EUROPEAN COMMISSION
DG Competition

CASE M.8084 – Bayer/Monsanto

(Only the English text is authentic)

MERGER PROCEDURE

REGULATION (EC) 139/2004

Article 8(2) Regulation (EC) 139/2004

Date: 21.3.2018

This is a <u>provisional</u> non-confidential version. The redactions included in this text have not yet been accepted by the Commission. The assessment of the redactions claimed by the Parties to the transaction and included in this provisional non-confidential version is ongoing. A final non-confidential version will be published in due course.

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Parts of this text have been edited to ensure that confidential information is not disclosed; those parts are enclosed in square brackets.

EUROPEAN
COMMISSION

Brussels, 21.3.2018
C(2018) 1709 final

Public version

COMMISSION DECISION

of 21.3.2018

declaring a concentration to be compatible with the internal market and the EEA agreement

(Case M.8084 – Bayer/Monsanto)

(Text with EEA relevance)

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THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to the Agreement on the European Economic Area, and in particular Article 57 thereof,

Having regard to Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings[1], and in particular Article 8(2) thereof,

Having regard to the Commission's decision of 22 August 2017 to initiate proceedings in this case,

Having given the undertakings concerned the opportunity to make known their views on the objections raised by the Commission,

Having regard to the opinion of the Advisory Committee on Concentrations[2],

Having regard to the final report of the Hearing Officer in this case[3],

Whereas:

SECTION I: INTRODUCTION

(1) On 30 June 2017, the Commission received a notification of a proposed concentration pursuant to Article 4 of Council Regulation (EC) No 139/2004 (the "Merger Regulation") by which Bayer Aktiengesellschaft ("Bayer", Germany) intends to acquire within the meaning of Article 3(1)(b) of the Merger Regulation sole control of the whole of Monsanto Company ("Monsanto", USA) by way of a purchase of shares (the "Transaction").[4] Bayer is hereinafter referred to as the "Notifying Party" and together with Monsanto as the "Parties" whilst the

1 OJ L 24, 29.1.2004, p. 1 ("Merger Regulation"). With effect from 1 December 2009, the Treaty on the Functioning of the European Union ("TFEU") has introduced certain changes, such as the replacement of "Community" by "Union" and "common market" by "internal market". The terminology of the TFEU will be used throughout this decision.

2 OJ C ...,...200. , p....

3 OJ C ...,...200. , p....

4 OJ C 222, 11.7.2017, p. 6.

undertaking that would result from the Transaction is referred to as "the merged entity".

(2) Bayer, incorporated in Germany, is active in four areas: pharmaceuticals, consumer health, agriculture ("Bayer Crop Science"), and animal health. Bayer's worldwide turnover in 2015 was EUR 47 billion, of which […] was achieved in the European Economic Area (EEA). The competitive effects of the Transaction mainly concern the Bayer Crop Science division. Bayer Crop Science operates three business segments: (i) Crop Protection; (ii) Seeds; and (iii) Environmental Science. The crop protection business is active in the discovery, development and sale of herbicides, insecticides, fungicides, seed dressings and seed treatments, and plant growth regulators. Bayer's crop protection business includes both chemical and biological products. The seeds business is active in the development and commercialisation of vegetable seeds, seeds for broad acre crops, and plant biotechnology traits. Bayer's environmental science business develops and sells weed, disease and pest control products for non-agricultural applications in the professional care segment. Bayer is also active in developing biological and digital agriculture technologies.

(3) Monsanto, incorporated in the USA, is an agriculture company which produces seeds for crops including corn, cotton, oilseeds (OSR) and fruit and vegetables. Monsanto also provides crop protection products. It focuses on the herbicide glyphosate which it commercialises under the "Roundup" brand, and other herbicides used by farmers, industrial customers, lawn-and-garden professionals and consumers. Additionally, Monsanto is involved in research on agricultural biologicals, and how they may be used to increase crop health and productivity. Monsanto also provides farmers with digital agriculture services through its The Climate Corporation. [Product specific turnover].

SECTION II: THE OPERATION AND THE CONCENTRATION

(4) On 14 September 2016, Bayer announced its takeover of Monsanto for an acquisition price totalling about USD 66 billion. There is a […] fee which Bayer would have to pay to Monsanto if the Transaction does not complete.

(5) The Transaction would create the global number one integrated player in seeds and traits, pesticides and digital agriculture. This is further illustrated in Figure 1 below.

(6) The merged entity would be the leading global integrated player with respect to seeds and traits, herbicides and insecticides (for a taxonomy of the different products see the Sections VIII-XII). It would create the number two player regarding fungicides. In terms of geographic presence, the merged entity would be the leader across geographic regions, including, in particular, the U.S., Latin America and the EEA as illustrated in the second row of Figure 1.

Figure 1 – [Extract from internal document]

[…]

Source: BI 02914, [internal document], ID1174, slide 15.

SECTION III: UNION DIMENSION

(7) The undertakings concerned have a combined aggregate worldwide turnover of more than EUR 5 000 million[5] [Bayer: EUR 42 270 million; Monsanto: EUR 12 198 million]. Each of them has a Union-wide turnover in excess of EUR 250 million [Bayer: EUR […]; Monsanto: EUR […]], and they do not each achieve more than two-thirds of their aggregate Union-wide turnover within one and the same Member State. The concentration therefore has a Union dimension pursuant to Article 1(2) of the Merger Regulation.[6]

SECTION IV: THE PROCEDURE

(8) Pre-notification contacts with the Commission started in June 2016, before the final agreement between the Parties on the terms of the Transaction had been concluded, and included site visits at Bayer's facilities in Belgium and the Netherlands. After those initial contacts, the Parties remained however essentially inactive for eight months (with the exception of an executive summary of the overlaps brought by the Transaction submitted by the Parties in December 2016). A first (partial) draft of the Form CO was received by the Commission in March 2017. Several parts of the draft Form CO were submitted in late June 2017. The Commission received formal notification of the Transaction on 30 June 2017.

(9) After the Commission clearance of the Dow/DuPont[7] and the ChemChina/Syngenta mergers,[8] the Transaction is the last and the largest of the three recent concentrations in the agrochemical sector to be notified to the Commission. In accordance with the priority rule[9], the Commission has assessed the Transaction taking into account those two previous mergers. The Dow/DuPont merger in particular renders certain markets where the Parties are active more concentrated.[10]

(10) In its initial (Phase I) investigation the Commission has reached out to a large number of market participants (mainly customers of the Parties, competitors and other stakeholders), by requesting information through eQuestionnaires, telephone calls and written requests for information pursuant to Article 11 of the Merger Regulation.

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5 Turnover calculated in accordance with Article 5 of the Merger Regulation and Commission Consolidated Jurisdictional Notice under Council Regulation (EC) No 139/2004 on the control of concentrations between undertakings, OJ C 95, 16.4.2008, p. 1, Section V.

6 According the Form CO, part 1, Table 1.4.1., the combined turnover of the Parties in the territory of the EFTA States does not equal 25% or more of their total turnover within the EEA. Neither of the Parties has a turnover exceeding EUR 250 million in the territory of the EFTA States. However, given that the Commission will throughout this decision, raise serious doubts as to the compatibility of the Transaction with the internal market for several EEA-wide and global markets, this case is a candidate for EEA cooperation pursuant to Article 58 of the EEA Agreement and Article 2(1) of Protocol 24 to the EEA Agreement. The turnover figures relate to the financial year 2015 for Bayer and the financial year 2016 for Monsanto.

7 Commission Decision in Case M.7932 – Dow/DuPont (2017).

8 Commission Decision in Case M.7962 – ChemChina/Syngenta (2017).

9 See, for example, Commission Decisions in Case M.6214 – Seagate/HDD Business of Samsung (2011); Case M.6203 – Western Digital/Viviti Technologies (2011); Case M.4942 – Nokia/Navteq (2008); Case M.4854 – TomTom/Tele Atlas (2008); Case M.4601 – Karstadtquelle/My Travel (2007) and Case M.4600 – TUI/First Choice (2007).

10 Please also see the discussion in recitals (147) and (148).

(11) Since the Commission had to send these eQuestionnaires during the summer, the response rate from customers and growers was relatively low, and several respondents replied only partially. The eQuestionnaires sent out in the Phase I investigation are listed below:

(a) Competitors: Questionnaire Q1 to Seeds & Traits & Crop Protection Competitors, Questionnaire Q4 to Crop Protection Competitors, Questionnaire Q5 to Row Crop Competitors, Questionnaire Q8 to Bee Health Competitors, Questionnaire Q9 to Vegetable Seeds Competitors, Questionnaire Q11 to Digital Agriculture Competitors, Questionnaire Q14 to Trait Technology Suppliers and Trait Discovery Organizations and Research Institutes;

(b) Customers and other stakeholders: Questionnaire Q2 to Distributors and Institutes, Questionnaire Q3 to Growers, Questionnaire Q6 to Non-Selective Herbicides Customers, Questionnaire Q7 to Bee Health Customers, Questionnaire Q10 to Vegetable Seeds Customers, Questionnaire Q12 to Digital Agriculture Customers.

(12) The Commission also conducted over 35 telephone calls during the Phase I investigation with market participants on seeds and traits, crop protection, bee health, and digital agriculture.

(13) A state of play meeting was held with the Parties on 26 July 2017, at which the Commission explained the preliminary findings from the market investigation and its preliminary conclusions.

(14) Bayer submitted commitments and a set of three Forms RM on vegetable seeds, broad acre crop seeds and traits and the non-selective herbicide glufosinate ammonium on 31 July 2017. Those commitments were, however, not market tested by the Commission because they did not address all the areas of serious doubts that had been identified by the Commission.

(15) On 22 August 2017, the Commission found that the Transaction raised serious doubts as to its compatibility with the internal market and the EEA Agreement and adopted a decision to initiate proceedings pursuant to Article 6(1)(c) of the Merger Regulation (the "Article 6(1)(c) Decision"). The areas where the Article 6(1)(c) Decision raised serious doubts were the following: vegetable seeds, broad acre crop seeds, broad acre crop traits, non-selective herbicides, seed treatment, other non-seed treatment crop protection overlaps, bee health, digital agriculture, and integration in particular, conglomerate effects at the distributor level and conglomerate effects at the grower level.

(16) The Article 6(1)(c) Decision also found that the commitments proposed by the Notifying Party on 31 July 2017 were not sufficient to eliminate the Commission's serious doubts as to the compatibility of the Transaction with the internal market, for the reasons described in that decision.

(17) On 4 September 2017, the Notifying Party submitted its written comments on the Article 6(1)(c) Decision.

(18) On 8 September 2017, following the Parties' comments on the Article 6(1)(c) Decision, a State of Play meeting took place between the Commission and the Parties.

(19) On 19 September 2017, the Commission, with the agreement of the Parties, extended the deadline by 10 working days under Article 10(3) of the Merger Regulation.

(20) During the in-depth (Phase II) investigation, the Commission sent to Bayer and Monsanto a total of 85 requests for information ("RFIs"), adding to the 41 RFIs sent during the Phase I investigation, including five custodian document requests. Moreover, a total of 15 RFIs to competitors, customers of the Parties, and other stakeholders were also sent out during the Phase II investigation in addition to the 17 RFIs sent during the Phase I investigation.

(21) With those RFIs mentioned in recital (20), the Commission collected and analysed a substantial amount of information from both Bayer and Monsanto, including their internal documents and internal business data, as well as from other market participants and stakeholders.

(22) The Commission also held six technical meetings with the Parties between end of September and mid-October 2017 to discuss the following topics: (i) seed treatment, (ii) biologicals, (iii) weed management, (iv) traits and seeds, (v) digital agriculture and (vi) bundling at the distributor level.

(23) Moreover, the Commission conducted further calls and meetings with a number of market participants, including customers and competitors of Bayer and Monsanto.

(24) In addition to the analysis of internal documents the Commission collected patent data to analyse the innovation strengths of the different firms involved in traits discovery.

(25) The Commission also collected factual evidence in order to qualify the magnitude of common ownership in this industry.

(26) The Commission attended the "Agritechnica" fair in Hannover on 16 November 2017. While at the fair, the Commission collected information on wheat and digital agriculture from the Parties and their competitors.

(27) The Commission also granted the status of interested third parties to the following organisations during the Phase II investigation: (i) Avaaz, a civil rights group (ii) Arbeitsgemeinschaft Bäuerliche Landwirtschaft (Farmer Interest Group for Agriculture, "ABL") a German farmers organization that represents the interests of farmers for a sustainable ecological and social agriculture for the future (iii) IPES Food, a multidisciplinary expert group seeking to shape the policy debate on how to reform food systems around the world and (iv) DowDuPont, a global agrochemical company.

(28) On 4 October 2017 and 16 October 2017, the Commission adopted two decisions pursuant to Article 11(3) of the Merger Regulation suspending the merger review time limit due to the failure of the Parties to provide certain requested documents. The first suspension lasted from 21 September 2017 until 13 October 2017 and the second from 10 October 2017 until 3 November 2017, at which dates the requested documents were provided.

(29) On 5 December 2017, the Commission informed the Parties of the preliminary results of the Phase II investigation during a State of Play meeting.

(30) On 14 December 2017, the Commission sent a Statement of Objections addressed to the Parties. The areas in respect of which the Statement of Objections raised serious concerns were the following: vegetable seeds, broad acre crop seeds, broad acre crop traits, non-selective herbicides, nematicide seed treatment, bee health and digital agriculture. Access to file was given to the Parties via CD-ROMs on 15 December 2017. Access to file was subsequently given to the Parties via encrypted email on 21 December 2017, via CD-ROM on 25 January 2018,

via encrypted email on 7 February 2018 and via CD-ROM on 15 February 2018, via CD-ROM on 9 March 2018.

(31) The Parties were also offered a Data Room such that their external advisors could access third party confidential information the Commission relied upon in its investigation. The period for which it was initially planned to make the Data Room available was between 3 and 9 January 2018. The Parties decided not to make use of the Data Room.

(32) The Parties replied to the Statement of Objections on 9 January 2018 (the "Parties' response to the Statement of Objections"). In addition, all of the four organisations admitted as interested third parties in Phase II as mentioned in recital (27) made submissions commenting on the Statement of Objections.[11]

(33) A post-Statement of Objections State of Play meeting with the Parties was held on 22 January 2018.

(34) The Commission issued four Letters of Facts addressed to the Parties. On 26 January 2018, the Commission sent the first Letter of Facts on weed management to the Parties, who replied on 2 February 2018.

(35) On 1 February 2018, the Commission sent the second Letter of Facts on digital agriculture, PPOs and on Annex I of the Statement of Objections covering the Commission's patent analysis to the Parties, who replied on 6 February 2018.

(36) On 1 February 2018, the Commission sent the third Letter of Facts on oil seed rape seeds, non-GM HT and innovation in traits and in cotton to the Parties, who replied on 6 February 2018.

(37) On 8 February 2018, the Commission sent the fourth Letter of Facts on trait innovation to the Parties to which the Parties did not reply.

(38) On 26 January 2018 the Commission, with the agreement of the Parties, extended the legal deadline by five working days under Article 10(3) 2 of the Merger Regulation.

(39) During the Phase II investigation the Notifying Party informally presented several remedy concepts. In order to address the preliminary competition concerns raised in the Statement of Objections, the Parties submitted a first set of commitments on 2 February 2018. As a result, the period for the adoption of a final Decision was extended by 15 working days pursuant to Article 10(3) of the Merger Regulation. On 5 February 2018 a slightly modified version of those commitments was submitted by the Parties.

(40) The Commission launched a market test of the commitments submitted on 5 February 2018 on 6 February 2018.

(41) The Parties submitted final commitments on 16 February 2018.

(42) The meeting with the Advisory Committee took place on 9 March 2018.

(43) The Final Report of the Hearing Officer was issued on 12 March 2018.

[11] For a discussion of these Third Parties' submissions, please see Section XIV of this Decision. Moreover, the arguments are also addressed in various Sections of this Decision to which these arguments are relevant.

SECTION V: FRAMEWORK OF THE COMMISSION'S ASSESSMENT

1. LEGAL BASIS FOR THE DECISION

(44) Article 2(3) of the Merger Regulation states that "*[a] concentration which would significantly impede effective competition, in the* [internal] *market or in a substantial part of it, in particular as a result of the creation or strengthening of a dominant position, shall be declared incompatible with the* [internal] *market.*" Article 2(1) of the Merger Regulation requires the Commission to take into account in its appraisal, among others, the need to maintain effective competition in light of the structure of the markets concerned, the market position of the undertakings concerned and their economic and financial power, as well as the development of technical and economic progress provided that it is to consumers' advantage and does not form an obstacle to competition.

(45) Recital 25 of the preamble to the Merger Regulation clarifies that the language of Article 2 is meant to encompass the appraisal of the effects of concentrations in oligopolistic markets, and in particular those that may significantly impede effective competition by the elimination of important competitive constraints that the merging parties had exerted upon each other as well as by a reduction of the competitive pressure on the remaining competitors.

(46) Recital 28 of preamble to the Merger Regulation clarifies that the Commission may publish guidance aimed at providing a sound economic framework for the assessment of concentrations, with a view to determining whether or not they may be declared compatible with the internal market.

(47) In this context, the Horizontal Merger Guidelines[12] and Non-Horizontal Merger Guidelines[13] provide further guidance on the underpinning concepts of the Commission's assessment.

2. INTRODUCTION TO THE COMPETITIVE ASSESSMENT OF HORIZONTAL EFFECTS OF THE TRANSACTION

2.1. Layers of analysis

(48) Pursuant to Article 2, in particular Article 2(2) and (3), of the Merger Regulation, the Commission examines whether notified concentrations can be declared to be compatible with the internal market by assessing whether they would significantly impede effective competition in the internal market or in a substantial part of it. In this framework, "competition" is understood to mean product and price competition (actual or potential) as well as innovation competition, where the Commission assesses in particular potential horizontal, non-coordinated effects.

(49) In line with that legal framework, in reviewing the Transaction, the Commission has assessed all likely horizontal effects using a four layer competitive assessment, which corresponds to the overlaps between the Parties' activities in terms of:

(a) product/price competition between actual products of the Parties;

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12 Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings, OJ C 31, 5.2.2004, p. 5 ("Horizontal Merger Guidelines").

13 Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings, OJ C 265, 18.10.2008, p. 6 ("Non-Horizontal Merger Guidelines").

(b) product/price competition between actual and forthcoming products or between forthcoming products of the Parties;

(c) innovation competition including in particular the incentives to discontinue, delay or reorient ongoing pipeline projects; and

(d) innovation competition including in particular the incentives to innovate in the future.[14]

(50) First, the Parties overlap in the supply of existing products in a number of EEA markets. In so far as the Transaction affects product and price competition between existing products of the Parties, the Commission investigated, in line with paragraphs 24 et seq. of the Horizontal Merger Guidelines, whether the Transaction would give rise to non-coordinated effects, which may result in the creation or strengthening of a dominant position and/or the elimination of an important competitive constraint.

(51) Second, one of the Parties intends to launch, in the near or relatively near future, products in markets where the other Party has existing products or also intends to launch in the near or relatively near future competing products. In this regard, and in line with paragraph 58 of the Horizontal Merger Guidelines according to which a merger with a potential competitor can have similar effects to a merger between competitors already active in the same market, the Commission investigated whether the Transaction would give rise to non-coordinated effects with regard to potential and product competition (i) between forthcoming and existing products or (ii) between forthcoming products, in particular as a result of the creation or strengthening of a dominant position and/or the elimination of an important competitive constraint.

(52) As regards the overlapping activities described in recitals (50) and (51), the Commission focused its assessment on product and price competition in a particular current or future product market. Product competition may be reduced through a different positioning of the products in order to prevent cannibalisation of each other's products' sales. Price competition may be reduced in those areas where the products of the Parties would have continued to compete head-to-head in the absence of the Transaction. It is important to note that product and price competition may be reduced independently of whether the merged entity decides to continue to sell both products or to withdraw one of the products from the market. In the latter case there might however be an additional reduction of competitive pressure on other competitors and thus an even more significant harm to product and price competition in a given market.

(53) Third, the Parties develop at least partially overlapping significant lines of research with similar discovery concepts and pipeline projects targeting the same product markets in discovery and early development that, if developed and brought to the market, would compete head-to-head against each other. It may also be the case that one of the Parties pursues important lines of research that would compete in a market where the other Party is an existing or potential supplier. In these cases, the Transaction may affect innovation competition between the two Parties in the form of discontinuation, delay or redirection of competing lines of research and early pipeline products.

[14] See Commission Decision in Case M.7932 – Dow/DuPont (2017), recitals 272 to 302.

(54) Fourth, the Parties operate two of only a few competing global R&D organisations in a given area. Provided the barriers to build such a R&D organisation are high, the discontinuation of one of those organisations may significantly reduce the overall level of innovation competition and thus product innovation in the crop protection and/or seed industry or parts thereof.

2.2. Depending on how close to commercialisation the pipeline products are, the Transaction could be likely to affect product or innovation competition

(55) As explained in Section V.2.1, the second layer of the assessment of horizontal effects focuses on overlaps between currently marketed and forthcoming products, that is to say where one of the Parties intends to launch in the relatively near future a number of products in markets where the other Party has existing products or also intends to launch in the relatively near future competing products.

(56) Indeed, paragraph 38 of the Horizontal Merger Guidelines states that "*effective competition may be significantly impeded by a merger between two important innovators, for instance between two companies with "pipeline" products related to a specific product market. Similarly, a firm with a relatively small market share may nevertheless be an important competitive force if it has promising pipeline products*".

(57) Similarly, paragraphs 58, 59 and 60 of the Horizontal Merger Guidelines describe the potential anti-competitive effects of a merger between potential competitors, where "*the potential competitor […] already exert[s] a significant constraining influence or there [is] a significant likelihood that it would grow into an effective competitive force [in a relatively short period of time]*". These paragraphs point to the significance of costs already incurred or yet to be committed as a useful indicator.

(58) However, the exact definition of what constitutes such a significant constraining influence or a significant likelihood that a potential competitor would become an effective competitive force in a relatively short period will depend on the specific characteristics of each industry. In this respect, key factors are in particular the time necessary to launch a new product on the market, and the point in that process where the likelihood of growing into "*an effective competitive force*" (and, *a fortiori*, of effectively entering the market) becomes significant.

(59) As explained in the Dow/DuPont Decision, the assessment of potential competition in the crop protection industry takes into account active ingredients which have entered or are about to enter the development stage. Accordingly, they have a significant likelihood of being launched on the market in spite of their launch in the EEA sometimes being six to eight years away.[15] Conversely, the assessment of innovation competition takes into account active ingredients in discovery or in early development, where market launch is less certain and further away in time.

(60) A similar principle applies to the assessment of traits. On the one hand, the assessment of potential competition is limited to traits that have a probability of reaching the commercialisation stage of at least 60% (that is to say traits that are in stage 3 or further on in the pipeline).[16] On the other hand, similarly to crop protection, the assessment of innovation competition takes into account traits in discovery or in early development, where market launch is less certain and further away in time.

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[15] Commission Decision in Case M.7932 – Dow/DuPont (2017), recitals 288 to 302. The actual assessment will ultimately depend on the specific facts of each case.

[16] See Sections X.1.2.1 and X.1.2.2.

3. THE FRAMEWORK TO ASSESS INNOVATION COMPETITION IN THIS CASE

(61) In this Section, the Commission (i) describes the legal basis for its assessment of innovation competition, corresponding to the last two layers of competition assessment referred to in recitals (49)(c) and (49)(d); (ii) explains why the analytical framework for the assessment of horizontal non-coordinated effects in the Horizontal Merger Guidelines is also largely applicable to innovation; (iii) presents its theory of harm on innovation competition; and (iv) explains why the Parties' arguments in response to the theory of harm are not well founded.

3.1. The legal basis to assess innovation competition

(62) Article 2 of the Merger Regulation provides that: "*[a] concentration which would significantly impede effective competition, in the common market or in a substantial part of it, in particular as a result of the creation or strengthening of a dominant position, shall be declared incompatible with the common market*". Recital 25 of the Merger Regulation clarifies that the language of Article 2 is meant to encompass the appraisal of the effects of concentrations in oligopolistic markets, and in particular those that may significantly impede effective competition by the elimination of important competitive constraints that the merging parties had exerted upon each other as well as by a reduction of the competitive pressure on the remaining competitors.

(63) The Merger Regulation establishes a legal framework that is not limited to the assessment of price effects, but may also be based on the likelihood of the impact of other factors such as innovation, quality and choice. In that respect, the Union Courts have clarified that the prospective analysis consists of an examination of how a concentration might alter the factors which determine the state of competition on a given market in order to establish whether it would give rise to a significant impediment to effective competition.[17]

(64) The Commission considers that innovation is an important criterion on the basis of which the appraisal of a concentration should be conducted. Paragraph 8 of the Horizontal Merger Guidelines clarifies that the merger control system established by the Merger Regulation aims at preventing mergers which would be likely to deprive customers of some of the benefits of effective competition, which are not only low prices, but also include high quality products, a wide selection of goods and services, and innovation (in the form of more, better and improved products).

(65) A merger may deprive consumers of these benefits through an increase of market power, which in the same paragraph is defined as the ability of one or more firms to profitably increase prices, reduce output, choice or quality of goods and services, diminish innovation or otherwise influence parameters of competition.[18]

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[17] Judgment of 15 February 2005, *Commission v Tetra Laval*, C-12/03 P, EU:C:2005:87, paragraph 43; Judgment of 10 July 2008, *Bertelsmann and Sony v. Impala and Commission*, C-413/06 P, EU:C:2008:392, paragraph 47. See also Judgment of 9 March 2015, *Deutsche Börse v Commission*, T-175/12, EU:T:2015:148, in particular paragraph 177.

[18] Paragraph 8 identifies innovation as one of the benefits that mergers may deprive customers of: "*[e]ffective competition brings benefits to consumers, such as low prices, high quality products, a wide selection of goods and services, and innovation*". Increased market power may consist in the ability of one or more firms to profitably diminish innovation. Pursuant to paragraph 25, "*mergers in oligopolistic markets involving the elimination of important competitive constraints that the merging parties previously exerted upon each other together with a reduction of competitive pressure on the remaining*

(66) Therefore, in accordance with the Merger Regulation and the Horizontal Merger Guidelines, the Commission is required to prevent significant impediments to effective competition without limiting its assessment to either price effects or product and price competition between existing products. It is also part of the Commission's tasks to determine whether a transaction is likely to lead to diminished innovation competition and innovation.

3.2. The analytical framework for the assessment of non-coordinated effects in the Horizontal Merger Guidelines is not exclusively restricted to the appraisal of price effects, but is also largely applicable to innovation

(67) The Commission considers that the framework set out in the Horizontal Merger Guidelines for the assessment of non-coordinated effects is not exclusively restricted to the appraisal of price competition between existing products. It is also largely applicable to innovation for the reasons as set out in recitals (68) to (74).

(68) First, paragraph 8 of the Horizontal Merger Guidelines clarifies that "*[e]ffective competition brings benefits to consumers, such as low prices, high quality products, a wide selection of goods and services, and innovation. Through its control of mergers, the Commission prevents mergers that would be likely to deprive customers of these benefits by significantly increasing the market power of firms.*" As such, the Horizontal Merger Guidelines clarify that the ways by which a merger may deprive customers of a number of benefits of effective competition, are not only higher prices, but also lower quality products, a reduced selection of goods and services and reduced innovation.

(69) Second, in line with paragraph 8 of the Horizontal Merger Guidelines, price increases are only one of the ways in which increased market power gained through mergers can harm competition. As such, whenever the section on non-coordinated effects of the Horizontal Merger Guidelines refers to price effects, this is in principle shorthand also for other possible forms of harm. This is not only apparent from the structure of the Horizontal Merger Guidelines, but also from the letter of paragraph 8 thereof, which expressly states that "*[in the guidelines], the expression 'increased prices' is often used as shorthand for these various ways [including diminished innovation and reduced choice] in which a merger may result in competitive harm*".

(70) Third, paragraph 38 of the Horizontal Merger Guidelines expressly mentions innovation as one of the criteria for the assessment of whether the merger eliminates an important competitive force. In this context, the Horizontal Merger Guidelines recall that increased incentives to innovate could find their place among the efficiencies stemming from a merger. At the same time, the same recital acknowledges that "*effective competition may be significantly impeded by a merger between two important innovators, for instance between two companies with 'pipeline' products related to a specific product market*". Innovation competition is thus confirmed as a criterion to assess the likely effects of a merger.

(71) Fourth, the wording of paragraph 38 of the Horizontal Merger Guidelines makes it also explicit that the assessment of pipelines within a merger between two firms with pipeline products related to a specific product market is only one example of how harm to innovation competition may occur.

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competitors may, even where there is little likelihood of coordination between the members of the oligopoly, also result in a significant impediment to competition."

(72) Fifth, more broadly paragraph 24 *et seq*. of the Horizontal Merger Guidelines as applied to non-coordinated effects on innovation competition entail that the Commission needs to assess whether the transaction reduces important constraints on one or more sellers and significantly impedes effective innovation competition. In line with paragraph 24 of the Horizontal Merger Guidelines and recital 25 of the Merger Regulation, the Commission thus considers both the loss of competition between the merging firms and the reduction of competitive pressure on other non-merging firms. Overall, the loss of product variety brought about by less innovation ultimately harms consumers by depriving them of choice, delaying or preventing the introduction of new and improved products, reducing competitive pressure on rival products, and hence leading to an overall loss of future welfare.

(73) Sixth, the Commission further notes that the assessment of the impact of a merger on innovation competition as part of the analysis on the likely non-coordinated effects of a merger is also expressly addressed by other jurisdictions.[19] Moreover the assessment of the impact of coordination of R&D activities on innovation competition between rival innovators is also addressed in other Commission Guidelines.[20]

(74) Finally, the principle that a merger between rival innovators may adversely affect innovation competition and lead to harm to consumers is also grounded in economic analysis.[21]

3.3. Theory of harm

(75) The Commission considers that the market features of both the crop protection and traits industries suggest that rivalry (or competition) is likely an important factor driving innovation, and that a merger between two of only a few important rival innovators is likely to lead to a reduction in innovation competition.

(76) This is because: (i) individual product markets are contestable on the basis of innovation; (ii) given the strong intellectual property rights ("IPRs") in the crop protection, seeds and traits industries, the original innovator can be expected to reap the benefits from its innovation by preventing rivals from imitating the successful

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19 For instance, the United States Horizontal Merger Guidelines published by the US Department of Justice and the Federal Trade Commission ("US Guidelines") specifically discuss harm to innovation competition. In section 6.4 the US Guidelines indicate that US Authorities may consider "*whether a merger is likely to diminish innovation competition by encouraging the merged firm to curtail its innovative efforts below the level that would prevail in the absence of the merger. That curtailment of innovation could take the form of reduced incentive to continue with an existing product-development effort or reduced incentive to initiate development of new products*". Both of these aspects will be considered in the assessment of the Transaction.

20 See paragraph 26 of the Guidelines on the application of Article 101 of the Treaty on the Functioning of the European Union to technology transfer agreements, OJ C 89, 28.3.2014, p. 3; and paragraphs 199-122 of the Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements, OJ C 11, 14.1.2011, p. 1.

21 See for example Gilbert, Richard and Steven Sunshine (1995), "Incorporating Dynamic Efficiency Concerns in Merger Analysis: The Use of Innovation Markets", *Antitrust Law Journal*, 63, pages 569-601; Gilbert, Richard (2006a), "Looking for Mr. Schumpeter: Where are we in the competition-innovation debate?", Chapter 6 in Adam Jaffe, Josh Lerner and Scott Stern (eds.), *Innovation Policy and the Economy*, Volume 6, pages 159-215; Baker, Jonathan (2007), "Beyond Schumpeter vs. Arrow: How Antitrust Fosters Innovation", *Antitrust Law Journal*, 74; Shapiro, Carl (2012), "Competition and innovation. Did Arrow hit the bull's eye?", chapter 7 of Josh Lerner and Scott Stern (eds.), *The Rate and Direction of Inventive Activity Revisited*, pages 361-404. For a review of this literature with a specific focus on the impact of horizontal mergers on innovation competition, see also Commission Decision in Case M.7932 – Dow/DuPont (2017), Annex 4.

innovation (that is, appropriability is high); (iii) innovation is mostly based on product innovation; (iv) the Parties have not put forward any arguments as to whether consolidation between rival innovators would be associated with efficiencies; and (v) the fear of cannibalisation of own existing products is a disincentive to innovate which is likely to be reinforced by a merger between rival innovators.

(77) The specific evidence gathered by the Commission in its investigation supports the finding that the Transaction is likely to lead to a significant reduction in innovation competition.

(78) First, as discussed in more detail in Section X (for traits) and Section XI (for crop protection), and in the light of the evidence at its disposal, the Commission considers that there is evidence that the Transaction would lead to a significant discontinuation and/or reorientation of R&D capabilities and projects.

(79) Second, there is evidence on file suggesting that pre-Transaction innovation rivalry drives innovation by the Parties. That is, their incentives to innovate are driven by the risk that successful innovation by their rivals may lead to a loss of market share (and, consequently, profits) and by the prospect of gaining valuable sales from their rivals by engaging in successful innovation. At the same time, there is also evidence that the Parties take into consideration cannibalisation when introducing new products. That is, the expected net profits of any newly introduced product takes into account the fact that this new product may subtract sales revenues from another product currently being commercialised and/or developed by the company.[22] This evidence is not disputed by the Parties.

(80) Third, there is evidence that Bayer and Monsanto are important and close innovators in several innovation spaces[23] where few other alternatives are available.[24]

(81) In many innovation spaces[25] the Parties have been in the past, and are likely to continue to be in the future, close and important innovation competitors. There are several markets in which the Parties have launched, are launching or are currently developing competing products that would take away revenue from each other. They also have a number of early pipeline products resulting from their lines of research which would likely be taking away revenue from each other in the future (be it another early pipeline product from the other Party, a development pipeline product, or a product currently marketed). Moreover, in the innovation spaces targeted by these early pipeline products there are few alternative equally effective competitors that are currently present or developing pipeline projects.

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22 For example, see Section X.1.7.2.2 for traits and Sections XI.1.4.5 and XI.1.5.5 for crop protection (for non-selective herbicides and for herbicide tolerance systems, respectively).

23 The term "innovation spaces" refers to spaces in which innovation competition occurs (be it in the crop protection sector or in the traits sector). R&D players do not innovate for all the product markets composing a sector at the same time. They also do not innovate randomly without targeting specific spaces within that sector. When setting up their innovation capabilities and conducting their research, R&D players have specific research targets. At early research stages in crop protection, these targets consist of a specific target pest (or pest group) and crops. For traits, instead, these targets consist of a specific functionality (for instance, weed control) and, depending on how advanced the research is, a crop.

24 See Section X.1.7.3 for traits; Section XI.1.4 for non-selective herbicides; and Section XI.1.5 for HT Systems.

25 For a definition of innovation spaces for traits, please see Section X.1.7.1, while for non-selective herbicides see Section XI.1.4.1.

(82) The investigation suggests that the Transaction would likely significantly diminish innovation competition in a number of innovation spaces within the crop protection and seeds and traits industries by encouraging the merged entity to curtail its innovative efforts and capabilities below the level that would prevail in the absence of the Transaction.

(83) The Commission considers that the reduced innovation incentives and capabilities are likely to manifest themselves in the form of:

(a) an immediate reduction of incentives to continue with some existing innovation efforts (either by discontinuing, redirecting or deferring early pipeline products or lines of research) in the case of overlapping lines of research and early pipeline products between the Parties, and

(b) reduced incentives to develop in the longer term the same number of new products as the combined targets of the Parties before the Transaction.

(84) The evidence on discontinuation and reorientation of R&D efforts, and on closeness of competition in innovation spaces,[26] is consistent with economic principles suggesting that a merger between two close and significant innovation competitors may lead to a reduction in innovation competition (and more generally to a loss of competition for innovative products).

(85) The same cannibalisation considerations that are driving the Parties' investment and innovation decisions prior to the Transaction are likely to continue to apply post-Transaction, with the difference that the portfolios of existing products, pipeline products and lines of research of Bayer and Monsanto will be combined, hence increasing the impact of cannibalisation and reducing innovation incentives.

(86) Whilst prior to the Transaction the Parties would have an incentive to capture current and future sales from each other when introducing and competing for new and improved products, post-Transaction they would be less incentivised to do so. This is because an innovation by either of the Parties would likely cannibalise the profits of the other Party. This effect is internalised with the Transaction, adding to the opportunity cost of innovation and thus depressing the innovation incentive.

(87) This is a unilateral effect of a merger, in line with the treatment of innovation competition under the Horizontal Merger Guidelines. As with other types of non-coordinated effects, this effect is likely to be significant when (i) the merger brings together two important[27] and close[28] innovators out of a limited number of effective innovators, which in the absence of the merger would have been likely to divert significant sales from each other by competing for innovative products; and (ii) the

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[26] For examples of evidence on closeness, see Section X.1.7.5 for traits and Sections XI.1.4.4 and Section XI.1.5.5.6 for crop protection (for non-selective herbicides and for herbicide tolerance systems, respectively). For example of evidence on discontinuation and reorientation, see Section X.1.7.6 for traits and Section XI.1.4.5 and Section XI.1.5.5.7 for crop protection (non-selective herbicides and herbicide tolerance systems).

[27] Paragraph 38 of the Horizontal Merger Guidelines: "*effective competition may be significantly impeded by a merger between two important innovators, for instance between two companies with 'pipeline' products related to a specific product market*".

[28] Paragraph 28 of the Horizontal Merger Guidelines: "*the higher the degree of substitutability between the merging firms' products, the more likely it is that the merging firms will raise prices* [or reduce quality, choice and innovation] *significantly*".

merger is unlikely to generate any efficiencies including potential positive effects on appropriability.[29]

(88) In the Commission's view, consumers would be harmed directly by a loss of innovation and ultimately by a loss of product variety and quality, by a lower rate of introduction of new and improved products, or by a reduced intensity of future product market competition in the overlap markets where the discontinued, deferred or redirected products would have been introduced but for the Transaction. More generally, the loss of an independent innovator brought about by the Transaction would be ultimately associated with a reduction in competition for future innovative products. This harm resulting from the absence of competition between the Parties in those markets could be felt repeatedly year after year for any possible future interaction between the Parties.

3.4. The Parties' arguments

(89) During the course of the proceedings, the Parties submitted a report which discussed an economic framework to assess innovation-related concerns in mergers (the "**First innovation submission**").[30]

(90) The main arguments raised by the Parties in the First innovation submission are the following:

(a) First, the report claims that a merger can negatively affect the level of innovation only where there is an expected overlap between the merging parties' future products;[31]

(b) Second, based on a specific economic model, the report puts forward the following claims: (i) any adverse impact on consumer welfare resulting from a reduction in innovation effort is limited relative to the corresponding price effect from the merger; and (iii) even small innovation-related efficiencies are sufficient to offset the consumer welfare loss resulting from a reduction in innovation effort.[32]

(91) In relation to the first argument, this Decision includes extensive factual evidence of innovation overlaps[33] between the Parties at the level of the relevant innovation spaces in all areas where innovation-related concerns have been raised. These overlaps include overlaps in current products, development efforts, research targets

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29 The Commission notes that the Parties have not put forward any claims related to potential efficiencies generated by the Transaction.

30 Parties' submission entitled "An economic framework to assess innovation concerns in mergers", 22 November 2017 (prepared by Compass Lexecon), ID8678.

31 Parties' submission entitled "An economic framework to assess innovation concerns in mergers", 22 November 2017 (prepared by Compass Lexecon), ID8678, section 2.

32 Parties' submission entitled "An economic framework to assess innovation concerns in mergers", 22 November 2017 (prepared by Compass Lexecon), ID8678, sections 3 and 4. The model used by Compass Lexecon consists of a numerical extension of the economic model set out in the paper by Federico, Langus and Valletti, "Horizontal Mergers and Product Innovation: An Economic Framework", working paper, July 2007.

33 The Commission also notes that an "innovation overlap" in this context refers to instances in which both merging parties are active in R&D in the same innovation spaces, as well as instances in which one merging party is active in an innovation space that is likely to generate products that, once developed and commercialised, will likely overlap with current products of the other merging party.

and patent activities.[34] The issue raised by the report does therefore not arise in the present case.

(92) In relation to the second argument, the Commission formulates the following observations.

(93) **First**, the Commission notes that its assessment of the impact of the Transaction on innovation competition is not based on the specific formal economic model that the Parties refer to. The Commission's assessment is instead based on the legal and economic framework set out in Section V.3.1-V.3.3, including the principles set out in paragraphs 8 and 38 of the Horizontal Merger Guidelines.

(94) Applying this framework to the particular case at hand, the Commission's assessment of this Transaction includes a detailed and fact based assessment of the specific features of innovation competition in the industries concerned, of the innovation overlaps between the Parties, and of the likely suppression and/or reorientation of R&D assets and/or projects by the Parties after the Transaction.[35]

(95) By contrast, the First innovation submission made by the Parties is based on an abstract and general model based on numerical simulations which by its very nature rests on a number of inevitably stylised and simplifying assumptions on the nature of the R&D process and of product market competition.[36] As the submission itself notes, [quote from internal document].[37]

(96) The Commission considers that the specific factual evidence on nature of innovation competition in the industries concerned and on the likely adverse impact of the Transaction on R&D incentives and efforts provides a more reliable and accurate indication of the significance of the effect of the Transaction on innovation competition than the numerical simulations of the model relied upon by the Parties, which, as stated above, do not attempt to simulate the specific facts of the current case.

(97) **Second**, and in any event, the article on which the submission primarily focuses on a specific question (namely, the likely direction of the effect of a merger between rival innovators on innovation incentives, due to its impact on market power), rather than the combined impact of a merger on innovation incentives and on product market competition (and ultimately on consumer welfare). The Commission notes the model's implications on the direction of the effect of a merger on innovation efforts are broadly consistent with the legal and economic principles set out in Section V.3.1-V.3.3 (a point that is not disputed by the Parties).

(98) **Third**, even within the economic framework that the Parties rely upon, the size of the "innovation effect" simulated in the submission is strictly related to the simulated "price effect". Since the merger lessens price competition in future innovative

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34 For examples of evidence on current product overlaps, see Sections X.1.6.3 and X.1.6.4 for traits and Sections XI.1.2.3 and XI.1.5.4 for crop protection (for non-selective herbicides and for herbicide tolerant systems). For examples of evidence on development effort and research target overlaps, see Section X.1.7.5 for traits and Sections XI.1.4.2 and XI.1.5.5 for crop protection (for non-selective herbicides and for herbicide tolerant systems). For examples of evidence on patent activity overlaps, see Section X.1.7.4.5 for traits.

35 For example, see Sections X.1.7.6 for traits and Section XI.1.4.5 and Section XI.1.5.5.7 for crop protection (non-selective herbicides and herbicide tolerant systems, respectively).

36 [Details from economic submission].

37 Parties' submission entitled "An economic framework to assess innovation concerns in mergers", 22 November 2017 (prepared by Compass Lexecon), ID8678, paragraph 1.5.

products (this is explicitly noted in the submission - see in particular paragraphs 3.5 and 4.7 of the Parties' First innovation submission), this price effect reduces the size of the "innovation effect". The mechanism behind the allegedly limited impact of a merger on innovation incentives is therefore an anticompetitive mechanism itself (namely an increase in prices) which stems from the loss of competition between rival innovators, resulting in future harm to consumers (over and above the harm resulting from the loss of competition in existing products). The two effects simulated in the Parties' First innovation submission are therefore related to the same underlying mechanism (namely the elimination of competition between rival innovators, with the resulting internalisation of price and non-price negative externalities), and happen simultaneously. It is therefore artificial to assess them in isolation from each other.[38]

(99) In light of the above, the Commission considers that even within the economic framework that the Parties rely upon, the First innovation submission understates the harm to consumer welfare resulting from the loss of competition between the Parties in innovative products. This is because, within the logic of the model relied upon by the Parties in their submission, consumers are harmed by the merger not only because of the reduction in innovation efforts, but more broadly because of the reduction in product market competition between innovative products that is due to a merger.[39] As a consequence, even on the basis of the simulations of the economic model relied upon by the Parties, the efficiencies computed by the Parties to allegedly eliminate concerns related to the effect of a merger on innovation effort are not sufficient to eliminate the consumer welfare loss due to the elimination of competition between the Parties in future innovative products.

(100) In the response to the Statement of Objections, the Parties submitted another report discussing the economic framework to assess innovation-related concerns in mergers and trying to rebut the Commission's arguments raised in the Statement of Objections (the "**Second innovation submission**").[40]

(101) In addition to reiterating the conclusions set out in the First innovation submission (see recital (90)), the Second innovation submission discusses why, in the Parties' views, the limitations pointed out by the Commission in its assessment of the First innovation submission are not material for the conclusions put forward by the Parties.

(102) First, the Parties claim that the Statement of Objections set out preliminary findings of innovation concerns in areas where future product overlaps were not clearly identified.[41]

(103) Second, as regards the economic model on which they rely, the Parties claim that their conclusion that the adverse impact on consumer welfare resulting from a

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38 Intuitively, if the merger relaxes future product market competition, the resulting future price increases limit access to innovative products for consumers in a similar fashion as a reduction in innovation incentive limits that access. So merger-induced future price increases on innovative products do naturally fall into the framework of the Commission's concerns related to merger-induced reductions in innovation competition.

39 For a more general discussion of this point, see Commission Decision in Case M.7932 – Dow/DuPont (2017), Annex 4, recitals 60 and 90.

40 Parties' response to the Statement of Objections, Annex SO.1 "Response to the SO's Framework for Innovation Concerns" dated 8 January 2018 (prepared by Compass Lexecon), ID9955-82.

41 Parties' response to the Statement of Objections, Annex SO.1 "Response to the SO's Framework for Innovation Concerns" dated 8 January 2018 (prepared by Compass Lexecon), ID9955-82, section 2.

reduction in innovation effort is limited compared to the corresponding price effect from the merger stands even if one were to only focus on the "cannibalisation effect" and exclude the attenuation of the innovation effect arising from the "price coordination effect".[42]

(104) Third, also as regards the model on which the Parties rely, the Parties disagree with the Commission's claim that the welfare losses due to innovation effects are understated by the Parties' analysis because of its focus on reductions in innovation efforts and abstraction from future price competition between innovative products. The Parties claim that the innovation effect calculated in the First innovation submission includes both the harm arising from having fewer successful innovations and from the reduced market competition between these innovative products.[43]

(105) Fourth, also as regards the model on which the Parties rely, the Parties claim that there is no reason why relaxing the simplifying assumptions adopted in their model would result in significantly higher negative innovation effects. In particular, the Parties discuss how the following simplifying assumptions would not, in their view, affect the conclusion that the adverse impact on consumer welfare resulting from a reduction in innovation effort is limited relative to the corresponding price effect: (i) the focus on interior solutions as opposed to corner solutions, (ii) symmetry between firms and (ii) abstraction from the existence of fixed costs.[44]

(106) The Commission considers that the arguments put forward by the Parties in the Second innovation submission are unfounded.

(107) **First**, the Commission considers that there is extensive factual evidence of innovation overlaps[45] between the Parties at the level of the relevant innovation spaces in all areas where innovation-related concerns have been raised. These overlaps include overlaps in current products, development efforts, research targets and patent activities.[46] The Commission therefore maintains its view that the first issue raised by the Parties does not arise.

(108) **Second,** as explained in recital (94), the Commission continues to consider that the specific factual evidence on the nature of innovation competition in the industries affected by the merger and on the likely adverse impact of the Transaction on R&D incentives and efforts provides a more reliable and accurate indication of the significance of the effect of the Transaction on innovation competition than the numerical simulations of the model put forward by the Parties.

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42 Parties' response to the Statement of Objections, Annex SO.1 "Response to the SO's Framework for Innovation Concerns" dated 8 January 2018 (prepared by Compass Lexecon), ID9955-82, section 3.

43 Parties' response to the Statement of Objections, Annex SO.1 "Response to the SO's Framework for Innovation Concerns" dated 8 January 2018 (prepared by Compass Lexecon), ID9955-82, section 4.

44 Parties' response to the Statement of Objections, Annex SO.1 "Response to the SO's Framework for Innovation Concerns" dated 8 January 2018 (prepared by Compass Lexecon), ID9955-82, section 5.

45 The Commission also notes that an "innovation overlap" in this context refers to instances in which both merging parties are active in R&D in the same innovation spaces, as well as instances in which one merging party is active in an innovation space that is likely to generate products that, once developed and commercialised, will likely overlap with current products of the other merging party.

46 For examples of evidence on current products overlap, see Section X.1.6.3 for traits and Sections XI.1.2.3 and XI.1.5.4.1 for crop protection (for non-selective herbicides and for herbicide tolerant systems). For examples of evidence on development efforts and research targets overlaps, see Section X.1.7.5 for traits and Sections XI.1.4.4 and XI.1.5.5 for crop protection (for non-selective herbicides and for herbicide tolerant systems, respectively). For examples of evidence on patent activities overlaps, see Sections X.1.7.4 for traits.

(109) **Third**, as regards the specifics of the model on which the Parties rely, the Commission considers that focussing on the relative importance for consumer welfare of harm associated with reductions in innovation efforts as opposed to harm stemming from future price effects evades the key question of whether the Transaction overall leads to a significant reduction of innovation competition.

(110) In this respect, the Commission considers the following:

(a) The Parties' submission shows that a merger between two rival innovators is likely to harm consumers because of reductions in innovation efforts and relaxation of future product market competition. The Commission considers that these two (negative) effects complement each other to the detriment of consumer welfare. As such, especially considering that both sources of harm stem from the same mechanism (the internalisation of negative externalities between the Parties), it is not necessary nor appropriate in the context of a specific merger assessment to determine which channel generates more harm.

(b) Most of the quantitative estimates presented by the Parties in their submission relate to 5-to-4 mergers (with sensitivities looking at 4-to-3 mergers), whereas a significant number of innovation spaces for which the Commission has raised concerns are more concentrated. While the level of concentration may not affect the proportion of harm related to the reduction in innovative efforts compared to future price increases using the framework relied upon by the Parties, the level of concentration matters for the absolute level of negative impact that a merger would have via each of these two channels.

(111) **Fourth**, also as regards the model on which the Parties rely, the Commission considers that the Parties' third claim in the Second innovation submission (see recital (104)) is incorrect. As explained in paragraph 4.5 of the Second innovation submission, [quotes from confidential submission].[47] It appears from this quote that while the Parties' calculated innovation effect accounts for [quote from confidential submission], it does not account for the reduction in product market competition between the innovative products that are developed after the Transaction. Therefore, the innovation effect calculated by the Parties only captures the effect of having less innovative products in the market in the future but does not account for the lost consumer welfare due to the fact the innovative products, once developed, would be controlled (namely, priced) by the same firm. In the Commission's view merger-induced future price increases on innovative products fall into the framework of the Commission's concerns related to merger-induced reductions in innovation competition.

(112) **Fifth**, the Commission acknowledges that a model by definition requires making simplifying assumptions. However, the Commission also considers that a model should fit reasonably well the most important stylised facts of a case (such as evidence of strong discontinuation and reorientation of R&D efforts). In the Commission's view, the conclusions of the Parties are based on a model (and parametrisations of it) that does not describe the evidence that the Transaction would generate significant discontinuation and reorientation of R&D investments.

(113) In conclusion, the Commission considers that, while the Commission's assessment is not based on the model relied on by the Parties, in any event, the Parties' simulations

[47] [Quote from confidential submission].

are not informative on the relative and absolute size of the harm from different channels.

SECTION VI: INTRODUCTION TO THE INDUSTRY

1. INTRODUCTION

(114) The Transaction combines the world number 1 seeds and traits player Monsanto with the number 2 crop protection player Bayer creating by some distance the largest global integrated player, that is to say a player combining within one business leading seeds, traits and crop protection industry capabilities within one business. The merged entity would be around 60% larger than the future number 2 and 3 players, respectively, DowDuPont and ChemChina-Syngenta, and around four times larger than the number 4, BASF, which is mainly a crop protection and traits discovery player.

(115) Bayer is a leading player in crop protection, particularly in Europe. Monsanto is the market leader in seeds and has a strong focus on the Americas. There is therefore a degree of complementarity between the two businesses both from a product and a geographic focus point of view.

2. FEATURES OF COMPETITION IN THE SEEDS & TRAITS INDUSTRY

2.1. Key concepts and definitions

(116) For the avoidance of doubt, and given the highly technical nature of the industries concerned, this Section defines a few key concepts that are used throughout this Decision.

2.1.1. Breeding

(117) New plant varieties are obtained through breeding. Breeding refers to the changing of the traits of plants in order to produce desired characteristics. It involves the creation and testing of male and female parental lines, crossing of those lines and testing of the new varieties that have been developed from the crosses. A parental line (or "inbred line") is a plant obtained through breeding which expresses specific characteristics. Parental lines are used for breeding purposes, notably for the creation of new hybrids. An elite parental line is a parental line used for the development of hybrids that are already commercialised or planned to be commercialised in the near future.

(118) The duration of breeding varies depending on the crops concerned. For example, it takes on average seven to eight years to breed new vegetable varieties and eight to twelve years for oilseed rape varieties.

(119) The Commission's Scientific Advice Mechanism[48] divides breeding techniques into three groups: (i) conventional breeding techniques ("CBTs"), (ii) established techniques of genetic modification ("ETGMs") and (iii) new breeding techniques ("NBTs").

(a) CBTs are characterised by crossing plant varieties enhanced by using molecular genetic markers (Marker Assisted Selection) and mathematical algorithms (Genomic Selection) to select and predict favourable, superior traits;[49]

(b) ETGMs are certain insertions of genetic information into an organism regardless of sexual compatibility;[50]

(c) NBTs are diverse and partly differ from, and partly overlap with CBTs and ETGMs. They include genome editing (removal and alteration of genes such as Oligonucleotide Directed Mutagenesis ("ODM"), Zinc Finger Nuclease ("ZFN"), Crispr-Cas9, etc.), introduction of genetic material, epigenetic modification (de/activation of genes such as RNA-dependent DNA methylation ("RdDM")) and grafting of non-ETMG varieties onto an ETGM rootstock.[51]

(120) A plant genome can be modified without inserting non-native DNA, by prompting genetic mutations using chemical or radiological elements. This approach has been successfully used to develop tolerance to acetolactate synthase ("ALS") inhibitors (such as Clearfield by BASF), considered as non-genetically modified ("non-GM").

(121) Plant varieties obtained through breeding are either hybrid or other types, such as open-pollinated varieties (or self-pollinated, cross-pollinated, synthetic, etc.).

(122) Open-pollinated varieties ("OPV") are plants obtained naturally through self-pollination (that is to say the plant contains both male and female reproductive parts) or pollination by another individual of the same variety. OPV display similar characteristics generation after generation ("true to type breeding"). Seeds obtained from OPV can therefore be saved and used for subsequent growing seasons.

(123) Hybrids are plants created from the crossing of two different parental lines by controlled pollination. The first generation of hybrids resulting from the crossing will display their parents' characteristics more vigorously ("heterosis" or "hybrid vigour"). However, subsequent generations will no longer exhibit the hybrid vigour. In order to maintain the same hybrid vigour, the crossing between the parental lines has to be repeated. Consequently, seeds obtained from hybrids cannot be saved for subsequent growing seasons.

2.1.2. Traits

(124) Traits refer to phenotyping characteristics of a plant, such as yield, early maturing, height, herbicide tolerance, insect or disease resistance, etc.[52] Historically, a plant trait referred to a characteristic of a plant obtained via natural breeding. Biotechnologies have allowed the development of traits in laboratories which can be

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48 The High Level Group of the European Commission's Scientific Advice Mechanism ("SAM") provides independent scientific advice to the College of European Commissioners to support their decision making. See also https://ec.europa.eu/research/sam/index.cfm?pg=about.

49 SAM (2017), New techniques in Agricultural Biotechnology, pages 29 et seq.

50 SAM (2017), New techniques in Agricultural Biotechnology, pages 46 et seq.

51 SAM (2017), New techniques in Agricultural Biotechnology, pages 56 et seq.

52 Form CO, part 14, paragraph 2.

later introgressed into certain plant varieties. These traits have significant commercial value and are sold as additional "options" to farmers. In the agricultural sector these traits are typically referred to as "branded traits", and, with some limitations, can be reproduced across different varieties and different crops.[53]

(125) Most of the branded traits offered today are obtained through genetically modified organisms ("GM"). However, new breeding techniques might enable a wide-spread market introduction in the near future of traits for which it is currently uncertain whether the GM legislation will be applicable. The European Patent Office has amended its implementing rules to exclude products emanating from essentially biological processes from patenting on the basis of the Commission notice on certain articles of Directive 98/44/EC of 6 July 1988 on the legal protection of biotechnological inventions.[54] Discussions on the question on patentability of native traits, and in particular the compliance with the novelty criteria, are ongoing.

(126) The most prevalent types of traits continue to be:

(a) traits conferring tolerance to the crop against a given herbicide, often referred to as Herbicide Tolerance ("HT") traits. For farmers, these traits, in combination with the related herbicide, can represent an element of so-called "weed management". The most common and wide-spread HT trait confers tolerance to the herbicide glyphosate.

(b) traits conferring resistance to some insect species. These traits are often referred to as Insect Resistance ("IR") traits, and represent for farmers an alternative to insecticides.

(127) In recent years, some firms have also introduced a number of different traits proving additional desired characteristics. The internal designation of those trait categories can vary for each firm. Based principally on the classification by Bayer, the following categories can be distinguished:[55]

(a) disease traits: traits which can confer specific resistance to selected diseases, such as virus diseases, scab, fusarium, rust, tan spot, septoria, etc.

(b) efficiency traits: traits which (i) improve yield (including traits that allow a better nutrient uptake), (ii) enhance or preserve plant health, or (iii) mitigate against abiotic stresses, e.g. drought or salinity stress;

(c) quality traits: traits which produce a modified and differentiated product versus the basic commodity, e.g. modified oil/fatty acid profile in soybeans. Quality traits are generally developed to service a specific consumer/processor demand.

(128) Nowadays, commercial seeds tend to contain combinations of several traits, also referred to as "stacks". There are two types of trait stacks:[56]

(a) "breeding stacks", obtained by introgressing into the germplasm each single trait;

(b) vector or molecular stacks, that is to say a single event composed of multiple genes, each providing a certain trait to the variety where the event will be

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53 BI 00001 [internal document], ID292, page 38.

54 OJ L 213, 30.7.1998, p.13.

55 Parties' response to the Commission's request for information RFI 35, questions 7 and 8.

56 For a detailed explanation on breeding stacks and vector stacks, please see Section X.1.4.6, recital (878).

introgressed. In contrast to breeding stacks, a vector stack is introgressed into a seed variety as a single event.[57]

(129) A farmer would in principle opt for purchasing seeds with a stack of traits, rather than one single trait for a number of reasons. In the case of a stack of multiple HT traits, for example, the farmer would have more flexibility regarding the herbicide they would have to use, rather than making this choice at the time of purchasing the seeds. Another reason is that, particularly in the case of IR traits, multiple traits allow for targeting a broader spectrum of insects (for instance above ground or below ground, or different insect species). Finally, from a resistance management perspective, having more than one trait makes it possible to reduce the effects of resistance developed by weed against a certain herbicide (in the case of HT) or by insects against a certain trait (in the case of IR). Nevertheless, some farms might prefer not to purchase seeds with multiple traits in order to avoid additional costs, or simply because they might not need all the functionalities offered by each of the traits in the stack.

(130) At present, the only GM trait authorised for cultivation in the Union is Monsanto's GM MON 810 (a Lepidopteran insect resistance trait for corn). Initially authorised in 1998, a number of Member States opted out from the authorisation in 2015. In 2016, MON 810 was cultivated only in Spain, Portugal, the Czech Republic and Slovakia.

(131) A firm that has developed and received regulatory approval for a trait can monetise it in different ways. The most common and widespread way appears to be via licensing the traits in return for trait royalties.[58] However, there are, or there have been in the past, a limited number of cases where a trait developer also owns a seed business and prefers to use the trait for providing competitive advantage to its seed business, rather than licensing it out.[59] Finally, some trait developers which also own a crop protection business might decide to license an HT trait royalty-free or for very low royalties, with a view to increasing the related herbicide sales.[60]

2.1.3. Registration

(132) Plant varieties can be registered for two distinct purposes, namely: marketing and intellectual property protection.

2.1.3.1. Registration for marketing purposes

(133) Before it can be marketed in the Union, a new plant variety of listed species must be registered in the national catalogue of a Member State. Registration of new varieties is governed by the national seeds authorities of the Member States.

(134) In order to be registered, the variety must fulfil three criteria. First, the variety must have a denomination, or an identifiable name, that has been approved by the relevant national seeds authority. Second, the variety must pass the so-called DUS ("Distinct, Uniform, Stable") test. This requires the new variety (i) to be distinct from all other existing varieties, (ii) to be uniform in the sense that only a limited number of deviations from the variety are allowed, and (iii) to remain stable after repeated propagation. Third, varieties of agricultural species must pass the VCU ("Value for

[57] Parties' response to the Commission's request for information RFI 35, question 1.

[58] Form CO, part 14, paragraph 58 and Parties' response to the Commission's request for information RFI 15, question 2.

[59] Form CO, part 14, paragraph 60.

[60] Form CO, part 14, paragraph 59.

Cultivation and Use") test by demonstrating that it is an improvement over existing varieties in terms of its value for cultivation and use. The VCU criteria and testing methods may vary depending on the country.

(135) The Commission publishes a Common Catalogue of varieties which lists all registered varieties notified by Member States' competent authorities. Inclusion in the Common Catalogue means that a variety may be marketed in all Member States.

2.1.3.2. Registration for intellectual property purposes

(136) In the Union, plant varieties can be protected by intellectual property rights called "Community Plant Variety Rights" (CPVRs). In order to be protected, a new variety must pass the DUS test. CPVRs' holders have an exclusive right to market the protected variety, as well as to carry out certain other related activities.

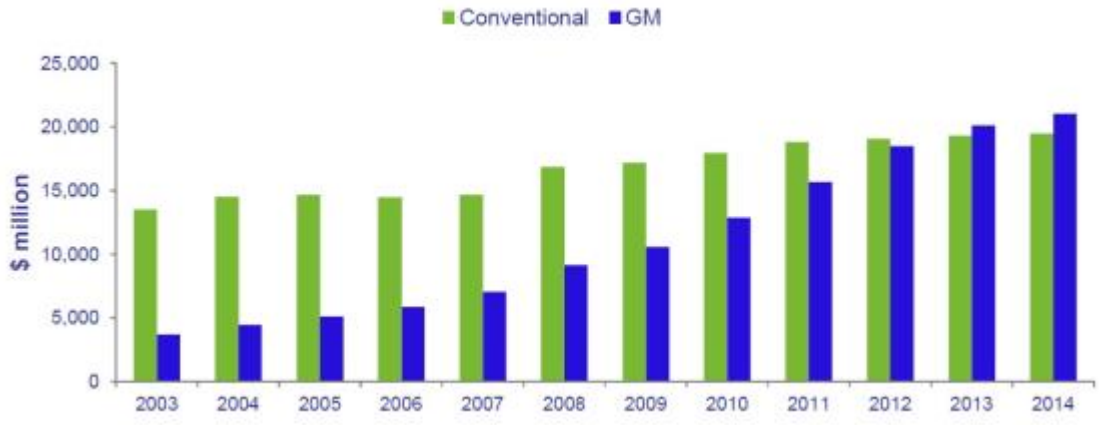
(137) A CPVR does not prevent other breeders from using the protected variety for breeding purposes. Under the so-called "Breeder's exemption", breeders are allowed to use protected varieties in order to develop and commercialise new varieties, without infringing existing CPVRs.

2.2. Worldwide move to GM over the past 20 years

2.2.1. Introduction

(138) The Parties maintain that innovation in plant breeding is necessary to meet the challenges of global population growth and climate change.[61] GM is one facet of that innovation. During the last decade, the worldwide cultivation of GM plants has steadily and significantly increased.

Figure 2 – World conventional and GM seed market size per year



Source: Phillips McDougall, Seed Industry Overview 2015, page 37.

(139) The European Union has established a legal framework to ensure that the development of GMs takes place under safe conditions.[62] Amongst others, it aims to

[61] Likewise European Commission Joint Research Centre ("EC JRC") (2011), New Plant Breeding Techniques, pages 5 and 19.

[62] Directive 2001/18/EC on the deliberate release into the environment of genetically modified organisms and repealing Council Directive 90/220/EEC, OJ L 106, 17.4.2001, p. 1; Directive (EU) 2015/412 of the European Parliament and of the Council of 11 March 2015 amending Directive 2001/18/EC as regards the possibility for the Member States to restrict or prohibit the cultivation of genetically modified organisms (GMOs) in their territory, OJ L 68, 13.3.2015, p. 1; Directive 2009/41/EC of the European Parliament and of the Council of 6 May 2009 on the contained use of genetically modified micro-organisms, OJ L125, 21.5.2009, p. 79; Regulation (EC) No 1829/2003 of the European Parliament and

protect human health, animal health and the environment by introducing a safety assessment of the highest possible standards at Union level before any GM is placed on the market.

(140) Today, one GM trait is allowed for cultivation in a few Member States and several others are undergoing authorisation (see recital (130)).

(141) The legal classification of NBTs is at a crossroads. While the Union institutions have not yet adopted a formal position on the qualification of NBTs as GM or non-GM and the Court of Justice of the European Union ("CJEU") has a pending case that touches on that question,[63] assessments differ in the Member States. For example, the United Kingdom Advisory Board on Releases to the Environment ("ACRE") deems that only cisgenesis and intragenesis (they belong to the ETGMs) are GM techniques. The Dutch Commission on Genetic Modification ("COGEM") has argued that cisgenic plants should be exempt from GM legislation. Germany's Central Committee on Biological Safety ("ZKBS") has classified ZFN and ODM techniques as non-GM.[64]

2.2.2. Biotech and breeding evolution

2.2.2.1. General biotech and breeding evolution

(142) Compared to CBTs and ETGMs, NBTs are ground-breaking in several ways. They make it possible to concisely modify individual genes or even just their activity where CBTs and ETGMs relied on the re-combination of whole DNA-strands. Hence NBTs save time, reduce unpredictability and randomness and they help to provide a better understanding of traits.[65]

(143) The regulatory debate on NBTs is currently not settled. Stakeholders considering NBTs as non-GM techniques argue first that NBT-modified plants do not incorporate foreign DNA. That appears to be only true though for NBTs that do not necessarily require inserting exogenous DNA.[66,67] Second, they argue that modified plants can de facto not be distinguished from natural plants.[68] Third, they refer to higher regulatory costs for GM plants and lower public acceptance. In contrast, stakeholders considering NBTs as non-admissible GM argue that any biotechnological change has unpredictable consequences on flora, fauna and the environment.[69]

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of the Council of 22 September 2003 on genetically modified food and feed, OJ L 268, 18.10.2003, p. 1; Regulation (EC) No 1946/2003 of the European Parliament and of the Council of 15 July 2003 on transboundary movements of genetically modified organisms, OJ L 268, 18.10.2003, p. 1.

63 Request for a preliminary ruling from the Conseil d'Etat (France) of 16 December 2018, Confédération paysanne e.a., C-528/16, OJ C 14, 16.1.2017, p. 23.

64 BI 03426, ID3747, slide 8.

65 BI 03432, ID3753, slides 16 and 19.

66 SAM (2017), New techniques in Agricultural Biotechnology, page 17.

67 NBT's can be used both for inserting foreign as well as non-foreign DNA.

68 SAM (2017), New techniques in Agricultural Biotechnology, page 19.

69 French MEP José Bové in EURACTIV's Article from 22 October 2015, link: http://www.euractiv.com/section/science-policymaking/news/new-plant-breeding-techniques-innovation-breakthrough-or-gmos-in-disguise/.

(144) As regards breeding, Figure 3 shows the key steps in breeding evolution to date, while a non-exhaustive list of the main breeding techniques in use or under development is set out in Table 1:

Figure 3 – [Extract from internal document]

[…]

Source: BI 03432, [internal document], ID3753, slide 4.

Table 1 – Main techniques used in modern breeding

Method	Description	Main outcome/impact
Marker Assisted Backcrossing	Use of molecular genetic markers to select, at certain generations, progeny with a higher proportion of recurrent parent alleles with the objective of reducing the generations required to achieve a target level of recurrent parent genetic background.	Reduced time-to-market and related breeding costs.
Marker Assisted Selection	Enhanced selection of desirable progeny by utilising molecular genetic markers linked to desired, simply inherited traits (Quantitative Trait Loci, QTL) as a proxy for phenotypic selection.	Reduced time-to-market and related breeding costs
Genomic Selection (big data based)	Use of mathematical algorithms applied to large sets of molecular marker data to select individuals that are predicted to have superior phenotypes.	Reduced time-to-market and related breeding costs, due to the reduced number of crossings required for developing a variety. Ideally, it would be possible to design a variety before breeding starts
Double Haploid	Methodology utilised to reach full inbreeding of a heterozygote individual in one generation of self pollinization.	Reduced time-to-market and related breeding costs, due to the reduced number of crossings required for developing a variety.
Seed chipping	Monsanto proprietary method for extracting genetic information from seeds (DNA mapping)	Reduced time-to-market and costs, while improving quality of the obtained varieties, due to better of genetic pool selection.

Source: European Commission, based on Parties' internal documents.

2.2.2.2. Transformation of cereal breeding and introduction of biotech for cereals

(145) The wheat industry is the last largely untapped broad acre crop market and is seen as one of the few remaining technology frontiers for many industry players. Productivity growth is plateauing based on current technologies. Moreover, the market is highly fragmented. The current technology is based on open-pollinated varieties.

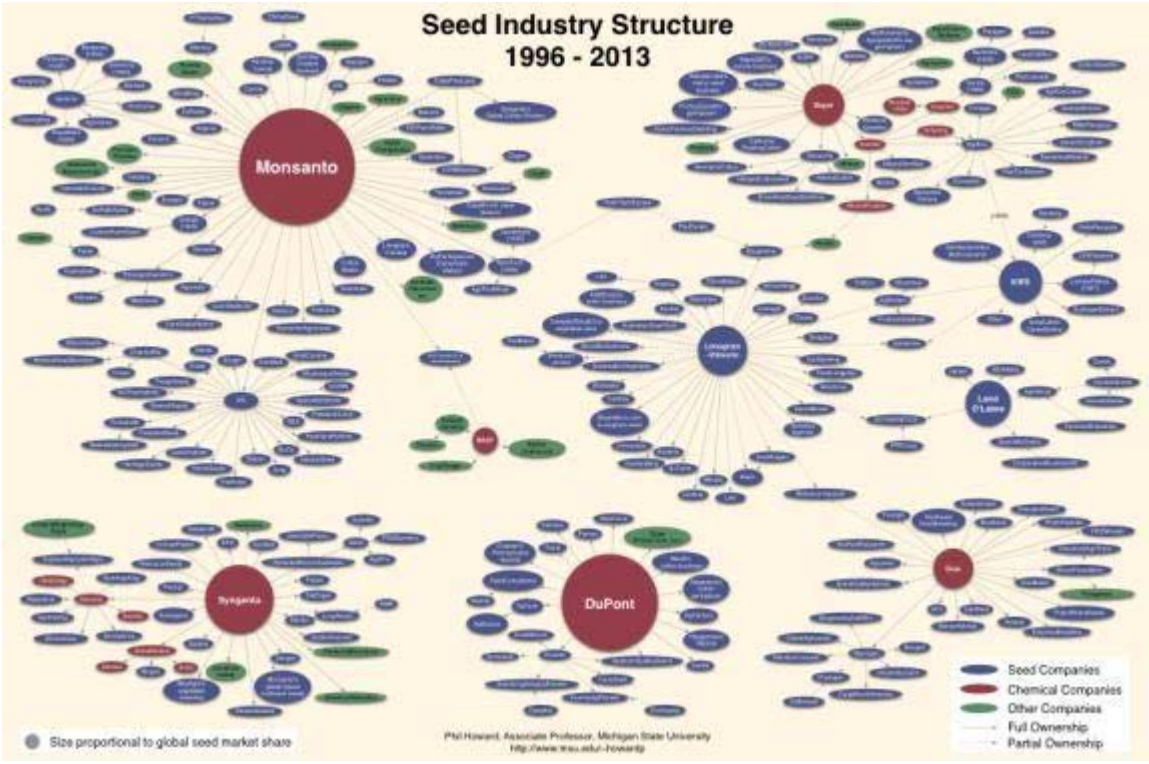
(146) Many market players expect enormous growth potential from the wheat market on the basis of a technology shift that will transform the industry. There are two main drivers for this shift. First, a number of players, […], are working on the development of hybrid wheat seeds. Second, significant advances in biotechnology

are expected to be launched within the next years including non-GM herbicide tolerant traits and non-GM yield and stress traits. These developments are complemented by new business solutions for wheat based on providing integrated product offers (see also Section VI.4.1).

2.3. The seeds and traits industry is increasingly concentrating

(147) Following the concentrations Dow/DuPont[70] and ChemChina/Syngenta,[71] the Transaction is the last of three recent concentrations in the industry to be notified to the Commission. Two previous waves of consolidation have significantly consolidated the industry: one in the mid-1980s through late 1990s, another one from the late 1990s to late 2000s (for instance the creation of Syngenta through the merger of AstraZeneca and Novartis' seeds businesses, Bayer's acquisition of Aventis Crop Science, BASF's acquisition of American Cyanamid, Monsanto's acquisition of DeKalb and DuPont's acquisition of Pioneer). The transformation of the seed industry structure between 1996 and 2013 is presented in Figure 4 below.

Figure 4 – Concentration in the seed industry



Source: Phil Howard, Associate Professor, Michigan State University, available at https://msu.edu/~howardp/infographics.html.

(148) This concentration process has been driven to a significant extent by the same players coming initially from the chemical industry, that is to say by Monsanto, DowDuPont, Syngenta and Bayer. While Monsanto, DowDuPont, Syngenta and Bayer are active in both seeds and traits and crop protection, there are also two important global pure-seeds players, KWS and Limagrain/Vilmorin which have also actively participated in the concentration process. Overall there are thus pre-Transaction six important global seeds and traits players. BASF is mainly active in

[70] Commission Decision in Case M.7932 – Dow/DuPont (2017).
[71] Commission Decision in Case M.7962 – ChemChina/Syngenta (2017).

crop protection. Its activities in the seeds and traits industry are essentially limited to trait discovery and licensing.

(149) Like in crop protection, concentration at individual seed market level and innovation space level is often higher than at seed industry level. This is due to the fact that not every player is active in each individual seed market.

2.4. The Parties activities in seeds

(150) Monsanto [product specific turnover]. Monsanto produces seeds for crops including corn, cotton, oilseeds and fruits and vegetables. […]. Monsanto produces germplasm for broad acre crop seeds and vegetable seeds and manufactures and sells various seeds under brands like DEKALB in corn, Asgrow in soy, Deltapine in cotton, Seminis and De Ruiter in vegetables.

(151) In comparison, Bayer's crop science business [product specific turnover]. In seeds and traits Bayer's core markets are [crops]. Bayer's branded seed products generating most revenues are […].

(152) At an industry level, Monsanto is the largest seed company by sales and Bayer the 6th largest. Details by crop are presented in Table 2.

Table 2 – Seed company sales by crop 2015 (in million USD)

Company	Maize	Soybean	Cotton	Vegetables	Flowers	Others	Total
Monsanto	5770	2318	488	799	0	646	10021
DuPont Pioneer	4517	1480	0	0	0	790	6787
Syngenta	1173	391	0	616	0	658	2838
Vilmorin	350	0	0	735	0	433	1518
Dow	769	243	87	0	0	354	1453
Bayer	0	121	250	444	0	602	1417
KWS	552	0	0	31	0	596	1179
AgReliant Genetics	510	114	0	0	0	6	630
DLF	0	0	0	0	0	617	617
Takii	0	0	0	279	150	0	429
Sakata	0	0	0	243	156	0	399

Source: Phillips McDougall Seed Service Report 2017, page 14, in Parties' response to the Commission's request for information RFI 30 [Annex 30.4].

(153) The sales of Monsanto and Bayer in the seeds and traits segment for the period 2009-2016 are shown in Figure 5.

Figure 5 – Seed and trait sales by Bayer and Monsanto 2009-2016 in million EUR

[…]

Source: Parties' response to the Commission's request for information RFI 26 Q1 (Annex 1); conversion of Monsanto figures from dollars to euros based on euro dollar average rates for years 2009 to 2016 as reported by the European Central Bank.

(154) The largest contributor to Monsanto's sales in seeds and traits in 2015 was corn, followed by soy. In the case of Bayer the largest revenue generating crop category was vegetables and OSR, as shown in Figure 6.

Figure 6 – Seeds and trait income by crop for Bayer and Monsanto in 2015

Source: Phillips McDougall Seed Service Report 2017, page 27 and page 143, in Parties' response to the Commission's request for information RFI 30 [Annex 30.4].

(155) The European seed business of Monsanto accounted for [5-10]% of the company's seed and trait business in 2015. […].[72]

(156) In 2015 Europe represented [10-20]% of the total sales of Bayer's seeds and trait business. The majority of these sales arise from the activities in the European [crop] market. In 2010 Bayer increased its European wheat activities through the acquisition of the wheat breeding programs of two Ukrainian breeding companies. This followed Bayer's establishment of wheat breeding programs at the Mironivka Institute. Bayer's commitment to wheat was further enhanced in 2011 through the establishment of a new wheat breeding centre in Gatersleben, Germany. In addition to the development [pipeline information], the site is to coordinate Bayer's [pipeline information] operations in Europe.[73]

2.5. Extensive links in the industry

(157) The players of the seeds and traits industry appear to be intertwined in a number ways, namely through R&D co-operations (see also Section VI.4.3, Sections X and XI), cross-licensing (see also Section VI.4.3, Sections X and XI), and dispute settlements.

(158) Dispute settlements appear to be important for the interaction between these players. According to the information provided by the Parties, they settled several patent disputes all over the world between 2001 and 2017 [parties].[74] [Details of disputes].

2.6. Barriers to entry are high

(159) Barriers to entry into the seeds and traits industry are significant as discussed in more detail, in particular in Section X.1.6.4 for traits. The main elements of these barriers to entry appear to be (i) the fixed costs associated with running and maintaining a global breeding programme with field testing capacities around the globe, (ii) the

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72 Phillips McDougall Seed Service Report 2017, page 154, in Parties' response to the Commission's request for information RFI 30, [Annex 30.4].

73 Phillips McDougall Seed Service Report 2017, page 36, in Parties' response to the Commission's request for information RFI 30, [Annex 30.4].

74 [Internal document], ID1496.

substantial upfront R&D costs necessary for breeding and trait development which are incurred over many years before the first sales and even later profits are realized, (iii) the importance of patents and patenting strategies and how they favour mainly large global players, and (iv) the strict regulatory barriers for seeds and even more so for traits. […].

3. FEATURES OF COMPETITION IN THE CROP PROTECTION INDUSTRY

3.1. Key concepts

(160) Crop protection products, also known as pesticides, are used in agriculture in order to protect a crop from other biological organisms (pests) that can negatively affect the crop development either by attacking it or by competing with it for resources. Depending on the type of organism they target, crop protection products are mainly categorised into herbicides, insecticides and fungicides. In addition, there are also other crop protection products that increase crop yield and help crops tolerate stress conditions, such as fertilisers and growth regulators.

(161) A formulated crop protection product as sold to distributors and farmers is composed of one or more active ingredients ("AIs") mixed with inactive ingredients such as solvents, fillers and adjuvants. The inactive ingredients aim at making the AIs more stable or effective, or safer or easier to apply.

(162) There are various types of final formulations, such as granules, emulsifiable concentrates, and so on. Crop protection AIs can also be applied in specific formulations directly on seeds prior to planting as seed treatments. Although seed treatments products are typically sold as coatings on seeds to growers, they are crop protection products and not elements of seeds and traits since they do not affect genetics but rather contain AIs.

(163) Crop protection products are classified into conventional chemical products and biological products. Chemical products are based on the synthesis of new molecules, whereas biological crop protection is a method of controlling pests by using other organisms or substances available in nature. Biological crop protection products include either microbials (bacteria, viri, fungi or protozoans) or a natural product from other sources such as plant extracts or yeast fermentation products.

(164) Crop protection products have properties that can endanger human or animal health or the environment since their active ingredients are in many cases aimed at harming animals, vegetation or fungi. In the EEA, the approval of AIs and authorisation of formulated crop protection products are governed by Regulation (EC) No 1107/2009 of the European Parliament and of the Council.[75,76] The same procedure applies to chemical and biological crop protection products alike.

(165) The lifecycle of a new AI starts with its discovery and development by an R&D company, which requires significant time and financial resources. The average overall costs for the discovery and development of a new agrochemical product brought to the market by an R&D company is estimated at USD 286 million. Industry sources and market participants highlight that both the cost and lead times

[75] Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC, OJ L 309, 24.11.2009, p. 1 ("Regulation 1107").

[76] Regarding the regulatory discussion on glyphosate, please see Section XI.1.2.7.

have been increasing over the years, allegedly due to a more challenging regulatory environment. […].[77]

(166) A number of players are active in the sale of crop protection products, operating on different scales and with different business models. Four companies are large R&D-integrated crop protection players globally, characterised by their scale and their in-house activities at all stages of the value chain (namely discovery, development, mixture/formulation and commercialisation) through large R&D budgets and operations for crop protection. These are ChemChina-Syngenta, Bayer, BASF and DowDuPont. FMC after acquisition of the divestment business following the conditional approval of the Dow/DuPont merger is in the process of becoming the fifth global integrated player. Sales by these R&D-integrated players account for around [70-80]% of the total EEA crop protection market and [70-80]% of the global crop protection market, and these companies are seen as the top players in crop protection.

(167) Monsanto is a large and leading crop protection and seed player globally, [business model].

(168) A number of other small or mid-sized companies, mostly from Japan, have R&D operations, including the discovery of new AIs, but do not compete on the same scale as global R&D-integrated players through global development, registration and distribution capabilities.

(169) In consequence, only a handful of companies are active in R&D in a given segment at the global level and have the ability to develop and market new molecules and products across geographies that can have a significant commercial impact.

(170) On the other hand, there are a number of companies that are generic players which focus on crop protection products that are no longer subject to patent protection. Generic players may have sizeable revenues, the largest being Adama (now part of ChemChina-Syngenta). None of these, however, has substantially moved to or remained active in the discovery of AIs. Their activities are largely dependent on access to AIs originally developed by R&D players. As regards downstream sales of crop protection products, the generics' share has been stable overall in recent years.

3.2. Increasing concentration in the crop protection industry

(171) Like the seeds industry, the crop protection industry has experienced several waves of consolidation during the last 30 years.[78] Following the Dow/DuPont merger, the ChemChina/Syngenta merger as well as the follow-on divestments, the first tier in the industry now consists of the five global R&D-integrated crop protection players ChemChina-Syngenta, Bayer, DowDuPont, BASF and FMC. Monsanto is by turnover also a large crop protection player. [Information on source turnover].

3.3. Decreasing availability of solutions in the crop protection industry

(172) In recent years, a number of older AIs have disappeared from the EEA due to stricter regulatory requirements, which also contributed to a significant rise in R&D costs for crop protection. However, while regulatory costs have increased, expenditure on

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77 Phillips McDougall, "The cost of new agrochemical product discovery, Development and Registration in 1995, 2000, 2005-2008, 2010-2014. R&D expenditure in 2014 and expectations for 2019," a consultancy study for CropLife International, CropLife America and the European Crop Protection Association, March 2016.

78 Commission Decision in Case M.7932 – Dow/DuPont (2017), recitals 237 to 240.

R&D as a percentage of revenues has decreased over the last twenty years. Moreover, innovation output has decreased in the crop protection industry.

(173) There has also been in recent years a shift in geographic focus in recent years, with less emphasis on Europe and more on the rest of the world, notably emerging markets.

(174) Meanwhile, limited solutions are available for so-called "orphan" crops or minor uses because companies focus on major global crops such as corn, wheat and rice.

3.4. Extensive links across crop protection industry players

(175) The crop protection industry is characterised by R&D co-operation between competitors in many different forms. For instance, companies may cooperate to discover and develop new AIs. More frequently, however, crop protection players cooperate to develop and market products in different markets across the globe, leveraging their respective routes to market.

(176) R&D agrochemical companies also sell their technology on the upstream market through the licensing of AIs (which may include IP rights, data, registration, etc.) to competing crop protection players. This can also take the form of a supply of AIs which encompasses a transfer of technology. The receiving party may then use those AIs as an input to produce their own formulated products benefiting from the licensor or supplier's proprietary technology (for example IP rights, data, etc.). These sales are to be distinguished from the bulk supply of off-patent (generic) AIs when it does not involve any transfer of technology (that is to say no IP, data package, etc.).

(177) Finally, the agrochemical industry is characterised by a significant level of common shareholding, both in terms of the number of shareholders common to several competitors and in the level of shares these common shareholders possess across the industry. This is further discussed in Section VI.4.4.

3.5. Barriers to entry in the crop protection industry

(178) Similar to the seeds and traits industry, barriers to entry appear to be substantial for the crop protection industry (see Section XI.1.4.6). The main barriers appear to include: (i) upfront R&D costs that need to be incurred many years before the right active ingredient is found that will eventually be developed into a pesticide product and commercialised; (ii) global field testing capabilities and sites; (iii) global regulatory know-how and capabilities; (iv) global distribution know-how and capabilities; (v) intellectual property rights and patents; (vi) economies of scale and scope. These barriers were discussed in the recent decision in the Dow/DuPont case and are likely still valid for the Transaction.

4. TRENDS RELEVANT FOR BOTH THE SEEDS & TRAITS AND CROP PROTECTION INDUSTRIES

4.1. Industry shift towards more integrated solutions

4.1.1. Introduction

(179) The global integrated market players that are active across crop protection, seeds, traits and digital agriculture – Bayer, Monsanto, DowDuPont, ChemChina-Syngenta and, to a lesser extent, BASF, which is mainly a crop protection player with only some activity in trait discovery and licensing, increasingly develop and push for integrated product solutions, as illustrated in Figure 7.

Figure 7 – [Extract from internal document]

[…]

Source: MI 000245048.00001, [internal document], ID6152-38956, slide 30.

(180) […].

Figure 8 – [Extract from internal document: transaction rationale]

[…]

Source: MI 000245048.00001, [internal document], ID6152-38956, slide 3.

(181) […].

4.1.2. Weed management systems

(182) Weed management systems consist in the combination of a (non-selective) herbicide and crops tolerant to this herbicide by way of a herbicide-tolerance trait. That trait is created either through genetic modification ("GM Systems") or, more rarely, through natively tolerant crops ("Non-GM Systems", together "HT Systems" or "Integrated Weed Management Systems").

(183) By using these systems growers are able to use (non-selective) herbicides on crops which would normally be killed or at least severely injured by that herbicide. Weed management systems are an important tool in modern agriculture as they allow growers to use NSH products, which normally are effective on a broad range of weeds, to address their weed control needs.

(184) Weed management systems – primarily based on GM Systems – have spread across the globe since Monsanto's launch of Roundup Ready crops in the 1990s, with the notable exception of the EEA, where HT traits have largely been continuously refused approval for cultivation. Non-GM Systems have also developed – including in the EEA – but remain limited to only a few crop/weed needs, with limited overall commercial success. BASF's Clearfield tolerance to the imazamox AI is the most prominent example of such a Non-GM System.

(185) The main players active in weed management systems are Monsanto, based on its Roundup Ready system, DowDuPont, based on its Enlist system, Bayer, based on its Liberty Link system, Syngenta, based on its MGI System currently in development. BASF based on its non-GM Clearfield system is a more marginal player with little revenues and market impact in HT Systems.

(186) Weed management systems are further assessed in Section XI.1.5.

4.1.3. Cross selling and bundling at the distributor level

(187) Integrated players active in both seeds (and traits) and crop protection such as Bayer or Monsanto typically have to sell their seeds and crop protection products indirectly via national distributors to growers. As part of their commercial strategies they may try to cross-sell or bundle their products for example by offering to distributors rebates on combined purchases of seeds and crop protection products.

(188) The cross selling and bundling of seeds and crop protection products at the distributor level is further assessed in Section XIII.

4.1.4. Offering integrated solutions and bundling directly at the grower level possibly assisted by digital agriculture

(189) Integrated players active in both seeds (and traits) and crop protection such as Bayer or Monsanto can also try to directly offer integrated solutions to growers. […].

(190) The advent of digital agriculture may enhance the possibilities for integrated players to engage in such bundling strategies at the grower level.

(191) Bundling at the grower level possibly further enabled by digital agriculture solutions is further assessed in Section XIII.

4.2. Increase of concentration across seeds, traits and crop protection industry

(192) As discussed in Sections VI.2.3 and VI.3.2, the seeds and agrochemical industries have become increasingly concentrated in the course of the last twenty to thirty years. Looking at the market participants that are active across seeds and traits and crop protection there are currently only a handful of players that are active on a global scale.

(193) One way to look at it would be to say that the Transaction would decrease the number of players active in both seeds and crop protection from four to three (Bayer/Monsanto, Dow/DuPont, ChemChina/Syngenta) or five to four depending on whether BASF is counted as an integrated player.

(194) It could however also be argued that the latest wave of consolidation actually created more truly integrated players than there were before. Before the recent round of consolidation Monsanto in particular but also DuPont were much more focussed in the area of seeds and traits than in the area of crop protection. By contrast BASF in particular, but also Syngenta and Bayer were much more focused in the area of crop protection. Summarizing, both the Dow/DuPont merger and the Transaction can be seen as attempts to create balanced integrated players in a form that did not really exist before those mergers.

4.3. Extensive links between industry players

4.3.1. R&D cooperation agreements and cross-licences

(195) The agrochemical industry is characterised by extensive links between industry players. In particular, industry players have concluded many R&D cooperation agreements such as the ones between Monsanto and Sumitomo as discussed in Section XI.1.3.3.1 (crop protection). Moreover, reliance on numerous cross-licensing agreements create interdependencies between industry players. This is further discussed in Section X for traits and Section XI for crop protection.

(196) Figure 9 provides a synthetic representation of published licencing agreements, as reported in Bayer's internal documents "Stakeholder profile". It shows that there are numerous licensing agreements between the main industry players active in seeds,

traits and crop protection and that all players are connected through several such agreements.

Figure 9 – [Extract from internal document: information on licensing arrangement]

[…]

Source: BI 01653 to BI 01668, [internal document], ID451-272 to 451-287.
Notes: […].

(197) In respect of Figure 9, the Parties indicated that they do not dispute that there are licensing and cooperation agreements between competitors in the agrochemical industry. However according to the Parties the Commission has drawn an extremely misleading picture when qualifying the links in the industry as extensive. According to the Parties the Commission has come to this significant conclusion without presenting any meaningful evidence[79].

(198) The Parties indicated that Figure 9 conveys the assumption that the presence of cross-licensing agreements would lead to a reduction in competition[80]. In fact, in Section VI.4.4.1 of the Statement of Objections consisting of the paragraphs 176 and 177, including Figure 14 of the Statement of Objections, the Commission did not refer to competition in the sector. In Figure 9, the Commission has graphically represented information on agreements qualified as licensing agreements, based on Bayer's internal presentations on the main competitors.[81] In doing so, the Commission factually describes existing links in the industry based on Bayer's internal assessment of competitors' situations and profiles. This does not imply that these agreements are anti-competitive.

(199) The Parties submit that Figure 9 conveys (i) the false assumption that the number of published licensing agreements can, on its own, tell a meaningful story about the industry of the particular party[82] and (ii) the false assumption that the importance of a relationship is based on the absolute number of agreements rather than the substance of the agreement[83]. This statement of the Parties seems at odds with the choice of Bayer itself to report the number of agreements (including commercial and other agreements) between the competitors and the "Big Six" (this group being reduced from six to five through the Dow/DuPont merger) in their own internal analysis of industry players.[84]

(200) The Parties further note that Figure 9 conveys the false assumption that whether the party is a net in-in licensor in or a net-out licensor tells a meaningful story about that party[85]. The Commission considers that this alleged implicit assumption in fact is simply a reflection of Bayer's internal documents[86] in which Bayer also specified whether licencing relationships between and with competitors are (i) cross licensing, (ii) out-licensing or (iii) in-licensing. To the extent that Bayer considered this

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79 Parties' response to the Statement of Objections, ID9941, paragraph 11.
80 Parties' response to the Statement of Objections, ID9941, paragraph 12.
81 BI 01653 to BI 01668, [internal document], ID451-272 to 451-287.
82 Parties' response to the Statement of Objections, ID9941, paragraph 12.
83 Parties' response to the Statement of Objections, ID9941, paragraph 12.
84 See BI 01655 [internal document], ID451-274, slide 24 ([…]); BI 01657 [internal document], ID451-276, slide 24 ([…]); BI 01658 [internal document], ID451-277, slide 24 ([…]); BI 01661 – [internal document], ID451-280, slide 24 ([…]); BI 01666 [internal document], ID451-285, slide 24 ([…]).
85 Parties' response to the Statement of Objections, ID9941, paragraph 12.
86 Statement of Objections, paragraph 177, Figure 14.

information as relevant, the diagram based on the internal presentations of Bayer simply reflects this information to the same extent.

(201) Finally, the Parties further stated that Figure 9 is misleading as it does not represent agreements between the five players and other parties in the same industry[87]. In this respect, it was Bayer's choice to report, for its internal purposes, relationships between competitors and companies referred to by Bayer as the "Big Six"[88], which included, at the time the documents were made, Bayer, BASF, Dow, DuPont, Syngenta and Monsanto (Dow and DuPont have since merged). Put differently, the focus of Figure 9 on the same players merely reflects the focus of Bayer on the cooperation relationships between the same players. The Commission acknowledges that Bayer has also made "stakeholder profiles" of other companies, such as Limagrain/Vilmorin and KWS, and these also include information on the collaboration agreements which these companies have entered into.[89] The Commission also does not dispute that there are agreements between the six players (now five after Dow and DuPont have merged) and other parties in the industry. However, when discussing the collaborations of Bayer, BASF, Dow, DuPont, Syngenta and Monsanto, the slides that discuss the collaborations of those companies focus on the collaborations with other "Big Six" players.[90]

(202) As indicated above in recitals (195) and (196), the Commission observes on the basis of the illustrative diagram in Figure 9 that there are numerous licensing agreements between the main industry players and that all players are connected through several such agreements. This conclusion is a factual observation based on the internal presentations of Bayer and is illustrated by the diagram in Figure 9.

4.3.2. Monsanto's internal prospective analysis of the connections between boards of industry players

(203) In the course of its investigation, the Commission has come across a document produced by Monsanto in 2015,[91] [internal analysis].[92,93]

(204) In the Parties' response to the Statement of Objections, section II.3, the Parties argue that [quote from confidential submission][94] and that [quote from confidential submission][95]. In particular, [quote from confidential submission][96] and, in any event, the board members were not nominated and [quote from confidential submission].[97]

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87 Parties' response to the Statement of Objections, ID9941, paragraph 12.

88 See BI 01655 BASF Profile, ID451-274, slide 24.

89 See, e.g., BI 01668 Vilmorin profile, ID451-287, and BI 01660 KWS Profile, ID451-279.

90 See BI 01655 [internal document], ID451-274, slide 24 ([…]); BI 01657 [internal document], ID451-276, slide 24 ([…]); BI 01658 [internal document], ID451-277, slide 24 ([…]); BI 01661 [internal document], ID451-280, slide 24 ([…]); BI 01666 [internal document], ID451-285, slide 24 ([…]).

91 Parties' response to the Commission's request for information to RFI 38, question 34.

92 […].

93 MI 07538 [internal document], ID4999-18.

94 Parties' response to the Statement of Objections, ID9941, paragraph 20.

95 Parties' response to the Statement of Objections, ID9941, paragraph 22.

96 Parties' response to the Statement of Objections, ID9941, paragraph 23.

97 Parties' response to the Statement of Objections, ID9941, paragraph 22. The Parties also argue that [quote from confidential submission] (paragraph 28), referring to, *in fine*, the "small world experiment" (see https://en.wikipedia.org/wiki/Small-world_experiment). The Commission notes that all links don't have the same consequences and, in particular, that links between board members do have economic

(205) The Commission acknowledges that the links highlighted by Monsanto's analysis did not materialize, as the Board nominees were not elected, and that the document does not show that there are actual extensive links between board members in the industry. Nevertheless, the Commission points out that it was Monsanto that initiated the analysis, not the Commission, and it was Monsanto that found second-degree connections.

(206) More importantly, while Monsanto claims that this analysis was prepared […].[98]

(207) Overall, the Commission notes that (i) [internal analysis]; (ii) [internal analysis];[99]and (iii) [internal analysis].

Figure 10 – Monsanto's internal analysis of the connections between board's members and nominees of industry players

[…]

Source: MI 07539, [internal document], ID4999-19, slide 2.

4.4. The seed and traits and crop protection industry, with the exception of Syngenta, is characterised by significant common shareholding

(208) The Commission used the service provider S&P Global Market Intelligence (Capital IQ) to collect information on shareholders of the main companies active in the seed & traits and crop protection industry. In particular, the Commission collected data related to BASF, Bayer, DowDuPont (which results from the merger between Dow and DuPont in 2017) and Monsanto, based on their shareholding status as of 30 September 2017. As Syngenta was acquired by ChemChina in 2017 and is now independent from other shareholders common to BASF, Bayer, DowDuPont and Monsanto,[100] it is not part of the analysis of common shareholdings in the seed and traits and crop protection industry.

(209) S&P Global Market Intelligence (Capital IQ) data cover 503 shareholders for BASF representing 36% of its equity share (see Table 3, first row, and Table 5, diagonal), 602 for Bayer (43%), 1,180 for DowDuPont (69%) and 1,058 for Monsanto (78%).

consequences (see, e.g., Bizjak, Lemmon and Whitby "Option Backdating and Board Interlocks", Review of Financial Studies, 2009, 22, 4821-4847).

98 Parties' response to the Commission's request for information RFI 38, question 34, paragraph 198.

99 MI 07538 [internal document], ID4999-18.

100 On 30 September 2017, less than 2% of the equity shares of Syngenta were still indicated by S&P Global Market Intelligence (Capital IQ) belonging to another shareholder than ChemChina.

4.4.1. *The shareholding structures and the extent of common shareholdings between BASF, Bayer, DowDuPont and Monsanto*

(210) Table 3 reports several statistics on the number of shareholders of BASF, Bayer, DuPont and Monsanto. The first part of the table shows how many shareholders hold different levels of equity ranging from 0.001% to 5%. The second part of the table shows the minimum number of shareholders necessary to reach a given percentage of total shareholdings (ranging from 20% to 50%). Overall, the table illustrates that very few shareholders are necessary to control 20% of each firm's equity: 9 for BASF and Bayer, 3 for DowDuPont and 4 for Monsanto. DowDuPont and Monsanto have more concentrated shareholdings, as only 8 shareholders are necessary to reach 30% equity shares, and 32 to 47 to reach 50%.

Table 3 – Number of reported equity holders with shares in any of BASF, Bayer, DowDuPont and Monsanto, as of 30 September 2017

	BASF	Bayer	DowDuPont	Monsanto
With positive holdings	503	602	1,180	1,058
With less than 0.001% shares	134	168	340	259
With less than 0.01% shares	335	414	815	670
With more than 0.01% shares	174	199	382	407
With more than 0.1% shares	42	52	97	117
With more than 1% shares	9	9	10	13
With more than 5% shares	1	1	3	2
Necessary to reach 20% shares	9	9	3	4
Necessary to reach 25% shares	15	15	5	6
Necessary to reach 30% shares	32	24	8	8
Necessary to reach 40% shares	NA	101	20	17
Necessary to reach 50% shares	NA	NA	47	32

Source: Commission's analysis of S&P Global Market Intelligence (Capital IQ) data.
Note: The numbers reported can be slightly affected by rounding approximations.

(211) The number of common shareholders and the importance of those common shareholdings are described in Table 4. It lists all equity holders having equity shares in any of the Parties or their main competitors, with a cumulative position in all these firms in excess of EUR 1 000 million. The ranking of each shareholder for each company is indicated between brackets.

(212) The 29 equity holders selected in Table 4 collectively account for a significant portion of the equity share of each of BASF, Bayer, DowDuPont and Monsanto: 26% of the equity shares of BASF, 27% of Bayer, 39% of DowDuPont and 37% of Monsanto.

(213) BlackRock is the shareholder with the highest overall investment in the four firms, amounting to EUR 23 484 million. BlackRock is the most important shareholder of BASF with a 6.04% equity share, as well as of Bayer with 6.89%. It is also the second most important shareholder of DowDuPont with 6.64% and of Monsanto with 6.40%.

Table 4 – Reported equity holders with shares in any of BASF, Bayer, DowDuPont and Monsanto, with a total portfolio value in all these companies of EUR 1,000 million or more, as of 30 September 2017

	BASF	Bayer	DowDuPont	Monsanto
BlackRock, Inc. (NYSE:BLK)	6.04% (1)	6.89% (1)	6.64% (2)	6.40% (2)
The Vanguard Group, Inc.	2.45% (4)	2.46% (3)	7.28% (1)	7.10% (1)
Capital Research and Management Company	0.91% (10)	2.90% (2)	6.49% (3)	2.26% (7)
State Street Global Advisors, Inc.	1.09% (9)	1.21% (7)	4.28% (4)	4.55% (3)
FMR LLC	0.33% (20)	1.11% (8)	2.40% (5)	2.76% (4)
Norges Bank Investment Management	3.00% (2)	2.01% (4)	-	0.83% (18)
Franklin Resources, Inc. (NYSE:BEN)	1.52% (5)	0.37% (26)	0.92% (12)	1.13% (13)
BNY Mellon Asset Management	0.56% (15)	0.69% (17)	1.09% (9)	0.76% (22)
T. Rowe Price Group, Inc. (NasdaqGS:TROW)	0.18% (32)	0.90% (10)	1.28% (7)	0.19% (74)
Deutsche Asset & Wealth Management	1.25% (7)	0.87% (13)	0.46% (26)	0.30% (44)
UBS Asset Management	0.68% (14)	0.89% (11)	0.63% (17)	0.80% (19)
Ministry of Finance (Norway)	3.00% (2)	-	-	-
Northern Trust Global Investments	-	-	1.23% (8)	1.71% (9)
Lyxor International Asset Management S.A.	1.40% (6)	1.22% (6)	-	0.01% (358)
Geode Capital Management, LLC	0.23% (23)	0.23% (38)	0.96% (11)	0.97% (14)
Wellington Management Group LLP	0.01% (169)	-	1.47% (6)	0.15% (88)
Teachers Insurance and Annuity Association of America - College Retirement Equities Fund	0.23% (24)	0.43% (23)	0.81% (13)	0.79% (20)
Amundi Asset Management	1.14% (8)	0.77% (15)	0.04% (181)	0.06% (167)
Deka Investment GmbH	0.83% (12)	1.01% (9)	0.02% (259)	0.07% (152)
Union Asset Management Holding AG	0.90% (11)	0.87% (12)	0.01% (383)	0.10% (123)
Massachusetts Financial Services Company	-	-	0.26% (44)	2.71% (5)
J.P. Morgan Asset Management, Inc.	-	0.00% (435)	1.03% (10)	0.11% (113)
Dodge & Cox	-	1.43% (5)	0.02% (292)	-
PRIMECAP Management Company	-	-	0.12% (88)	2.50% (6)
Barrow, Hanley, Mewhinney & Strauss, Inc.	0.00% (370)	0.01% (226)	0.81% (14)	-
Charles Schwab Investment Management, Inc.	0.15% (35)	0.12% (49)	0.49% (23)	0.36% (37)
Assenagon Asset Management S.A.	0.47% (16)	0.70% (16)	-	-
Legal & General Investment Management Limited	0.07% (61)	0.07% (79)	0.50% (22)	0.53% (29)
Columbia Management Investment Advisers, LLC	0.22% (25)	0.04% (104)	0.52% (21)	0.16% (85)
Total	26.64%	27.17%	39.73%	37.29%

Source: *Commission's analysis of S&P Global Market Intelligence (Capital IQ) data.*
Note: *Shareholders are ranked by decreasing order of their portfolio value in all companies.*
The ranking of each shareholder for each supplier is indicated between brackets.
Negative reported share values have been ignored.

(214) The most important shareholders listed in Table 4, for example BlackRock, The Vanguard Group, State Street Global Advisors and Norges Bank Investment Management, are so-called "passive" shareholders.[101] These shareholders are often large "passive" mutual funds holdings, in the sense that these shareholders tend to construct well-diversified portfolios of individual stocks, most often based on index

[101] Note that each investment company or mutual fund holds several funds, each of which could be managed in a "passive" or in an "active" way.

funds, with long investment horizons and infrequent selling, and tend not to buy and sale shares for the purpose of influencing managerial decisions.[102]

(215) Nevertheless, "passive" investors acknowledge that they exert influence on individual firms with an industry-wide perspective. For example, in a letter sent in February 2015 to board members of the Vanguard funds' largest portfolio holdings, Vanguard's chairman and chief executive F. William McNabb III stated that Vanguard, one of the largest mutual funds holdings that manages approximately USD 3.6 trillion in assets, will seek active interactions with firms they invest in: "*[i]n the past, some have mistakenly assumed that our predominantly passive management style suggests a passive attitude with respect to corporate governance. Nothing could be further from the truth.*"[103] Glenn H. Booraem, controller of the Vanguard Group's funds and a Vanguard principal, complemented that view: "*[w]e believe that engagement is where the action is. We have found through hundreds of direct discussions every year that we are frequently able to accomplish as much—or more—through dialogue as we are through voting. Importantly, through engagement, we are able to put issues on the table for discussion that aren't on the proxy ballot. We believe that our active engagement on all manner of issues demonstrates that passive investors don't need to be passive owners. [...] The bottom line is that we believe that the vast majority of boards and management teams are appropriately focused on the same long-term value objectives as we are.*"[104,105]

(216) Table 5 provides a more systematic assessment of common equity holders between each of the four firms. The Commission computed the equity share of all reported equity holders of one company collectively own in each of its competitors. For example, the second row indicates that all reported equity holders of Bayer own, collectively, 32.79% of BASF, 45.28% of DowDuPont and 39.69% of Monsanto. In row 2, column 2 of Table 5, it is reported how much shares the reported equity holders of Bayer collectively hold in Bayer, which is 43.17%. In other words, the data provided by S&P Global Market Intelligence (Capital IQ) allows to identify the owners of 43.13% of Bayer's equity share, meaning that equity holders representing 56.87% of BASF are not reported in the data.

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102 See, for example, http://www.investopedia.com/terms/p/passiveinvesting.asp and Appel, Gormley and Keim (2016), "Passive investors, not passive owners", *Journal of Financial Economics*, 121(1), page 112.

103 Letter sent by F. William McNabb III, Vanguard's Chairman and CEO, to the independent leaders of the boards of directors of the Vanguard funds' largest portfolio holdings, dated 27 February 2015, available at https://about.vanguard.com/vanguard-proxy-voting/CEO_Letter_03_02_ext.pdf (last accessed on 4 December 2017).

104 Vanguard, "Passive investors, not passive owners", dated 20 June 2013, accessible at https://www.vanguardinvestments.se/portal/site/institutional/se/en/articles/research-and-commentary/topical-insights/passive-investors-passive-owners-tlor (last accessed on 4 December 2017).

105 Commission Decision in Case M.7932 – Dow/DuPont (2017), Annex 5, Section 3.

(217) On the basis of the reported equity holders, DowDuPont and Monsanto seem to be the most "consanguine" agrochemical firms, as they share a significant number of equity holders with, overall, large positions in both firms. DowDuPont's reported equity holders own 62% of Monsanto, while they own 24%-32% of BASF and Bayer. Monsanto's reported holders represent 61% of DowDuPont, and 29%-34% of BASF and Bayer.

Table 5 – Collective shares of reported equity holders of each of BASF, Bayer, DowDuPont and Monsanto, in their competitors, as of 30 September 2017

	BASF	**Bayer**	**DowDuPont**	**Monsanto**
Reported holders of **BASF** collectively hold	*(36.83%)*	38.07%	44.44%	38.06%
Reported holders of **Bayer** collectively hold	32.79%	*(43.13%)*	45.28%	39.69%
Reported holders of **DowDuPont** collectively hold	24.08%	31.85%	*(69.35%)*	62.14%
Reported holders of **Monsanto** collectively hold	29.59%	34.52%	61.51%	*(78.99%)*

Source: *Commission's analysis of S&P Global Market Intelligence (Capital IQ) data.*

Note: *Values in the diagonal measure the total equity shares in a given firm from all its reported equity holders.*

Negative reported share values have been ignored.

(218) The data report 106 shareholders common to BASF, Bayer, DowDuPont and Monsanto (see Table 6) which collectively account for a significant equity share in each of the four firms: 23.09% for BASF, 28.04% for Bayer, 40.83% for DowDuPont and 35.25% for Monsanto. Importantly, 18 common shareholders are enough to reach, collectively, between 18% and 34% shares in all of these firms, and in particular 34.81% of DowDuPont and 29.28% of Monsanto.

(219) Moreover, Bayer and Monsanto have 236 common equity holders, with a collective share of 34% for Bayer and 39% for Monsanto. These shareholders common to the Parties also represent a significant equity share of the other firms: 29% of DowDuPont and 43% of DowDuPont. More importantly, 21 of these common shareholders of the Parties account for, collectively, between 23% and 35% equity share in all firms. The same 21 common shareholders of the Parties collectively reach an equity share of 25% in Bayer and an equity share of 30% in Monsanto. An even more limited number of shareholders, namely 18, collectively represent a significant equity share in each of BASF, Bayer, DowDuPont and Monsanto, namely between 18% and 34%.

Table 6 – Collective shares of reported equity holders with shares in any of BASF, Bayer, DowDuPont or Monsanto, as of 30 September 2017

	#	BASF	Bayer	DowDuPont	Monsanto
With a total portfolio value in all firms of EUR 1,000 million or more (**Table 4**)	29	26.64%	27.17%	39.73%	37.29%
Common to all firms	106	23.09%	28.04%	40.83%	35.25%
Common to all firms *and* with a total portfolio value in all firms of EUR 1,000 million or more (**Table 4**)	18	18.76%	21.80%	34.81%	29.28%
Common to Bayer and Monsanto	236	29.38%	34.52%	43.33%	39.69%
Common to Bayer and Monsanto *and* with a total portfolio value in all firms of EUR 1,000 million or more (**Table 4**)	21	23.17%	25.03%	35.84%	30.22%
Common to DowDuPont and Monsanto	551	23.24%	28.27%	61.51%	62.14%
Common to DowDuPont and Monsanto *and* with a total portfolio value in all firms of EUR 1,000 million or more (**Table 4**)	23	18.77%	21.80%	38.91%	36.46%
Reported in S&P Capital IQ data	3,229	36.83%	43.13%	69.35%	78.99%
Non reported in S&P Capital IQ data	-	63.17%	56.87%	30.65%	21.01%

Source: Commission's analysis of S&P Global Market Intelligence (Capital IQ) data.
Note: Negative reported share values have been ignored.

4.4.2. The level of attendance at shareholders' meeting allows for a limited group of common shareholders to collectively influence several companies

(220) The levels of shares that are reached by a limited number of common shareholders need to be seen in the perspective of voting practices in this industry. As a matter of illustration, Table 7 shows the attendance levels of the shareholders' meetings of the Parties since 2014.

(221) In a *hypothetical* scenario, the 23 common shareholders of DowDuPont and Monsanto that have a total portfolio value in all firms of EUR 1 000 million or more could decide to vote in a coordinated manner in a view to maximizing the value of their portfolio in the seeds and traits, and crop protection industry. In such circumstances, those 23 common shareholders represent 21.80% of Bayer's shares (see Table 6). Given that the voting levels at Bayer's annual meeting vary between [attendance level], they would collectively either have the necessary majority of the votes expressed or reach at least […]% of votes necessary to reach such majority. Moreover, these 23 common shareholders represent more than 36% of the shares of DowDuPont and of Monsanto.

Table 7 – Attendance and voting levels at Bayer's and Monsanto's meeting since 2014

[…]

Source: Parties' response to the request for information RFI 38, question 25.

Note: Figures are rounded to the closest unit.

(222) In their response to the Statement of Objections,[106] the Parties devote all of section II.4.1 (9 pages) to the assessment of the Annex 5 to the Decision in Case M.7932 – Dow/DuPont. Irrespective of the merits of the arguments put forward by the Parties in that section II.4.1, this Decision will only address the elements raised by the Parties which relate to the Statement of Objections in this case, namely section II.4.2 of their response, as well as, paragraphs in section II.4.1 to which cross-reference is made in section II.4.2, namely paragraphs 42 to 50, 63 and 74 to 79 of the Parties' response to the Statement of Objections.

(223) In section II.4.2.1 of their response to the Statement of Objections,[107] the Parties argue that [quote from confidential submission]. In paragraphs 42 to 50, the Parties argue that [quote from confidential submission]. In paragraphs 74-79, the Parties dispute the literature review made in the Dow / DuPont Decision but provide limited arguments for that purpose. For example, discussing Anton, Ederer, Gine and Schmalz (2018)[108] in paragraph 79, which points to the fact that common ownership would increase the likelihood that [quote from confidential submission].

(224) In section II.4.2.2 of their response to the Statement of Objections, the Parties also argue that [quote from confidential submission].[109,110]

(225) In sections II.4.2.3 and II.4.2.4 of the Parties' response to the Statement of Objections, the Parties comment on Table 3, Table 4, Table 6, and Table 7 above arguing primarily that [quote from confidential submission].[111]

(226) In relation to the points raised by the Parties in their response to the Statement of Objections, the Commission recognizes the debate related to the possible effects of the presence of common shareholders on competitors' incentives to compete in an industry and the characteristics of common shareholding that would generate such effects.

(227) Nevertheless, the Commission notes that all concentration measures, such as market shares or the HHI, used as proxy of market power, are based on the assumption that firms are fully independent one from the other. Therefore, the qualification of the level of concentration based on standard concentration measures such as the HHI is to be understood with respect to the absence of common shareholding.

(228) In the light of the ongoing debate, as already stated in the Dow/DuPont Decision,[112] the Commission considers that in the presence of common shareholding (i) concentration measures, such as market shares or the Herfindahl-Hirschman index ("HHI"), are likely to underestimate the level of concentration of the market structure and, thus, the market power of the Parties; (ii) common shareholding is a reality in the biotech and agrochemical industry, both in terms of the number of common

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106 Parties' response to the Statement of Objections, ID9941, section II.4.1.

107 Parties' response to the Statement of Objections, ID9941, section II.4.2.1.

108 Anton, Ederer, Gine and Schmalz (2018), "Common ownership, competition, and top management incentives", Ross School of Business working paper 1328, https://ssrn.com/abstract=2802332 (last accessed 11 February 2018).

109 Parties' response to the Statement of Objections, ID9941, paragraph 85.

110 The Parties then illustrate their argument by measuring the level of common shareholdings in relation to the Case M.7630 – FedEx / TNT Express, that is the level of common shareholding in December 2014 across FedEx, TNT, UPS, and Deutsche Post (through DHL).

111 Parties' response to the Statement of Objections, ID9941, paragraph 96.

112 Commission Decision in Case M.7932 – Dow/DuPont (2017), Annex 5, paragraphs 4, 60 or 79.

shareholders as well as with respect to the level of shares possessed by these common shareholders; and, thus, (iii) common shareholding in these industries are to be taken as an element of context in the appreciation of any significant impediment to effective competition that is raised in this Decision.[113]

5. CONCLUSION

(229) As discussed in the present Section, the Transaction takes place in an industry environment which is very concentrated, features high barriers to entry, extensive links between industry players and substantial common shareholdings. It is also subject to substantial changes including a trend towards integration. These trends may significantly transform the industry in the coming years. Moreover, the Transaction is geared at taking advantage of the complementarity of Bayer and Monsanto to create the leading industry player integrating seeds & traits and crop protection products via digital agriculture in light of these trends.

SECTION VII: OVERVIEW OF THE RELATIONSHIPS BETWEEN THE PARTIES AND AREAS OF INVESTIGATION

(230) According to the Parties, the areas where both Bayer and Monsanto operate are essentially limited to:

(a) vegetable seeds,

(b) seeds for oilseed rape,

(c) seeds for cotton,

(d) traits for broad acre crops, and

(e) non-selective herbicides.

(231) Additionally, the Parties have identified certain vertical relationships between their respective activities.

(232) However, and as discussed in Section VI, given the high degree of apparent concentration in the industry, the high barriers to entry, the multiple links between the main players, the importance of innovation in these industries, and important ongoing industry transforming trends such as digital agriculture and new breeding techniques, the Commission has investigated the following, in addition to areas of concurring operation by the Parties:

(a) the possible effects of the Transaction on potential competition,

(b) the possible effects of the Transaction on innovation competition,

(c) the possible effects on industry structure in particular in seeds and traits where Monsanto already today has a leading, if not dominant, position, and

(d) the possible horizontal and conglomerate effects of the Transaction due to the combination of a leading seeds and a leading crop protection player.

[113] For example, the Commission does not rely on the modified HHI computation in this Decision, as this would require a case-specific assessment that would justify applying a specific assumption on the effective control exerted by each shareholder on each firm.

(233) In Sections VIII to XIV of this Decision, the Commission will present its findings relative to:

(a) vegetable seeds,

(b) broad acre crop seeds,

(c) broad acre crop traits,

(d) crop protection,

(e) digitally-enabled agronomic prescriptions,

(f) integration of seeds and crop protection products,

(g) non-competition concerns.

SECTION VIII: VEGETABLE SEEDS

1. DESCRIPTION OF THE VEGETABLE SEED INDUSTRY

(234) Vegetable seeds are the product of either open pollination or hybrid pollination. As set out in Section VI.2.1.1, open-pollinated seeds are produced from parents of the same variety, while hybrids are produced by cross-breeding parents of different varieties. Open-pollinated seeds produce offspring roughly identical to their parents (only if they are isolated from other varieties), while hybrids produce offspring that tend to display particular desired traits more vigorously than their parents. Hybrids are also more uniform than open-pollinated varieties.

(235) Open-pollinated seeds are typically less costly to produce, as a field of a single variety can be planted in isolation from other varieties and left to pollinate, thereby producing such seeds. Hybrids result from controlled pollination that ensures the presence of specific traits (for example, yield or natural pest resistance) which open-pollinated varieties may not be able to replicate to the same degree. The most important feature of hybrid vegetable seeds is usually increased yield. Most hybrid vegetable seeds produce plants with yields 25% or more above a comparable open-pollinated variety. However, these improved traits come with an increased price due to the increased costs associated with breeding and producing the seeds.

(236) Certain open-pollinated vegetable seeds are sold in the EU, but the vast majority are hybrid seeds.

1.1. The vegetable seed industry cycle: a two-stage industry

(237) The vegetable seed industry can be described as a two-stage industry encompassing, first, the development of new vegetable varieties via breeding (development of parental lines which are crossed to create hybrids and new varieties) and second, the commercial production, processing and distribution of those vegetable seeds (also called multiplication). Breeding new vegetable varieties includes breeding parental lines and breeding hybrids.

(238) All vegetables cultivated in the EU are conventional. There are no genetically modified vegetables licenced for sale in the EU, and neither of the Parties offers genetically modified vegetable seeds in the EU.

1.1.1. Development of varieties via breeding (stage 1)

(239) Vegetable breeding programmes aim at improving both agronomic and consumer traits in vegetable varieties.

(240) All breeders have a foundation of breeding stock (or germplasm), which is essentially a "library" of foundation seed varieties, from which they breed new varieties of vegetables with different properties demanded by customers. Breeding targets and priorities are first set and then, breeders will develop new varieties on this basis. The breeding process starts with collecting and selecting germplasm from a breeder's own supply, or from external sources of germplasm. Then, several generations of inbreeding are executed to ensure that the parental line is genetically uniform. For hybrid seeds, once the parental line displays the desired traits, the line will be crossed with another parental line to create the hybrids that exhibit the desired traits, for example yield, even more vigorously.

(241) Once the hybrid (or inbred line, in the case of open-pollinated varieties) has been selected, the variety will move through various screening and trialling phases where its suitability for commercialisation is tested.

(242) Breeding a new variety takes on average seven to eight years, but can take up to twenty years for certain vegetables (such as Onions) with slower reproductive cycles or vegetables with significant technical demands. This is followed by several years of making specific crosses to combine the desired traits. The breeding process is supported by the use of genetic tools, such as Marker Assisted Breeding, which accelerates the process.

(243) A typical vegetable seed company will invest approximately between 15% and 30% of its total revenue on its breeding programme. For lower-margin or lower research-intensive crops such as Onions or Carrots, the breeding budget will typically be at the lower end of this range, while high-margin crops, such as Glasshouse Tomatoes or Sweet Peppers, will be at the higher end of the range.

1.1.2. Production, commercialisation and distribution (stage 2)

(244) The second stage of the vegetable seed industry encompasses the production, processing and distribution of seeds.

(245) The first step is the production, or multiplication, of seeds. This is a process which is typically outsourced. In selecting appropriate regions for production, the seed company will consider climate, water supply, economic stability, infrastructure, intellectual property protection, import/export regulations, phytosanitary (plant health) rules and overall risk management to ensure the production of safe, disease-free, high-quality seeds in a reliable manner.

(246) The production process starts by growing foundation volumes of seeds for the parental lines of a hybrid variety, or the inbred lines of an open-pollinated variety, in very close collaboration with the breeding teams. Foundation stocks are then used to create stock seeds which can be provided to seed production growers.

(247) The second step is the processing of seeds. Processing can be divided into five phases: warehousing, seed conditioning, seed enhancement, seed treatment and packaging.[114] Processing is typically done in-house in order to preserve the quality of seeds:

(a) Warehousing involves receiving seeds from seed production growers, sampling for quality testing, seed drying, storage and recording of all relevant seed lot information;

(b) Seed conditioning involves a first pre-cleaning of seeds (removal of any undesired plant rests, soil or weed seeds and germinated seeds) followed by a quality cleaning;

(c) Seed enhancement involves specialised treatments to enhance the standard seed quality. There are three types of treatment undertaken at this stage: (a) seed disinfection (heat, hot water, or chemical treatments to erase fungi, bacteria or viruses); (b) priming, or pre-germination to provide more uniform and faster germination once planted by the grower; and (c) pelleting (encapsulation of seeds in a layer to enhance sowability);

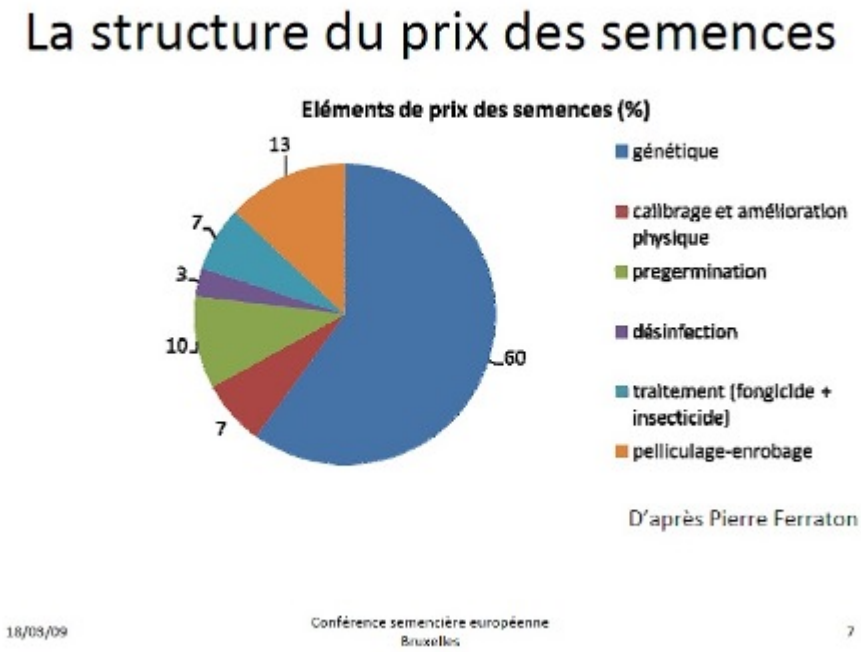
(d) Seed treatment includes the application of a film coating in which "seed dressings" (active ingredients, for example, fungicide formulation) are applied to the seed to protect it during the first weeks of germination;

(e) Packaging and labelling is the final stage of the processing phase, during which seeds are packed in pouches, bags, cans or buckets, depending on the product.

[114] The description of processing relies on Bayer's internal organisation. However, other seed companies have similar organisations.

(248) Figure 11 provides an overview of the respective costs of each step, compared to the total price of a seed.

Figure 11 – Price structure of seeds



Source: *Presentation by Mr. Bernard Le Buanec, "Importance économique. Situation présente et évolution à attendre des marchés interne et mondial des semences et plants" Conférence semencière européenne, 18 March 2009, available at* https://ec.europa.eu/food/sites/food/files/plant/docs/ppm_legis_review_economic_importance.pdf.

(249) As regards distribution, vegetable seeds are sold to a variety of customers, which can be divided into four main categories: (i) professional growers who purchase vegetable seeds to plant and raise, and eventually harvest the grown vegetable crop; (ii) plant raisers who plant vegetables and raise them to a certain size or age and then sell them to growers; (iii) food processors who purchase vegetable seeds to provide to growers to plant under contract; (iv) seeds dealers who are distributors of seeds and will purchase large quantities of seeds for re-sale to growers; and (v) other customers.

1.2. Exchange of parental lines and licensing of varieties

(250) Unlike for some broad acre crops, vegetable seed companies do not license-in vegetable germplasm or traits for their breeding programmes to any significant extent. Vegetable seed companies tend to rely on their own germplasm and intellectual property for the vast majority of their breeding programme requirements.

(251) Vegetable seed companies tend to license out traits but keep their varieties and germplasm internal as they are the company's main asset. This is particularly true for the varieties they consider part of their core business. It is the varieties that the vegetable seed company will seek to protect during production and will be less likely to share with competitors.

(252) However, vegetable seed companies do license out varieties to other vegetable seed companies in certain circumstances. This occurs most frequently when a vegetable

seed company considers that it is not able to commercialise a variety to the maximum extent. This might be because the vegetable seed company has not been successful in penetrating certain geographies, or because the vegetable seed company is not able to commit the resources to maximise its sales. This is not, however, common, and is usually only considered for crops that are not of high strategic value to the seed company.

(253) Research institutions frequently license out varieties for commercialisation because, in most cases, they have no ability to, or interest in, taking the varieties that they have bred to commercial production themselves.

1.3. Intellectual property: Plant Variety Breeder's Rights and patents

(254) Vegetable seed companies protect their intellectually property rights through CPVRs. They can also benefit from the Breeders' exemption under which breeders are allowed to use registered varieties in order to develop and commercialise new varieties, without infringing existing CPVRs.

(255) In addition to CPVRs, vegetable seed companies protect their intellectual property rights through the use of patents. These patents can either apply to traits, breeding techniques, markers, disease screening or other processes. Traits are available from a number of outside sources including commercial suppliers of traits and other vegetable seed companies with breeding programmes.

(256) There are a small number of commercial producers of vegetable traits. As far as the Parties are aware, these are all units of research universities or institutions set up to commercialise useful discoveries. These organisations are scientific research organisations and do not operate breeding programmes in any conventional sense. They tend to license their technology portfolios to any interested party on non-exclusive terms because licensing revenue forms a key source of income for further research.

(257) In November 2014, several vegetable seed companies (Agrisemen, Bayer, Bejo, Enza, Holland-Select, Limagrain/Vilmorin, Limgroup, Pop Vriend, Rijk Zwaan, Syngenta and Takii) created the license platform "International Licensing Platform – Vegetable" ("ILP Vegetable"). Other vegetable seed companies (East-West International, Semillas Fito and Sakata) have subsequently joined ILP Vegetable.

(258) The goal of ILP Vegetable is to facilitate bilateral agreements to license patents. A vegetable seed company must be a member of the ILP Vegetable before it can make use of the platform, but membership is available to all interested parties, including those which do not own any patents. The members of the ILP Vegetable agree to make their patents accessible to other members under the conditions of the ILP Vegetable.[115]

(259) ILP Vegetable ensures that any member seeking to license the intellectual property of another member will be successful. ILP Vegetable uses a form of baseball, arbitration to resolve disputes between a producer seeking to license a patented trait and the patent holder. This mechanism ensures that any desired trait can be licensed, the only point of dispute being the price.

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115 ILP Vegetable https://www.ilp-vegetable.org/about-ilp/.

(260) There are a number of vegetable seed companies that are not members of ILP Vegetable, and still license their intellectual property. Monsanto is not a member of a platform such as ILP Vegetable, [licensing strategy].

(261) In case intellectual property rights not covered by ILP Vegetable, it falls to the owner of the intellectual property rights and the vegetable seed company seeking a license to agree a license bilaterally.

2. TRENDS IN THE VEGETABLE SEED INDUSTRY

(262) Participants to the market investigation have identified several key trends in the vegetable seed industry over the past 20 years.[116]

(263) Firstly, there has been a concentration in the industry. Participants mentioned that independent and local vegetable seed companies have been acquired by larger global seed companies. Other participants nevertheless acknowledged the entry of smaller vegetable companies in the market.

(264) Secondly, there has been a professionalisation and sophistication of the vegetable seed industry. This has notably materialised through an increasing use of technology, accompanied by a rise in R&D investments.

(265) Thirdly, the number of new vegetable varieties has increased, while their commercial lifespan has shortened.

(266) Fourthly, patents have been increasingly used.[117]

3. MARKET SIZE

(267) The global market for vegetable seeds is worth around EUR […]. Figure 12 provides a breakdown of the global market for vegetable seeds by crop. [Crop] is the largest crop, followed by [crops].

Figure 12 – Breakdown of global vegetable seed market by crop (2016)

[…]

Source: [Parties' confidential submission].

(268) In the EEA, the market for vegetable seeds is worth around EUR […].[118] Figure 13 provides a breakdown of the market for vegetable seeds in the EEA by crop.

Figure 13 – Breakdown of the market for vegetable seed in the EEA by crop (2016)

[…]

Source: [Parties' confidential submission].

4. PARTIES' PRODUCTS AND CAPABILITIES

4.1. Bayer

(269) Bayer breeds and commercialises vegetable seeds globally and in the EU mostly under the "Nunhems" brand. In addition, Bayer sells vegetable seeds for gardeners,

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116 Questionnaire to Competitors – Vegetable seeds (Q9), questions 19 and 20.

117 See also, agreed non-confidential minutes of a call with a competitor, 5 May 2017, ID1467.

118 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

herbs and organic-certified seeds in the EU under the "HILD" brand. HILD also sells "white label" seeds to packagers who then sell them under their own brands. Bayer commercialises seeds for 24 different vegetable crops and generated EUR […] in sales in 2016. Bayer is the fourth largest player globally.

4.2. Monsanto

(270) Monsanto breeds and commercialises seeds for open-field and unheated-protected vegetables under the "Seminis" brand, and for heated-protected culture vegetables under the "De Ruiter" brand. Monsanto is the global industry leader. Monsanto generated EUR […] in sales of vegetable seeds in 2016. [Details of Monsanto's sale structure].

4.3. The Parties are important innovators for several types of traits in fruits&vegetables overall and for similar types of fruits &vegetables

(271) In Annex 1 to the Decision, the Commission has analysed patent data related to traits in order to measure the technological strengths of the firms involved in R&D for traits. Based on the quality of past innovations, this analysis allows to identify the innovation activities and capabilities of the Parties and their competitors.

(272) The data analysed includes traits for fruits and vegetables.

(273) The Commission has carried out a forward-citation analysis, which counts the number of times each patent has been cited by subsequent patents (so-called forward-citations) to compute a citation-based index as a measure of innovative output. The Commission reports in the Decision patent shares based on the methodology that it considers to be the most reliable forward-citation analysis in this case.[119]

(274) The patent data includes all patents relevant for fruits/vegetables, for the "Big5" companies, Bayer (BAY), Monsanto (MNS), ChemChina/Syngenta (CCSYN), DowDuPont (DDP), and BASF, and for any other firms active in research for traits in fruits&vegetables (e.g. Limagrain, Enza Zaden, etc). The time period covered by the analysis concerns 2007-2016, with a few patents for 2005 and 2006 (see Annex 1 for further details).

(275) The main comments of the Parties on the Commission's patent analysis made in their submissions are addressed in Section X.1.5.5.5. Annex 1 provides a detailed description of the Commission's analysis of patent data for traits.

(276) As discussed in Section X.1.5.5.5 and in Annex 1, in order to take into account the Comments made by the Parties in the response to the Statement of Objections, the Commission reports patent shares based on two different classifications:

(a) Patent shares based on the patent classification used by the Commission in the Statement of Objections.

(b) Patent shares based on the patent classification used by the Parties in the response to the Statement of Objections (and also provided in response to the Commission' Request for Information 113).

[119] It is well established in the economic literature that citation-based indexes are informative on the technological importance (or quality) of patents. See Annex 1 to this Decision for a detailed analysis of the relevant patent data.

(277) First, the analysis of patent data indicates that the Parties are important innovators for several types of traits, where either Bayer or Monsanto have a significant patent share. These traits are:

(a) For Monsanto: based on the patent classification used in the Statement of Objections, crop efficiency (with a patent share of [50-60]%), disease control ([60-70]%), and other traits ([30-40]%);[120,121] The Commission finds similar results based on the patent classification used by the Parties in the response to the Statement of Objections.

(b) For Bayer: based on the patent classification used in the Statement of Objections, other traits ([30-40]%).[122] The Commission also notes that Bayer's patent share in disease control traits is increasing significantly from [5-10]% based on patents published across the full period to [10-20]% for patents published after 2011. The Commission finds similar results based on the patent classification used by the Parties in the response to the Statement of Objections. The Commission understands that the category "Other traits" is closely related to "quality traits".[123]

(278) Second, the analysis of patent data indicates that Bayer and Monsanto are both active in research for the following traits:

(a) Fruit/vegetables-disease control: based on the patent classification used in the Statement of Objections, with a significant patent share of [70-80]% (Bayer: [5-10]%, Monsanto: [60-70]%), a post-merger HHI of [5000-5500], and a Delta HHI of [800-900].[124] The Commission finds similar results based on the patent classification used by the Parties in the response to the Statement of Objections.

(b) Fruit/vegetables-other traits: with a significant patent share of [70-80]% (Bayer: [30-40]%, Monsanto: [30-40]%), a post-merger HHI of [5500-6000], and a Delta HHI of [2500-3000].[125] The Commission finds similar results based on the patent classification used by the Parties in the response to the Statement of Objections.

(c) Moreover, using the patent classification used by the Parties in the response to the Statement of Objections, the Commission finds that the Parties have a significant combined patent share ranging from [50-60]% to [60-70]% in fruit/vegetables-crop efficiency traits (Bayer: [5-10]%, Monsanto: [50-60]%), with a post-merger HHI of [4500-5000] and a Delta HHI of [600-700].[126]

(279) In the Response to the Statement of Objections, the Parties argue that innovation spaces should defined per type of fruits and vegetables (e.g. tomatoes, corn salad,

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120 For patents published after 2011, Monsanto's patent shares are relatively high for the following traits: crop efficiency ([40-50]%), disease control ([40-50]%), and other traits ([40-50]%).

121 In the response to question 5 of the […].

122 For patents published after 2011, Bayer's patent share for the category "other traits" is [40-50]%.

123 [Quote from confidential submission].

124 The combined patent share is [50-60]% for patents published after 2011 (Bayer: [10-20]%; Monsanto: [40-50]%).

125 The combined patent share is [80-90]% for patents published after 2011 (Bayer: [40-50]%; Monsanto: [40-50]%).

126 This is based on the classification used by the Parties in the response to the Statement of Objections, including all patents (i.e. active and inactive patents) and excluding inactive patents (as suggested by the Parties in the response to the Statement of Objections).

cucumber, watermelon, etc) rather than for "Fruits and Vegetables" overall. The Commission understands that the Parties consider that the analysis of the level of "fruits&vegetables" would lead to the risk of resulting in "artificial" overlaps while the Parties may be researching for very different crops.

(280) While the innovation spaces may be narrower than "fruits&vegetables", the Commission considers that a high patent share in traits for "fruits&vegetables" constitute reliable evidence to assess the technological strength of firms involved in research for specific traits and/or specific types of fruits and vegetables, in particular given the importance of economies of scale and scope in the vegetables business of the Parties (see Section VIII.6.1 of the Decision, recitals (331), (333), (334)).

(281) Moreover, the Commission notes that the Parties did not comment in their response to the Statement of Objections on the evidence submitted by the Commission that the Parties are close competitors for several crops, for example carrot, cucumber, eggplant, garden bean, hot pepper, leek, lettuce, melon, onion, pea, spinach, squash, sweet pepper, tomato, and watermelon (see Sections VIII.7 to VIII.21 of the Decision). Therefore, doing a patent share analysis at a narrower level (e.g. for specific types of vegetables) would have likely lead to higher combined patent shares for certain crops than the one presented below at the more aggregated level of "fruits&vegetables" traits. Given that the Parties are close innovation competitors for similar types of fruit and vegetables, the Commission considers that the patent shares presented at the level of "fruits&vegetables" are conservative and do not result in "artificial" overlaps. Last, the Parties submitted in the response to the Statement of Objections some patent classification for fruits and vegetables for the Parties (like pepper, tomatoes, watermelon) showing that they overlap for some specific crops.[127]

(282) These findings show that the Parties are important innovators for several types of traits in fruits and vegetables overall, and have research activities in similar traits (in particular for disease control traits, other traits, and crop efficiency traits) and similar types of fruits and vegetables.

4.4. Competitors

(283) The Parties submit that there are a number of competitors active in the EEA who offer all or many of the vegetable seeds in which the Parties overlap. The companies which the Parties claim are their main competitors in the EEA in the sale of vegetable seeds are described below.

(284) Group Limagrain (Limagrain, France) has three business units that produce and sell vegetable seeds: HM Clause, Hazera and Vilmorin. Group Limagrain sells vegetable seeds in Europe primarily through Vilmorin, which is publicly listed. Vegetable seeds accounted for approximately 28% of Limagrain's sales in 2015/2016.

(285) Syngenta International AG (Syngenta, Switzerland) is a leading agriculture company with 28 000 employees in over 90 countries. Syngenta is active in the vegetable seeds markets in Europe and the USA. Its vegetable business includes over 30 crops.

(286) Rijk Zwaan Zaadteelt en Zaadhandel B.V. (Rijk Zwaan, the Netherlands) offers over 1,000 varieties from 25 vegetable crops. Rijk Zwaan has employees in 30 countries and sells seeds in more than 100 countries.

[127] The Commission notes that the Parties did not comment on this evidence in the response to the second Letter of Facts.

(287) Bejo Zaden BV (Bejo, the Netherlands) has a portfolio containing more than 1 200 varieties, representing approximately 50 vegetable crops. Its seeds are distributed to more than 100 countries through a global network of Bejo companies and independent distributors.

(288) Enza Zaden B.V. (Enza, the Netherlands) has subsidiaries and joint ventures in 24 countries worldwide. Enza's portfolio contains approximately 1 200 vegetable seed varieties.

5. MARKET DEFINITIONS

5.1. Product market definition

5.1.1. Commission precedents

(289) In 2010, the Commission defined the licensing (or trading) and the commercialisation of conventional sunflower seeds as two separate product markets because, among other things, (i) the licensing and commercialisation activities fulfil different market demands, (ii) the relevant actors are different on the demand and the supply side, (iii) the activities are organised separately and (iv) the geographic focus of the activities is different.[128] However, in previous decisions concerning different conventional open field seed markets, the Commission considered that those two stages of the seed industry are included in one single relevant product market.[129]

(290) When it comes to vegetable seeds in particular, in Case M.3506 – Fox Paine/Advanta, the Commission's market investigation confirmed that the breeding and commercialisation of Pea seeds and Onion seeds could in general be included in one single relevant product market.[130]

(291) With regard to a segmentation of the vegetable seeds per crop, the Commission has consistently considered that the various kinds of seeds are not mutually substitutable, and seeds for different crops have been held to constitute separate product markets.

(292) In Case M.3506 – Fox Paine/Advanta, the Commission examined the question whether the market for a given vegetable crop should be further segmented into different varieties, but left it ultimately open.[131]

5.1.2. Notifying Party views

(293) The Notifying Party submits that vegetable seed breeding and vegetable seed commercialisation or production form part of the same market. The Notifying Party notes that most of their competitors are active in both the breeding and production of vegetable seeds.

(294) The Notifying Party also submits that trading germplasm, traits or other intellectual property rights for the purposes of breeding new varieties of vegetables does not constitute a distinct product market. According to the Notifying Party, the contribution of trading germplasm, traits or other intellectual property rights is inconsequential to the turnover of the vegetable seed industry, being a rather

128 Commission Decision in Case M.5675 – Syngenta/Monsanto's sunflower seeds business (2010), recitals 76-89.

129 Commission Decisions in Case M.3465 – Syngenta CP/Advanta (2004), recital 12; Case M.1512 – DuPont/Pioneer Hi-Bred International Commission (1999), recital 7; Case M.1497 – Novartis/Maïsadour (1999), recital 7; Case M.556 – Zeneca/Vanderhave (1996), recitals 12 and 13.

130 Commission Decision in Case M.3506 – Fox Paine/Advanta (2004), recital 12.

131 Commission Decision in Case M.3506 – Fox Paine/Advanta (2004), recital 21.

ancillary activity. The Notifying Party also submits that there are no commercial enterprises focused exclusively on breeding vegetable germplasm or traits.

(295) With regard to a segmentation of the vegetable seed markets at crop level, the Notifying Party submits that demand-side substitutability is determined by both its direct customers (e.g. growers) and indirect customers (e.g. processors, traders and grocery retailers). Customers of grown vegetables have specific demands in relation to quality, size, cultivar type and other characteristics of the vegetables they buy from growers. From the supply-side perspective, while growers do specialise in particular vegetables, their choices are dictated by their customers' specifications.

(296) With regard to a further segmentation of the vegetable seed markets by varieties, the Notifying Party submits that, owing to the distinct characteristics of each variety, there is limited demand-side substitutability between the different varieties of most vegetable seeds from the perspective of growers' customers and therefore also from the perspective of growers. From the supply-side perspective, given the cost and complexity of vegetable seed-breeding programmes for each new variety, the Notifying Party submits that there is no supply-side substitutability between these product markets. The Notifying Party notes, however, that not all of these differentiating factors apply to all vegetable seeds.

(297) Therefore, the Notifying Party submits that the relevant product markets for vegetable seeds should be defined first according to the vegetable crop, followed by segmentations for:

(a) Growing environment (open field, netted and plastic house, or glass house);

(b) Seed type (open-pollinated or hybrid);

(c) Use (fresh or processing);

(d) Whether or not the grown plant has been bred as rootstock;[132] and

(e) Features of the grown vegetable (vegetable type, size, colour, flavour, etc.).

(298) In addition, the Notifying Party considers organic and non-organic vegetable seeds to be part of the same product market owing to the high level of supply-side substitutability between them.

5.1.3. Commission assessment

5.1.3.1. The market covers the licensing and the commercialisation of vegetable seeds

(299) The Commission has consulted market participants on the relevant delineation of the product markets for vegetable seeds.

(300) A large majority of the competitors that participated in the market investigation indicated that it is not appropriate to distinguish a market for the licensing of vegetable seed varieties from a market for the commercialisation of vegetable seeds.[133] One competitor submitted that "*the licensing of seed varieties can occasionally occur to complete a product range with a particular crop or type for*

[132] Rootstocks are varieties grown by commercial fruit and vegetable growers specifically for their root systems to which the producing plant can be grafted. Rootstock plants are not used for vegetable production, but are an important category of demand for certain vegetables. Growers purchase rootstock seeds specifically for the properties of the plant's root system and not its grown vegetables. Source: Form CO, part 8.1, paragraphs 187-190.

[133] Questionnaire to Vegetable Seeds Competitors (Q9), question 7.

approaching a particular market. But in general this is a secondary focus".[134] Another competitor noted that "*contrary to corn or other row crops, there is no specific licensing market in vegetables*".[135]

(301) Several competitors also submitted that, contrary to broad acre crops, licensing parental lines in the vegetable seed industry is not a common practice.[136] In addition, one of these competitors noted that "*there has been a significant decrease in licensing agreements for hybrids and the exchange of parental lines*".[137]

(302) Despite the limited importance of exchanging licences or parental lines in the vegetable seed industry, some competitors submitted that, according to the current regulatory framework, it is possible to patent plant traits.[138] This means that, although it is not possible to patent vegetable varieties in the EU as such, a licence needs to be obtained from the patent owner to breed a variety including one or more patented traits. Furthermore, some competitors see patenting as "*the next big trend in the seed industry*".[139]

(303) The Commission therefore concludes that, for the purposes of assessing the Transaction, the relevant product market includes both licensing and commercialisation of vegetable seeds.

5.1.3.2. Each vegetable crop constitutes a separate product market

(304) A majority of competitors that participated in the market investigation agreed with the Commission practice to separate the vegetable seed industry into different markets for each crop.[140]

(305) This practice is also confirmed by the Parties' internal documents. The Commission notes that each Party adopts an overall strategy for vegetable seeds, which is further divided into specific strategies for each vegetable crop or group of vegetable crops.[141]

(306) The Commission therefore concludes that, for the purposes of assessing the Transaction, each vegetable crop constitutes a separate product market.

5.1.3.3. While each vegetable crop constitutes a separate product market, there is high differentiation within each crop

(307) The Commission has considered whether the product market is narrower than the crop.

(308) There are arguments in favour of markets narrower than crops, which would consist of segments or varieties.

(309) Each vegetable crop is a highly differentiated market. Differentiation is made on the basis of varieties, which display different properties. These properties relate notably to the growing environment, the type of seeds, the use and features of the grown vegetable.

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134 Questionnaire to Vegetable Seeds Competitors (Q9),question 7.1, ID3686.

135 Questionnaire to Vegetable Seeds Competitors (Q9), question 7.1, ID3553.

136 Agreed non-confidential minutes of a call with a competitor, 21 June 2017, ID4620; agreed non-confidential minutes of call with a competitor, 5 May 2017, ID1467.

137 Agreed non-confidential minutes of call with a competitor, 5 May 2017, ID1467.

138 Agreed non-confidential minutes of a call with a competitor, 21 June 2017, ID4620.

139 Agreed non-confidential minutes of call with a competitor, 5 May 2017, ID1467.

140 Questionnaire to Vegetable Seeds Competitors (Q9), question 8.

141 Form CO, part 8.1, paragraphs 25-30 (Bayer) and 45-47 (Monsanto).

(310) With regard to demand-side substitutability, vegetable seed companies supply a wide range of customers which are located at different levels of the supply chain (growers, plant raisers, food processors, seed dealers and other customers). Customers have specific needs depending on their activities. As explained by the Parties, growers pay attention to disease resistance, ease of harvesting, and suitability for available growing conditions while uniformity of size, certain taste or composition considerations may be more relevant for food processors.[142] Within a given crop, customers purchase varieties which meet their specific needs. Certain varieties might nevertheless be suitable for various needs. For example, a variety suited for a given growing environment may be grown in a different growing environment. A majority of competitors that participated in the market investigation indicated that seeds tailored to the agro-climatic conditions of a country/region are sold in other countries/regions with similar agro-climatic conditions.[143] From a demand-side perspective, there is therefore some substitutability between varieties but only to a limited extent.

(311) With regard to supply-side substitutability, vegetable seed companies can breed and commercialise a broad range of varieties with different properties in order to meet specific demands from their clients. However, each variety responds in principle to a specific demand. Moreover, internal documents show that for each crop, the Parties decide their strategies at variety level with respect to different aspects, such as breeding targets, competitive assessment and pricing.[144] These elements show that from a supply-side perspective, there is no or limited substitutability between varieties.

(312) The Commission therefore finds that price competition takes place at segment level.

(313) The market investigation has confirmed the analysis of the Commission. A majority of competitors that participated in the market investigation considered that it was appropriate to further sub-divide each vegetable crop into different varieties on the basis of differentiating factors such as, for example, the growing environment, whether the seeds are hybrid or open-pollinated, the use of the vegetables (fresh or processing), or the features of the grown vegetable (size, colour, flavour, etc.).[145] One competitor noted for example that consumer needs and preferences often drive differences in the size, shape, colour, flavour, consistency, etc. of a vegetable.[146]

(314) However, the Commission notes that segmentation is uncertain because there is no agreed and uniform segmentation system across market players in the vegetable seed industry. While similar parameters (growing environment, seed type, use and features of the grown vegetables) are generally taken into account by vegetable seed companies, each company uses its own internal segmentation system. In that respect, the Parties acknowledge that the segmentation system they propose does not necessarily reflect the segmentation system used internally by each of the Party.[147] Moreover, segments evolve with time and with the development of new varieties.

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142 Form CO, part 8.1, paragraph 71.

143 Questionnaire to Vegetable Seeds Competitors (Q10), question 18.

144 See for example, Cucumber: BI 01624, BI 01639, MI 05386, Form CO, part 8.1, Annexes 8.1.40 and 8.1.41.

145 Questionnaire to Vegetable Seeds Competitors (Q9), question 9.

146 Questionnaire to Vegetable Seeds Competitors (Q9), question 9.1, ID3553.

147 Form CO, part 8.2, paragraph 14; part 8.3, paragraph 13; part 8.4, paragraph 12; part 8.5, paragraph 14; part 8.6, paragraph 13; part 8.7, paragraph 11; part 8.8, paragraph 15; part 8.9, paragraph 14; part 8.10,

5.1.4. Conclusion

(315) The Commission concludes that, for the purposes of assessing the Transaction, the relevant product market includes both licensing and commercialisation of vegetable seeds for each vegetable crop. However, the Commission acknowledges that each vegetable crop is a highly differentiated market, based on segments or varieties. The Commission therefore considers that it is relevant to make the competitive assessment at segment level.

(316) The Commission has looked at the segmentation proposed by the Parties and has considered it reliable. For the purpose of assessing the Transaction only, and without prejudice to future cases, the Commission will use the segmentation suggested by the Parties, namely:

(a) Growing environment (open field, netted and plastic house, or glass house);

(b) Seed type (open-pollinated or hybrid);

(c) Use (fresh or processing);

(d) Whether or not the grown plant has been bred as rootstock;[148] and

(e) Features of the grown vegetable (vegetable type, size, colour, flavour, etc.).

5.2. Geographic market definition

5.2.1. Commission precedents

(317) In its decision in Case M.3506 – Fox Paine/Advanta, the Commission concluded that the market for Pea seeds and Onion seeds should be viewed as national in scope, mainly because of the existence of national registration and/or national recommendation lists. The market investigation in that case also provided some evidence, however, of a certain further "Europeanization" of the seeds markets.[149]

(318) In Case M.5675 – Syngenta/Monsanto's sunflower seed business, the Commission concluded that the geographic scope of the market for licensing (or trading) of sunflower varieties was European wide in scope, and that the market for the commercialisation of sunflower seeds was to be considered national in scope.[150]

5.2.2. Notifying Party views

(319) The Notifying Party acknowledges that some national elements remain in the vegetable seed industry, particularly as regards the registration of intellectual property protection. Nevertheless, the Notifying Party submits that there are a number of elements pointing towards a geographic scope wider than national for vegetable seeds.

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paragraph 13; part 8.11, paragraph 15; part 8.12, paragraph 16; part 8.13, paragraph 14; part 8.14, paragraph 12; part 8.15, paragraph 15; part 8.16, paragraph 15; part 8.17, paragraph 16.

148 Rootstocks are varieties grown by commercial fruit and vegetable growers specifically for their root systems to which the producing plant can be grafted. Rootstock plants are not used for vegetable production, but are an important category of demand for certain vegetables. Growers purchase rootstock seeds specifically for the properties of the plant's root system and not its grown vegetables. Source: Form CO, part 8.1, paragraphs 187-190.

149 Commission Decision in Case M.3506 – Fox Paine/Advanta (2004), recital 26.

150 Commission Decision in Case M.5675 – Syngenta/Monsanto's sunflower seeds business (2010), recitals 118 and 131.

(320) First, the Notifying Party notes that, although pricing and supply conditions continue to vary moderately between Member States, largely due to the structure of local growing markets and differences in purchasing patterns, prices have become more harmonised over time. The Notifying Party also submits that trade between EEA member states prevents prices from varying to any significant degree, particularly between neighbouring countries and within growing regions.

(321) Second, the Notifying Party submits that most of the Parties' major competitors are present across the EEA.

(322) Finally, the Notifying Party notes that, although customisation of vegetable seeds is a significant demand-side factor, it is harmonised at the growing region level rather than at national level.

5.2.3. Commission assessment

(323) The Commission notes that there are factors which point towards national markets.

(324) Firstly, the first step to commercialisation takes place at national level. Although the inclusion of a new variety in the common catalogue allows its commercialisation in all Member States, this inclusion first requires the registration in the national catalogue of a Member State. In order to be registered in the national catalogue, the new variety must notably pass the DUS ("Distinct, Uniform, Stable") and VCU ("Value for Cultivation and Use") tests, which are conducted by the responsible national authorities. The VCU criteria and testing methods may vary depending on the Member State.

(325) Secondly, a majority of competitors that participated in the market investigation confirmed that the commercialisation of vegetable seeds takes place at national level.[151] One competitor submitted that "*[m]ostly for cultural and language reasons the commercialization of vegetable seeds dominantly takes place at national level*".[152] Another competitor also mentioned cultural preferences as one of the factors explaining why "*vegetable seed companies focus their demand generation / sales activities as close to the end-user of the seed (the grower) as possible - hence at national or even local level (province, state, etc)*".[153] Another competitor indicated that more than 70% of the vegetable varieties are sold on a national basis at the moment, although this percentage is declining.[154] Certain competitors nevertheless acknowledged that vegetable seeds are also sold on a global scale.[155]

(326) Thirdly, the market investigation gave mixed results regarding price differences in different geographies. While half of the competitors which participated in the market investigation indicated that there is no significant price difference among EU countries, the other half indicated that there is a significant price difference among them.[156] At the same time, internal documents from Bayer show that prices are benchmarked and set at national level.[157]

(327) By contrast, the fact that the European regulatory framework enables to commercialise a variety in all EU Member States suggests that the market may be

151 Questionnaire to Vegetable Seeds Competitors (Q9), question 11.
152 Questionnaire to Vegetable Seeds Competitors (Q9), question 11.1, ID3686.
153 Questionnaire to Vegetable Seeds Competitors (Q9), question 11.1, ID3553.
154 Questionnaire to Vegetable Seeds Competitors (Q9), question 11.1, ID3602.
155 Questionnaire to Vegetable Seeds Competitors (Q9), question 11.1, ID8234, 3602, 3136, 7958, 3553.
156 Questionnaire to Vegetable Seeds Competitors (Q9), question 15.
157 Form CO, part 8.1, Annex 8.1.40.

broader than national. In that respect, all the competitors that participated to the market investigation indicated they commercialise seeds in countries other than those where the variety was first registered.[158]

(328) The Commission concludes that, on balance and for the purposes of assessing the Transaction, the geographic scope of the market is national. However, the Commission notes that there are other factors which suggest that the market for vegetable seeds might be broader than national. In its assessment, the Commission will therefore take account of the broader geographic context in which each national market is included by looking at the overall size and the position of the Parties in a given segment both at EU level.

6. COMPETITIVE ASSESSMENT PRINCIPLES

6.1. Competitive dynamics

(329) The Commission has identified three types of competitive dynamics in the vegetable seed industry.

(330) The first competitive dynamic is price competition. Price competition takes place at country/segment (variety) level.[159] This parameter constitutes the core, and the starting point, of the competitive assessment. It requires a "bottom-up" approach, starting from country/segment level. Conducting the competitive assessment at higher (crop) or broader (regional, EU) levels may lead to overlook segments where competition concerns may arise. This may be the case, for instance, where there are limited overlaps at crop/country level, but significant ones at segment/country levels.

(331) The second competitive dynamic is product variety and quality competition. Product variety and quality competition takes place at crop/regional or even crop/global level. Vegetable seed companies breed and commercialise new varieties which are suited for several countries. As explained by the Parties, breeders target a specific growing region for a new variety at the beginning of the breeding programme.[160] Varieties are then commercialised in different countries, which belong to the same growing region. Growing regions are defined according to growing and climatic conditions.[161] This is also illustrated by the internal organisation of the vegetable seed business of the Parties. Firstly, R&D is conducted at crop level. [Details of Parties' internal structure].[162] It generates cross-segment synergies, such as the use of germplasm for the enrichment of other breeding programmes within the same crop, the use of the same marker for several varieties and the fact that [quote from Parties' submission].[163] Economies of scales, mainly in the form of shared cost of equipment and infrastructure, and knowledge spill-over are also generated.[164] Secondly, the overall vegetable seed strategy is adapted into specific strategies for each crop. Crop strategies notably include the prioritisation of segments.[165] In Bayer, crop strategies

158 Questionnaire to Vegetable Seeds Competitors (Q9), question 13.
159 Form CO, part 8.1, Annex 8.1.40.
160 Form CO, part 8.1, paragraph 148.
161 Form CO, part 8.1, paragraph 149.
162 Parties' response to the Commission's request for information RFI 28, question 4 [Annexes 28.2 and 28.3].
163 Bayer's amended response to the Commission's request for information RFI 47, question 2, paragraphs 11, 14 and 17.
164 Bayer's amended response to the Commission's request for information RFI 47, question 2, paragraphs 17 and 18.
165 See for example, Cucumber: BI 01639, slide 7; MI 05386, slides 3 and 4.

are made at global level, through the "VISTA" process.[166] [Details on Monsanto's internal structure].[167]

(332) The third competitive dynamic is cross-crop competition. Leading vegetable seed companies are active across multiple crops and numerous countries or regions. They have centralised R&D centres, processing and distribution facilities, which serve multiple crops at a regional or even global scale. Vegetable seed companies compete against each other in several crops and geographies. It follows that low market shares in one given crop and/or one geography do not necessarily reflect the strength of a vegetable seed company overall.

(333) In the Article 6(1)(c) Decision and the Statement of Objections, the Commission preliminary concluded that a number of features of the vegetable seed industry explain why some players, including most notably the Parties, perform better than others, related among other things to benefits from economies of scale as well as to barriers for competitors to expand within and across markets.

(334) These industry features include the existence of considerable advantages arising from (i) breeding a large number of vegetable crops and/or from breeding more varieties for the same crop, (ii) breeding both vegetable crops and broad acre crops, (iii) having global breeding capabilities, (iv) having a presence in traits research and licencing, (v) the ability to develop new breeding techniques (NBT), (vi) having a strong presence in crop protection products, and (vii) having strong brands and commercializing a wide number of vegetable crops (and their varieties), broad acre crops and crop protection products. These aspects were confirmed by participants to the market investigation.[168]

(335) In its responses to the Article 6(1)(c) Decision and to the Statement of Objections, the Notifying Party challenged the Commission's preliminary conclusion. The Notifying Party argued essentially that none of the elements identified in recital (334) provide significant advantages to the Parties. According to the Notifying Party, successful vegetable seed companies have pursued various strategies, demonstrating that there is no [quote from Parties' submission].[169]

(336) However, the Notifying Party acknowledged that in Bayer, [quote from Parties' submission].[170] [Quote from Parties' submission].[171] The Notifying Party acknowledged that conducting breeding programmes for several segments of the same crop generates economies of scale, mainly in the form of shared cost of equipment and infrastructure.[172] Finally, the Notifying Party also acknowledged that [quote from Parties' submission].[173] The Notifying Party claimed there were no synergies and very few economies of scale and knowledge spill-over across vegetable crops and broad acre crops.[174]

166 Form CO, part 8.1., paragraph 25.
167 Form CO, part 8.1., paragraphs 45-53.
168 Article 6(1)(c) Decision, paragraphs 435-439.
169 Bayer's response to the Article 6(1)(c) Decision, paragraph 34; Bayer's response to the Statement of Objections, paragraph 173.
170 Bayer's 2nd draft response to the Commission's request for information RFI 47, paragraph 10.
171 Bayer's 2nd draft response to the Commission's request for information RFI 47, paragraph 14.
172 Bayer's 2nd draft response to the Commission's request for information RFI 47, paragraph 17.
173 Bayer's 2nd draft response to the Commission's request for information RFI 47, paragraph 18.
174 Bayer's 2nd draft response to the Commission's request for information RFI 47, paragraph 29.

(337) [Details on Monsanto's internal structure].[175]

Figure 14 – [Monsanto's organization]

[…]

Source: MI 09400, [internal document], ID5154, slide 12.

6.2. Data for segment assessment

6.2.1. Segmentation

(338) As noted above, there is no agreed and uniform segmentation system across market players in the vegetable seed industry, included among the Parties. However, the Parties have devised a segmentation system for the sole purpose of this case, which does not necessarily reflect the segmentation system used internally by each of the Party.[176]

(339) The Commission notes the Parties' efforts to provide data which correspond to the segmentation proposed by them. They have provided comprehensive and detailed sets of market share estimates at segment/country level. The Parties have explained that there is no third party source or industry reports available. Market share estimates provided are based on their own estimates only.

(340) Given the amount of data, the Commission has not been able to check all market shares provided by the Parties at segment level. However, the Commission has compared a representative sample of markets shares provided by the Parties at crop level with estimates available in the Parties' internal documents. The Commission has not found significant discrepancies between these two sets of data.

(341) In light of the explanation provided by the Parties and the checks conducted, the Commission considers that data, both at crop and segment levels, provided by the Parties are reliable.

6.2.2. Year

(342) The Parties have provided data for each year, from 2013 to 2016. The sheer number of segments and countries to assess and the need to ensure the correctness and consistency of the assessment, have lead the Commission to rely on the latest data available which is for 2016.

(343) The Commission notes that while providing market shares and HHI indexes and delta at segment level, the Notifying Party focused most of its competitive assessment at crop level. The Commission also notes that this assessment relied on data for 2015. Given that the Notifying Party has not provided additional arguments based on data for 2016, the Commission considers that the assessment based on data for 2015 remains relevant in light of data for 2016.

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175 Monsanto's response to the Commission's request for information RFI 47, paragraphs 7-12; see also, [internal document], MI 09399.

176 Form CO, part 8.2, paragraph 14; part 8.3, paragraph 13; part 8.4, paragraph 12; part 8.5, paragraph 14; part 8.6, paragraph 13; part 8.7, paragraph 11; part 8.8, paragraph 15; part 8.9, paragraph 14; part 8.10, paragraph 13; part 8.11, paragraph 15; part 8.12, paragraph 16; part 8.13, paragraph 14; part 8.14, paragraph 12; part 8.15, paragraph 15; part 8.16, paragraph 15; part 8.17, paragraph 16.

6.3. Analytical framework

(344) As explained above, price competition takes place at segment/country level.[177] The competitive assessment has therefore to be conducted in several hundreds of markets (segment/country combination).

(345) In view of this very high number of markets to be assessed, it was necessary for the Commission to develop a methodology which could be applied consistently across all markets and enabled the Commission to provide sufficient reasoning in support of its findings on whether the Transaction would likely cause a significant impediment to effective competition.

(346) The methodology used by the Commission is based on market shares and concentration levels filters, pre- and post-Transaction. In order to measure concentration levels, the Commission used the Herfindahl-Hirschman Index (HHI) as well as the change in the HHI (HHI Delta) brought about by the Transaction. The Commission notes that HHI and HHI Delta are more accurate proxies than market shares because they allow to take into account the strength of the Parties as well as the number and strength of their competitors.[178]

(347) On the basis of these filters, the Commission has divided segment/country combination into three categories, as follows:

(a) "Green" markets which gather segment/country combination that fall into a "safe harbour" and where the Transaction do not raise *prima facie* competition concerns;

(b) "Red" markets which gather segment/country combination where the concentration levels, as well as the combined market shares of the Parties, suggest that the Transaction would *prima facie* likely cause a significant impediment to effective competition;

(c) "Yellow" markets which are neither "green" nor red and for which the Commission has conducted a more in-depth assessment based on structural and qualitative factors.

(348) The filters are described below. These filters have been established for the sole purpose of the present case. Their use is without prejudice to any other cases.

6.3.1. "Green" markets where the Transaction would prima facie likely not cause a significant impediment to effective competition

(349) The Commission has considered that the Transaction would likely not cause a significant impediment to effective competition in the following markets:

(a) Markets in which the Parties have a combined market share below 20%;[179] or

(b) Markets where the post-merger HHI is below 1000.[180]

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177 The Commission notes that the EEA Agreement does not apply to vegetable seeds (see Article 8(3) EEA Agreement and Chapter 12, Heading 12.09 of the Harmonized Commodity Description and Coding System). Accordingly, this Section does not cover any national markets for vegetable seeds in Iceland, Liechtenstein and Norway.

178 Commission's Horizontal Merger Guidelines, paragraph 16 and 19-21.

179 These are non-affected markets according to the Commission's Notice on simplified merger procedure (paragraph 5.c.i), Commission Notice of 5 December 2013 on a simplified procedure for treatment of certain concentrations under Council Regulation (EC) No 139/2004 (Official Journal C 366, 14.12.2013, page 5).

(350) For markets with a post-merger HHI between 1000 and 2000 and a delta below 250 or, with a post-merger HHI above 2000 and a delta below 150, the Commission has also considered that the Transaction would likely not cause a significant impediment to effective competition unless at least one of the following special circumstances is present:

(a) One of the Parties is a recent or potential entrant; or

(b) One of the Parties is an important innovator; or

(c) One of the Parties has a pre-merger market share of at least 50%.[181]

6.3.2. "Red" markets where the Transaction would prima facie likely cause a significant impediment to effective competition

(351) The Commission has considered that markets where the Transaction would *prima facie* likely cause a significant impediment to effective competition in the following markets:

(a) Markets where the Parties' combined market share is equal or above 50%, with an increment equal or above 1%;[182] or,

(b) Markets where the post-merger HHI is equal or above 2500 and the delta HHI is equal or 200.[183]

(352) For these markets, the Commission has also addressed counter-arguments put forward by the Parties when relevant.

6.3.3. "Yellow" markets

(353) As regards "yellow" markets, the Commission has conducted a more in-depth assessment on a case-by-case basis in order to conclude whether the Transaction would likely cause a significant impediment to effective competition. This assessment is a two-tier assessment based on market structure and qualitative factors.

(354) The starting point of the assessment is the market structure for which the Commission has used the following criteria:

(a) Firstly, HHI and HHI delta;[184]

(b) Secondly, the combined market share of the Parties and the increment in market share brought about by the Transaction;[185]

(c) Thirdly, whether the merger entity will be the market leader and, if yes, its size compared to the second largest competitor;

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180 According to the Commission's Horizontal Merger Guidelines, such markets normally do not require extensive analysis, see paragraph 19 of the Commission's Horizontal Merger Guidelines.

181 Commission's Horizontal Merger Guidelines, paragraph 20 a), b) and f).

182 Commission's Horizontal Merger Guidelines, paragraph 17.

183 HHI is used to measure market concentration, which may "*provide useful information about the competitive situation*", see Commission's Horizontal Merger Guidelines, paragraph 16. The present HHI thresholds have been set by the Commission for the purposes of this case only, and without prejudice to any other cases, on the basis of the economics literature. The Commission notes that the U.S. Department of Justice and the Federal Trade Commission use similar thresholds in their Horizontal Merger Guidelines (2010, section 5.3.).

184 Commission's Horizontal Merger Guidelines, paragraph 16 and 19-21.

185 Commission's Horizontal Merger Guidelines, paragraph 15 and 17-18.

(d) Fourthly the number of remaining sizeable competitors with respective market shares above 5% post-Transaction and their respective size compared to each other.

(355) The Commission has then refined its preliminary conclusion on market structure in light of the following qualitative factors:

(a) The existence of ongoing breeding programmes of the Parties for a given crop:[186] in the Commission's view, the absence of breeding programme indicates that the Party concerned may likely exit the market in the near future and will unlikely exert a significant competition constraint;

(b) Whether a segment and/or a country is a strategic priority for either Party: in the Commission's view, the fact that a segment and/or a country is a strategic priority based on the respective Party's internal documents indicates that this Party may become a significant competitor in the near future in the segment and/or country concerned.

7. CARROT

7.1. General

(356) Carrot seeds are differentiated on the basis of the use by growers' customers of the grown vegetable and the variety of grown vegetable they produce. Based on these considerations, the Notifying Party submits that the following is the most appropriate segmentation of the product market for Carrot seeds:

(a) Carrot – Chantenay;

(b) Carrot – Cut and Peel;

(c) Carrot – Nantes;

(d) Carrot – Tapered Long; and

(e) Carrot – Other.

(357) The global sales of Carrot seeds amounted to around EUR […] in 2016. At global level, Bayer ([20-30]%) […] player, […] Monsanto ([5-10]%). The other significant competitors are Bejo ([20-30]%), Limagrain ([20-30]%) and Sakata ([5-10]%).

Figure 15 – Worldwide market shares in Carrot seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 83, question 3(d) [Annex 83.1].

[186] […] (see Form CO, part 8.1, paragraph 119) and […] (see Form CO, part 8.1, paragraph 127).

(358) The EEA is the largest region worldwide for Carrot seeds, with a value of around EUR […] in 2016.[187] In the EEA, Bayer is […] [10-20]%, […] Bejo ([40-50]%) and Limagrain ([20-30]%). Monsanto has a share of [0-5]%. The other identified competitors are Syngenta ([5-10]%) and Rijk Zwaan ([5-10]%).

Figure 16 – EEA market shares in Carrot seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 87, question 5 [Annex 87.5].

(359) There are five varieties commercialised in the EEA, namely: Nantes, Cut and Peel, Chantenay, Tapered Long and Other. The Nantes segment, accounted for around [80-90]% of the sales of Carrot seeds in the EEA in 2016.

Figure 17 – EEA segment sizes, Carrot seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 94, question 1 [Annex 94.1].

(360) In the EEA, the Parties' activities overlap in three segments, namely: Nantes, Cut and Peel and Chantenay. These three segments accounted together for around [90-100]% of the sales of Carrot seeds in the EEA in 2016.

Figure 18 – Parties' overlaps in Carrot seeds by segment (EEA, 2016)

[…]

Source: Parties' supplementary reply to the Commission's request for information RFI 34, question 1.[188]

7.2. Competitive assessment

7.2.1. Criteria used in the Commission's assessment

(361) The Commission has used the filters set out in Section VIII.6.3 in order to identify segments where the Transaction would likely cause a significant impediment to effective competition.

(362) The Commission has also taken into account the fact that the Parties are important and close competitors as regards Carrot seeds for the following reasons:

(a) Bayer and Monsanto are among the few players which have both a global and EU presence;

(b) In the EU, the Parties are both present in the main segments and countries;

(c) […].[189]

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187 Parties' response to the Commission's request for information RFI 83, question 3(c) [Annex 83.1]; the Parties provided figures and data for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

188 Colours correspond to the colour coding provided by the Commission in its request for information RFI 34, as follows:
(a) "Green flag" for markets with combined share below 20%; or, HHI post-merger below 1000; or, HHI post-merger between 1000 and 2000 and delta below 250, provided Parties' combined share is below 50%; or, HHI post-merger above 2000 and delta below 150, provided Parties' combined share is below 50%;
(b) "Red flag" for markets where the combined share is equal to or above 50% and the increment is equal to or above 1%; or, markets where the HHI is above 2500 and the delta is above 200.
(c) "Yellow flag" for markets that are neither red nor green.

189 BI 01634, page 5; BI 0637, slide 17; MI 05385, slide 5.

7.2.2. Arguments of the Parties

(363) The Notifying Party argued that the Transaction will not give rise to competition concerns in the markets for one or more of the following reasons:

(a) For certain countries, there is no affected market at crop or segment level;[190]

(b) For certain countries, the Parties' combined market at crop level is less than 25%;[191]

(c) For certain countries, the increment in market share[192] and/or the increase in HHI[193] is low;

(d) For certain countries, a significant number of competitors will remain in the market;[194]

(e) For certain countries, other competitors present in neighbouring countries may easily enter or expand in the market concerned;[195]

(f) For certain countries, the relatively small size of markets enhances volatility in percentage market caused by small movements in sales.[196]

(364) The Commission has addressed these arguments, when relevant, in the following assessment, which has been done at segment level.

(365) The Commission notes that in its response to the Statement of Objections, the Notifying Party expressed its disagreement with the Commission's assessment of vegetable seeds in the Statement of Objections, without addressing specifically the Commission's assessment of Carrot seeds.[197]

7.2.3. Relevant segments

(366) The Parties' combined share exceeds 20% and the Transaction thus results in affected markets in certain countries in the following segments: Cut and Peel and Nantes.

7.2.3.1. Cut and Peel

(367) In the Cut and Peel segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

190 Form CO, part 8.4, [countries].
191 Form CO, part 8.4, [countries].
192 Form CO, part 8.4, [countries].
193 Form CO, part 8.4, [countries].
194 Form CO, part 8.4, [countries].
195 Form CO, part 8.4, [countries].
196 Form CO, part 8.4, [countries].
197 Notifying Party's response to the Statement of Objections, paragraphs 156-173.

Table 8 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Carrot – Cut and Peel)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[198]	Comments
Cut And Peel	Germany	[…]	[60-70]%	[0-5]%	[5000-5500]	[400-500]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than four times larger than second largest competitor; no evidence of recent entry
Cut And Peel	Italy	[…]	[30-40]%	[10-20]%	[2000-2500]	[400-500]	[…]	[…]	[…]	Market leader; concentrated market; significant increase in market share and HHI; two sizeable competitors with comparable market shares; key segment[199] and country[200] for Bayer; no evidence of recent entry
Cut And Peel	Netherlands	[…]	[90-100]%	[0-5]%	[8500-9000]	[200-300]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; more than fifteen times larger than only sizeable competitor; no evidence of recent entry
Cut And Peel	United Kingdom	[…]	[90-100]%	[20-30]%	[9500-10000]	[3000 - 3500]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in market share and HHI; no sizeable competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[201]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[40-50]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

198 Excluding unidentified competitors under the "Other" category.

199 […], BI 02837, slide 4.

200 […], BI 01634, page 21.

201 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(368) The Commission notes that these geographic markets account together for around [40-50]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Cut and Peel segment in the EEA with a combined market share of around [40-50]%.[202]

7.2.3.2. Nantes

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(369) In the Nantes segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

[202] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 9 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Carrot – Nantes)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[203]	Comments
Nantes	Bulgaria	[…]	[60-70]%	[30-40]%	[4500-5000]	[2000-2500]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than three times larger than second largest competitor: no evidence of recent entry
Nantes	Czech Republic	[…]	[30-40]%	[5-10]%	[2000-2500]	[400-500]	[…]	[…]	[…]	Market leader; concentrated market; significant increase in HHI; one sizeable competitor with comparable market share; no evidence of recent entry
Nantes	Lithuania	[…]	[30-40]%	[5-10]%	[2500-3000]	[500-600]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in HHI; no evidence of recent entry
Nantes	Poland	[…]	[30-40]%	[0-5]%	[2500-3000]	[0-100]	[…]	[…]	[…]	Market leader; highly concentrated market; one sizeable competitor with comparable market share; no evidence of recent entry; key segment and key country for Bayer[204]

[203] Excluding unidentified competitors under the "Other" category.

[204] […], BI 01637, slides 4 and 7.

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [203]	Comments
Nantes	Romania	[…]	[30-40]%	[5-10]%	[2000-2500]	[300-400]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in HHI; one sizeable competitor with comparable market share; key segment for Bayer[205]; no evidence of recent entry
Nantes	Slovakia	[…]	[30-40]%	[0-5]%	[2000-2500]	[200-300]	[…]	[…]	[…]	Market leader; concentrated market; significant increase in HHI; around twice larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[206]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[10-20]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[205] […], BI 01637, slide 7.

[206] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(B) Geographic markets where the Transaction would not significantly impede effective competition

(370) In the Nantes segment, the Commission has identified in the table below the affected geographic markets where the Transaction would not significantly impede effective competition.

Table 10 – Geographic markets where the Transaction would not significantly impede effective competition (Carrot – Nantes)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [207]	Comments
Nantes	Austria	[…]	[20-30]%	[0-5]%	[2000-2500]	[100-200]	[…]	[…]	[…]	One larger competitor and market leader; three other sizeable competitors; low increment in market share; small HHI Delta
Nantes	France	[…]	[30-40]%	[0-5]%	[4000-4500]	[0-100]	[…]	[…]	[…]	One larger competitor and market leader; low increment in market share; small HHI Delta
Nantes	Germany	[…]	[20-30]%	[0-5]%	[2000-2500]	[100-200]	[…]	[…]	[…]	One larger competitor and market leader; three other sizeable competitors; low increment in market share; small HHI Delta
Nantes	Sweden	[…]	[30-40]%	[0-5]%	[3000-3500]	[100-200]	[…]	[…]	[…]	One larger competitor and market leader; low increment in market share; small HHI Delta

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[207] Excluding unidentified competitors under the "Other" category.

7.2.4. Conclusion

7.2.4.1. Markets where the Transaction would likely cause a significant impediment to effective competition

(371) For the reasons set out above, in particular in the relevant tables, and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to Carrot seeds because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on competition, in the following segments and countries:

(a) In the Cut and Peel segment: Germany (strengthening of dominance, "SD"), Italy, Netherlands (SD), United Kingdom (SD);

(b) In the Nantes segment: Bulgaria (creation of dominance, "CD"), Czech Republic, Lithuania, Poland, Romania, Slovakia.

7.2.4.2. Markets where the Transaction would not significantly impede effective competition

(372) On balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition in relation to Carrot seeds in the following segment and countries:

(a) In the Nantes segment: Austria, France, Germany, Sweden.

8. CUCUMBER

8.1. General

(373) Cucumbers, and accordingly their seeds, are differentiated on the basis of appearance, texture, presence of seeds, the growing environment in which they are bred to thrive most effectively, and the use by growers' customers of the grown vegetable (fresh consumption or pickling). Based on these considerations, the Notifying Party submits that the following is the most appropriate segmentation of the product market for Cucumber seeds:

(a) Cucumber – American Slicer – Netted & Plastic House;

(b) Cucumber – American Slicer – Open Field;

(c) Cucumber – Beit Alpha – Open Field;

(d) Cucumber – Beit Alpha Parth – Heated Glasshouse;

(e) Cucumber – Beit Alpha Parth – Netted & Plastic House;

(f) Cucumber – Long Dutch Parth – Heated Glasshouse;

(g) Cucumber – Long Dutch Parth – Netted & Plastic House;

(h) Cucumber – Non Parth Spined Pickle – Netted & Plastic House;

(i) Cucumber – Non Parth Spined Pickle – Open Field;

(j) Cucumber – Other Cucumber – Netted & Plastic House;

(k) Cucumber – Other Cucumber – Open Field;

(l) Cucumber – Parth Slicer – Heated Glasshouse;

(m) Cucumber – Parth Slicer – Netted & Plastic House;

(n) Cucumber – Parth Slicer – Open Field;

(o) Cucumber – Parth Smooth – Netted & Plastic House;

(p) Cucumber – Parth Smooth – Open Field;

(q) Cucumber – Parth Spined – Netted & Plastic House;

(r) Cucumber – Parth Spined – Open Field; and

(s) Cucumber – Parth Spined – Pickling Indoor Fresh.

(374) Cucumber is the fourth largest vegetable crop at global level.[208] The global sales of Cucumber seeds amounted to around EUR […] in 2016. At global level, Monsanto ([20-30]%) is the leading player. Bayer ([10-20]%) is the third largest player, immediately after Rijk Zwaan ([10-20]%). The other identified competitors are Enza Zaden ([5-10]%), Limagrain ([0-5]%), Fito ([0-5]%) and Syngenta ([0-5]%).

Figure 19 – Worldwide market shares in Cucumber seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 83, question 3(d) [Annex 83.1].

(375) The EEA is the […] worldwide for Cucumber seeds, with a value of around EUR […] in 2016.[209] In the EEA, Bayer is the second largest player with a share of [20-30]%, after Rijk Zwaan ([20-30]%). Monsanto closely follows Bayer with a share of [10-20]%. The other identified competitors are Enza Zaden ([5-10]%), Syngenta ([5-10]%), Bejo ([0-5]%), Fito ([0-5]%) and Limagrain ([0-5]%).

Figure 20 – EEA market shares in Cucumber seeds (2016)

[…]

Source: Parties' response to the Commission's request for information for information RFI 87, question 5 [Annex 87.5].

(376) There are seventeen segments commercialised in the EEA. The five largest segments accounted together for around [60-70]% of the sales of Cucumber seeds in the EEA in 2016.

Figure 21 – EEA segment sizes, Cucumber seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 94, question 1 [Annex 94.1].

[208] Parties' response to the Commission's request for information RFI 83, question 3(a) [Annex 83.1].

[209] Parties' response to the Commission's request for information RFI 83, question 3(c) [Annex 83.1]; the Parties provided figures and data for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(377) In the EEA, the Parties' activities overlap in seven segments, namely: American Slicer – Netted & Plastic House; Long Dutch Parth – Heated Glasshouse; Long Dutch Parth –Netted & Plastic House, Beit Alpha Parth – Heated Glasshouse, Beit Alpha Parth – Netted & Plastic House, Parth Spined – Open Field and Parth Slicer – Netted & Plastic House. These segments accounted together for around [80-90]% of the sales of Cucumber seeds in the EEA in 2016.

Figure 22 – Parties' overlaps in Cucumber seeds by segment (EEA, 2016)

[…]

Source: Parties' supplementary reply to the Commission's request for information RFI 34, question 1.[210]

(378) In the EEA, the Parties' activities overlap in countries which accounted for around [90-100]% of the sales of Cucumber seeds in the EEA. The Parties' activities notably overlap in the […].

8.2. Competitive assessment

8.2.1. Criteria used in the Commission's assessment

(379) The Commission has used the filters set out in Section VIII.6.3 in order to identify segments where the Transaction would likely cause a significant impediment to effective competition.

(380) The Commission has also taken into account the fact that the Parties are important and close competitors as regards Cucumber seeds for the following reasons:

(a) First, the Parties are among the few players with significant geographic outreach. The Parties are among the […] at both global and EU levels;

(b) Second, in the EU, the Parties are both present in the main segments and countries;

(c) […].[211]

8.2.2. Arguments of the Parties

(381) The Notifying Party argued that the Transaction will not give rise to competition concerns in the markets for one or more of the following reasons:

(a) For certain countries, the Parties' sales overlap marginally at segment level, i.e. where one segment accounts for a significant part of one of the Parties' sales but for a more limited part of the other Parties' sales;[212]

(b) For certain countries, the increment in market share[213] and/or the increase in HHI[214] is low;

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210 Figure 22 does not display the American Slicer – Netted & Plastic House segment. Colours correspond to the colour coding provided by the Commission in its request for information RFI 34, as follows:
(a) "Green flag" for markets with combined share below 20%; or, HHI post-merger below 1000; or, HHI post-merger between 1000 and 2000 and delta below 250, provided Parties' combined share is below 50%; or, HHI post-merger above 2000 and delta below 150, provided Parties' combined share is below 50%;
(b) "Red flag" for markets where the combined share is equal to or above 50% and the increment is equal to or above 1%; or, markets where the HHI is above 2500 and the delta is above 200.
(c) "Yellow flag" for markets that are neither red nor green.

211 BI 01624, pages 5-7; MI 05386, slide 7.

212 Form CO, part 8.5, [countries].

213 Form CO, part 8.5, [countries].

(c) For certain countries, the Parties' combined market share at crop/country level has been decreasing over the past year.[215]

(d) For certain countries, the relatively small size of markets enhances volatility in percentage market caused by small movements in sales.[216]

(e) For certain countries, a significant number of competitors will remain in the market;[217]

(f) For certain countries, other competitors present in neighbouring countries may easily enter or expand in the market concerned.[218]

(382) The Commission has addressed these arguments, when relevant, in the following assessment, which has been done at segment level.

(383) The Commission notes that in its response to the Statement of Objections, the Notifying Party expressed its disagreement with the Commission's assessment of vegetable seeds in the Statement of Objections, without addressing specifically the Commission's assessment of Cucumber seeds.[219]

8.2.3. Relevant segments

(384) The Parties' combined share exceeds 20% and the Transaction thus results in affected markets in certain countries in the following segments: American Slicer – Netted & Plastic House, Beit Alpha Parth – Heated Glasshouse, Beit Alpha Parth – Netted & Plastic House, Long Dutch Parth – Heated Glasshouse, Long Dutch Parth – Netted & Plastic House, Parth Slicer – Netted & Plastic House, Parth Spined – Open Field.

8.2.3.1. American Slicer – Netted & Plastic House

(385) In the American Slicer – Netted & Plastic House segment, the Commission has identified in the table below the geographic market where the Transaction would likely cause a significant impediment to effective competition.

214 Form CO, part 8.5, [countries].
215 Form CO, part 8.5, [countries].
216 Form CO, part 8.5, [countries].
217 Form CO, part 8.5, [countries].
218 Form CO, part 8.5, [countries].
219 Notifying Party's response to the Statement of Objections, paragraphs 156-173.

Table 11 – Geographic market where the Transaction would likely cause a significant impediment to effective competition (Cucumber – American Slicer – Netted & Plastic House)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[220]	Comments
American Slicer – Netted & Plastic House	Italy	[…]	[70-80]%	[20-30]%	[5000-5500]	[2000-2500]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than six times larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[221]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[70-80]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[220] Excluding unidentified competitors under the "Other" category.

[221] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(386) The Commission notes that this geographic market accounts for around [70-80]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the American Slicer – Netted & Plastic House segment in the EEA with a combined market share of around [60-70]%.[222]

8.2.3.2. Beit Alpha Parth – Heated Glasshouse

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(387) In the Beit Alpha Parth – Heated Glasshouse segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

[222] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 12 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Cucumber – Beit Alpha Parth – Heated Glasshouse)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[223]	Comments
Beit Alpha Parth – Heated Glasshouse	Germany	[…]	[80-90]%	[20-30]%	[6500-7000]	[2500 - 3000]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in market share and HHI; no sizeable competitor; no evidence of recent entry
Beit Alpha Parth – Heated Glasshouse	Poland	[…]	[40-50]%	[0-5]%	[2000-2500]	[0-100]	[…]	[…]	[…]	Market leader; highly concentrated market; around twice larger than second largest competitor; no evidence of recent entry; key segment for Bayer[224]
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[225]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[70-80]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

223 Excluding unidentified competitors under the "Other" category.

224 […], BI 01639, slide 7.

225 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(388) The Commission notes that these geographic markets account together for around [70-80]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Beit Alpha Parth – Heated Glasshouse segment in the EEA with a combined market share of around [40-50]%.[226]

(B) Geographic market where the Transaction would not significantly impede effective competition

(389) In the Beit Alpha Parth – Heated Glasshouse segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

[226] Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 13 – Geographic market where the Transaction would not significantly impede effective (Cucumber – Beit Alpha Parth – Heated Glasshouse)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [227]	Comments
Beit Alpha Parth – Heated Glasshouse	Netherlands	[…]	[20-30]%	[0-5]%	[4000-4500]	[100-200]	[…]	[…]	[…]	Modest combined market share; low increment in market share; small HHI Delta; one larger competitor and market leader

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[227] Excluding unidentified competitors under the "Other" category.

8.2.3.3. Beit Alpha Parth – Netted & Plastic House

(390) In the Beit Alpha Parth – Netted & Plastic House segment, the Commission has identified in the table below the geographic market where the Transaction would likely cause a significant impediment to effective competition.

Table 14 – Geographic market where the Transaction would likely cause a significant impediment to effective competition (Cucumber – Beit Alpha Parth – Netted & Plastic House)

Segment	Country	Market Size (`000 EUR)	Combined	Increment	HHI post merger	HHI Delta	Parties will be largest player (Yes/No)	Size of Parties compared to second largest competitor (number of times)	Number of remaining sizeable competitors (>5%)[228]	Comments
Beit Alpha Parth – Netted & Plastic House	Germany	[…]	[70-80]%	[10-20]%	[6000-6500]	[2000-2500]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in market share and HHI; more than six times larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[229]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[10-20]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[228] Excluding unidentified competitors under the "Other" category.

[229] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

8.2.3.4. Long Dutch Parth – Heated Glasshouse

(391) In Long Dutch Parth – Heated Glasshouse segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 15 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Cucumber – Long Dutch Parth – Heated Glasshouse)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[230]	Comments
Long Dutch Parth – Heated Glasshouse	Belgium	[…]	[40-50]%	[0-5]%	[4000-4500]	[100-200]	[…]	[…]	[…]	Market leader; highly concentrated market; one sizeable competitor with comparable market share; no evidence of recent entry; key segment for Bayer[231]
Long Dutch Parth – Heated Glasshouse	Finland	[…]	[40-50]%	[10-20]%	[4000-4500]	[900-1000]	[…]	[…]	[…]	Highly concentrated market; significant increase in market share and HHI; one sizeable competitor; no evidence of recent entry
Long Dutch Parth – Heated Glasshouse	Germany	[…]	[30-40]%	[0-5]%	[2500-3000]	[200-300]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in HHI; no evidence of recent entry
Long Dutch Parth – Heated Glasshouse	Netherlands	[…]	[30-40]%	[5-10]%	[3000-3500]	[300-400]	[…]	[…]	[…]	Highly concentrated market; significant increase in market share and HHI; one sizeable competitor with comparable market share; no evidence of recent entry
Long Dutch Parth – Heated Glasshouse	United Kingdom	[…]	[20-30]%	[0-5]%	[5000-5500]	[100-200]	[…]	[…]	[…]	Highly concentrated market; one sizeable competitor with similar market share; no evidence of recent entry; key segment for Bayer[232]
Combined size of markets with SIEC ('000 EUR)		[…]	[…]							
Segment size EEA ('000 EUR)[233]		[…]	[…]							
Combined size of markets with SIEC/Segment size EEA (%)		[70-80]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

230 Excluding unidentified competitors under the "Other" category.

231 […], BI 01639, slide 7.

232 […], BI 01639, slide 7.

233 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(392) The Commission notes that these geographic markets account together for around [70-80]% of the overall segment in the EEA.

8.2.3.5. Long Dutch Parth – Netted & Plastic House

(393) In the Long Dutch Parth – Netted & Plastic House segment, the Commission has identified in the table below the geographic market where the Transaction would likely cause a significant impediment to effective competition.

Table 16 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Cucumber – Long Dutch Parth – Netted & Plastic House)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[234]	Comments
Long Dutch Parth – Netted & Plastic House	Bulgaria	[…]	[30-40]%	[0-5]%	[2000-2500]	[100-200]	[…]	[…]	[…]	Market leader; concentrated market; one sizeable competitor with comparable market share; no evidence of recent entry; key segment for Bayer[235]
Long Dutch Parth – Netted & Plastic House	Spain	[…]	[40-50]%	[10-20]%	[3000-3500]	[1000-1100]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in market share and HHI; twice larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[236]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[70-80]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

234 Excluding unidentified competitors under the "Other" category.

235 […], BI 01639, slide 7.

236 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(394) The Commission notes that this geographic market accounts for around [70-80]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Long Dutch Parth – Netted & Plastic House segment in the EEA with a combined market share of around [40-50]%.[237]

8.2.3.6. Parth Slicer – Netted & Plastic House

(395) In the Parth Slicer – Netted & Plastic House segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

[237] Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 17 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Cucumber – Parth Slicer – Netted & Plastic House)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[238]	Comments
Parth Slicer – Netted & Plastic House	Italy	[…]	[70-80]%	[30-40]%	[5000-5500]	[2500-3000]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than seven times larger than second largest competitor; no evidence of recent entry
Parth Slicer – Netted & Plastic House	Portugal	[…]	[40-50]%	[5-10]%	[2500-3000]	[500-600]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in HHI; one sizeable competitor with comparable market share; no evidence of recent entry
Parth Slicer – Netted & Plastic House	Spain	[…]	[40-50]%	[5-10]%	[3500-4000]	[700-800]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in HHI; one sizeable competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]	[…]							
Segment size EEA ('000 EUR)[239]		[…]	[…]							
Combined size of markets with SIEC/Segment size EEA (%)		[90-100]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[238] Excluding unidentified competitors under the "Other" category.

[239] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(396) The Commission notes that these geographic markets account together for around [90-100]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Parth Slicer – Netted & Plastic House segment in the EEA with a combined market share of around [50-60]%.[240]

8.2.3.7. Parth Spined – Open Field

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(397) In the Parth Spined – Open Field segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

[240] Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 18 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Cucumber – Parth Spined – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [241]	Comments
Parth Spined – Open Field	Germany	[…]	[60-70]%	[0-5]%	[4500-5000]	[200-300]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; around twice larger than only sizeable competitor; no evidence of recent entry
Parth Spined – Open Field	Hungary	[…]	[90-100]%	[10-20]%	[10000-10500]	[2500-3000]	[…]	[…]	[…]	Strengthening of dominance; no other competitor
Parth Spined – Open Field	Lithuania	[…]	[50-60]%	[0-5]%	[4000-4500]	[200-300]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than twice larger than second largest competitor; no evidence of recent entry
Parth Spined – Open Field	Poland	[…]	[30-40]%	[10-20]%	[2500-3000]	[700-800]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in market share and HHI; one sizeable competitor with comparable market share; no evidence of recent entry
Parth Spined – Open Field	Portugal	[…]	[70-80]%	[0-5]%	[5500-6000]	[500-600]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than twelve times larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR) [242]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[70-80]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

241 Excluding unidentified competitors under the "Other" category.

242 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(398) The Commission notes that these geographic markets account together for around [70-80]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Parth Spined – Open Field segment in the EEA with a combined market share of around [40-50]%.[243]

(B) Geographic market where the Transaction would not significantly impede effective competition

(399) In the Parth Spined – Open Field segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

[243] Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 19 – Geographic market where the Transaction would not significantly impede effective competition (Cucumber – Parth Spined – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [244]	Comments
Parth Spined – Open Field	Slovakia	[…]	[20-30]%	[0-5]%	[3000-3500]	[0-100]	[…]	[…]	[…]	One larger competitor and market leader; two other identified competitors; low increment in market share; small HHI Delta

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[244] Excluding unidentified competitors under the "Other" category.

8.2.4. Conclusion

8.2.4.1. Markets where the Transaction would likely cause a significant impediment to effective competition

(400) For the reasons set out above, in particular in the relevant tables, and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to Cucumber seeds because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on competition, in the following segments and countries:

(a) In the American Slicer – Netted & Plastic House segment: Italy (CD);

(b) In the Beit Alpha Parth – Heated Glasshouse segment: Germany (SD), Poland;

(c) In the Beit Alpha Parth – Netted & Plastic House segment: Germany (SD);

(d) In the Long Dutch Parth – Heated Glasshouse segment: Belgium, Finland, Germany, Netherlands, United Kingdom;

(e) In the Long Dutch Parth – Netted & Plastic House segment: Bulgaria, Spain;

(f) In the Parth Slicer – Netted & Plastic Houses segment: Italy (CD), Portugal, Spain;

(g) In the Parth Spined – Open Field segment: Germany (SD), Hungary (SD), Lithuania (SD), Poland, Portugal (SD).

8.2.4.2. Market where the Transaction would not significantly impede effective competition

(401) On balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition in relation to Cucumber seeds in the following segment and country:

(a) In the Beit Alpha Parth – Heated Glasshouse segment: Netherlands;

(b) In the Parth Spined – Open Field segment: Slovakia.

9. EGGPLANT SEEDS

9.1. General

(402) Eggplant varieties are distinguished by shape and growing environment. Based on these considerations, the Notifying Party submits that the following is the most appropriate segmentation of the product market for eggplant seeds:

(a) Eggplant – Long – Heated Glasshouse;

(b) Eggplant – Long – Netted & Plastic House;

(c) Eggplant – Long – Open Field;

(d) Eggplant – Oval – Heated Glasshouse;

(e) Eggplant – Oval – Netted & Plastic House;

(f) Eggplant – Oval – Open Field; and

(g) Eggplant – Other (including rootstock and other breeds).

(403) The global sales of Eggplant seeds amounted to around EUR […] in 2016. At global level, Monsanto has a market share of [10-20]%. Bayer has a share of [0-5]%. The

other significant identified competitors are Fito ([10-20]%) and Rijk Zwaan ([10-20]%).

Figure 23 – Worldwide market shares in Eggplant seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 83, question 3(d) [Annex 83.1].

(404) The EEA is the second largest region worldwide for Eggplant seeds, with a value of around EUR […] in 2016.[245] In the EEA, Monsanto is the second largest player with a share of [10-20]%, alongside Fito ([10-20]%). Bayer has a share of [0-5]%. The other significant competitors are Rijk Zwaan ([20-30]%), Enza Zaden ([5-10]%) and Limagrain ([5-10]%).

Figure 24 – EEA market shares in Eggplant seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 87, question 5 [Annex 87.5].

(405) There are seven segments commercialised in the EEA, namely: Long – Heated Glasshouse, Long – Netted & Plastic House, Long – Open Field, Oval – Heated Glasshouse, Oval – Netted & Plastic House; Oval – Open Field and Other (including rootstock and other breeds). The three largest segments (namely, Oval – Netted & Plastic House, Other and Oval – Open Field) accounted together around [80-90]% of the sales of Eggplant seeds in the EEA in 2016.

Figure 25 – EEA segment sizes, Eggplant seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 94, question 1 [Annex 94.1].

(406) In the EEA, the Parties activities overlap in three segments, namely: Oval – Netted & Plastic House, Oval – Heated Glasshouse and Long – Netted & Plastic House. These three segments accounted together for around [50-60]% of the sales of Eggplant seeds in the EEA in 2016.

Figure 26 – Parties' overlaps in Eggplant seeds by segment (EEA, 2016)

[…]

Source: Parties' supplementary reply to the Commission's request for information RFI 34, question 1.

9.2. Competitive assessment

9.2.1. Criteria used in the Commission's assessment

(407) The Commission has used the filters set out in Section VIII.6.3 in order to identify segments where the Transaction would likely cause a significant impediment to effective competition.

(408) The Commission has also taken into account the fact that the Parties are important and close competitors as regards Eggplant seeds for the following reasons:

(a) First, the Parties are among the few players with significant geographic outreach;

[245] Parties' response to the Commission's request for information RFI 83, question 3(c) [Annex 83.1]; the Parties provided figures and data for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(b) Second, in the EU, the Parties are both present in the main segments and countries.

9.2.2. Arguments of the Parties

(409) The Notifying Party argued that the Transaction will not give rise to competition concerns in the markets for one or more of the following reasons:

(a) For certain countries, the Parties' sales overlap marginally at segment level, i.e. where one segment accounts for a significant part of one of the Parties' sales but for a more limited part of the other Parties' sales;[246]

(b) For certain countries, the increment in market share[247] is low;

(c) For certain countries, a significant number of competitors will remain in the market;[248]

(d) For certain countries, the combined market of the Parties has decreased in the growing region over the past three years.[249]

(410) The Commission has addressed these arguments, when relevant, in the following assessment, which has been done at segment level.

(411) The Commission notes that in its response to the Statement of Objections, the Notifying Party expressed its disagreement with the Commission's assessment of vegetable seeds in the Statement of Objections, without addressing specifically the Commission's assessment of Eggplant seeds.[250]

9.2.3. Relevant segments

(412) The Parties' combined share exceeds 20% and the Transaction thus results in affected markets in certain countries in the following segments: Long – Netted & Plastic House, Oval – Heated Glasshouse and Oval – Netted & Plastic House.

9.2.3.1. Long – Netted & Plastic House

(413) In the Long – Netted & Plastic House segment, the Commission has identified in the table below the geographic market where the Transaction would likely cause a significant impediment to effective competition.

246 Form CO, part 8.6, [country].
247 Form CO, part 8.6, [country].
248 Form CO, part 8.6, [countries].
249 Form CO, part 8.6, [country].
250 Notifying Party's response to the Statement of Objections, paragraphs 156-173.

Table 20 – Geographic market where the Transaction would likely cause a significant impediment to effective competition (Eggplant – Long – Netted & Plastic House)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [251]	Comments
Long – Netted & Plastic House	Italy	[…]	[40-50]%	[10-20]%	[3500-4000]	[900-1000]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in market share and HHI; one sizeable competitor with comparable market share
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR) [252]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[50-60]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[251] Excluding unidentified competitors under the "Other" category.

[252] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(414) The Commission notes that this geographic market accounts for around [50-60]% of the overall segment in the EEA.

9.2.3.2. Oval – Heated Glasshouse

(415) In the Oval – Heated Glasshouse segment, the Commission has identified in the table below the affected geographic markets where the Transaction would not significantly impede effective competition.

Table 21 – Geographic markets where the Transaction would not significantly impede effective competition (Eggplant – Oval – Heated Glasshouse)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [253]	Comments
Oval – Heated Glasshouse	France	[…]	[20-30]%	[0-5]%	[3500-4000]	[0-100]	[…]	[…]	[…]	One larger competitor and market leader; two other sizeable competitors; low increment in market share; small HHI Delta; the Parties stopped their breeding programmes
Oval – Heated Glasshouse	Germany	[…]	[30-40]%	[0-5]%	[2000-2500]	[100-200]	[…]	[…]	[…]	Four sizeable competitors; low increment in market share; small HHI Delta; the Parties stopped their breeding programmes

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[253] Excluding unidentified competitors under the "Other" category.

9.2.3.3. Oval – Netted & Plastic House

(416) In the Oval – Netted & Plastic House segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

Table 22 – Geographic market where the Transaction would not significantly impede effective competition (Eggplant – Oval – Netted & Plastic House)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [254]	Comments
Oval – Netted & Plastic House	Italy	[…]	[60-70]%	[0-5]%	[4500-5000]	[0-100]	[…]	[…]	[…]	Low increment in market share; small HHI Delta; the Parties stopped their breeding programmes

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[254] Excluding unidentified competitors under the "Other" category.

9.2.4. Conclusion

9.2.4.1. Market where the Transaction would likely cause a significant impediment to effective competition

(417) For the reasons set out above, in particular in the relevant tables, and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to Eggplant seeds because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on competition, in the following segment and country:

(a) In the Long – Netted & Plastic House segment: Italy.

9.2.4.2. Markets where the Transaction would not significantly impede to effective competition

(418) On balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition in relation to Eggplant seeds in the following segments and countries:

(a) In the Oval – Heated Glasshouse segment: France, Germany;

(b) In the Oval – Netted & Plastic House segment: Italy.

10. GARDEN BEAN SEEDS

10.1. General

(419) Garden Bean seeds sold in the EU are essentially open-pollinated. Garden bean varieties are distinguished by their intended use by customers. Based on these considerations, the Notifying Party submits that the following is the most appropriate segmentation of the product market for Garden Bean seeds:

(a) Garden Bean – Fresh; and

(b) Garden Bean – Processing.

(420) The global sales of Garden Bean seeds amounted to around EUR […] in 2016. At global level, Monsanto has a share of [20-30]%. Bayer has a share of around [0-5]%. The other identified significant competitors are Limagrain ([10-20]%) and Syngenta ([10-20]%).

Figure 27 – Worldwide market shares in Garden Bean seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 83, question 3(d) [Annex 83.1].

(421) The EEA is the second largest region worldwide for Garden Bean seeds, with a value of around EUR […] in 2016.[255] In the EEA, Monsanto is the largest player with a share of [30-40]%, Bayer has a share of [5-10]%. The other significant competitors are Pop Vriend ([10-20]%), Holland Select ([5-10]%), Limagrain ([5-10]%) and Syngenta ([5-10]%).

Figure 28 – EEA market shares in Garden Bean seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 87, question 5 [Annex 87.5].

(422) Both the Processing and Fresh segments are commercialised in the EEA. The Processing segment accounted for around [70-80]% of the sales of Garden Bean seeds in the EEA in 2016.

Figure 29 – EEA segment sizes, Garden Bean seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 94, question 1 [Annex 94.1].

(423) In the EEA, the Parties' activities overlap in the Processing segment.

Figure 30 – Parties' overlaps in Garden Bean by segment (EEA, 2016)

[…]

Source: Parties' supplementary reply to the Commission's request for information RFI 34, question 1.

10.2. Competitive assessment

10.2.1. Criteria used in the Commission's assessment

(424) The Commission has used the filters set out in Section VIII.6.3 in order to identify segments where the Transaction would likely cause a significant impediment to effective competition.

(425) The Commission has also taken into account the fact that the Parties are important and close competitors as regards Garden Bean seeds for the following reasons:

(a) First, the Parties are among the few players with significant geographic outreach;

(b) Second, in the EU, the Parties are both present in the main segment and countries.

10.2.2. Arguments of the Parties

(426) The Notifying Party argued that the Transaction will not give rise to competition concerns in the markets for one or more of the following reasons:

(a) For certain countries, the Parties' sales overlap marginally at segment level, i.e. where one segment accounts for a significant part of one of the Parties' sales but for a more limited part of the other Parties' sales;[256]

(b) For certain countries, the increment in market share[257] is low;

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[255] Parties' response to the Commission's request for information RFI 83, question 3(c) [Annex 83.1]; the Parties provided figures and data for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

[256] Form CO, part 8.2, [country].

(c) For certain countries, the Parties' combined market share at crop/country level has been decreasing over the past three years;[258]

(d) For certain countries, a significant number of competitors will remain in the market;[259]

(e) For certain countries, other competitors present in neighbouring countries may easily enter or expand in the market concerned.[260]

(427) The Commission has addressed these arguments, when relevant, in the following assessment, which has been done at segment level.

(428) The Commission notes that in its response to the Statement of Objections, the Notifying Party expressed its disagreement with the Commission's assessment of vegetable seeds in the Statement of Objections, without addressing specifically the Commission's assessment of Garden Bean seeds.[261]

10.2.3. Relevant segment

(429) The Parties' combined share exceeds 20% and the Transaction thus results in affected markets in certain countries in the following segment: Processing.

10.2.3.1. Processing.

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(430) In the Processing segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

257 Form CO, part 8.2, [country].
258 Form CO, part 8.2, [country].
259 Form CO, part 8.2, [countries].
260 Form CO, part 8.2, [countries].
261 Notifying Party's response to the Statement of Objections, paragraphs 156-173.

Table 23 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Garden Bean – Processing)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [262]	Comments
Processing	Belgium	[…]	[40-50]%	[20-30]%	[2500-3000]	[1000-1100]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in market share and HHI; stable individual market share at segment level over the past three years; more than three times larger than second largest competitor; no evidence of recent entry
Processing	Poland	[…]	[70-80]%	[0-5]%	[6500-7000]	[200-300]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; no sizeable competitor; no evidence of recent entry
Processing	United Kingdom	[…]	[50-60]%	[0-5]%	[4500-5000]	[300-400]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; one sizeable competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR) [263]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[10-20]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[262] Excluding unidentified competitors under the "Other" category.

[263] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(B) Geographic markets where the Transaction would not significantly impede effective competition

(431) In the Processing segment, the Commission has identified in the table below the affected geographic markets where the Transaction would not significantly impede effective competition.

Table 24 – Geographic markets where the Transaction would not significantly impede effective competition (Garden Bean – Processing)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [264]	Comments
Processing	France	[…]	[30-40]%	[5-10]%	[1500-2000]	[400-500]	[…]	[…]	[…]	Six sizeable competitors; Bayer stopped its breeding programme
Processing	Germany	[…]	[30-40]%	[5-10]%	[1500-2000]	[400-500]	[…]	[…]	[…]	Five sizeable competitors; Bayer stopped its breeding programme
Processing	Italy	[…]	[20-30]%	[0-5]%	[1500-2000]	[0-100]	[…]	[…]	[…]	Modest combined market share; low increment in market share; small HHI Delta; one larger competitor and market leader; three other sizeable competitors; Bayer stopped its breeding programme
Processing	Spain	[…]	[30-40]%	[0-5]%	[1500-2000]	[0-100]	[…]	[…]	[…]	Four sizeable competitors; low increment in market share; small HHI Delta; Bayer stopped its breeding programme

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[264] Excluding unidentified competitors under the "Other" category.

10.2.4. Conclusion

10.2.4.1. Markets where the Transaction would likely cause a significant impediment to effective competition

(432) For the reasons set out above, in particular in the relevant table, and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to Garden Bean seeds because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on competition, in the following segment and countries:

(a) In the Processing segment: Belgium, Poland (SD), United Kingdom (SD).

10.2.4.2. Markets where the Transaction would not significantly impede effective competition

(433) On balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition in relation to Garden Bean seeds in the following segment and countries:

(a) In the Processing segment: France, Germany, Italy, Spain.

11. HOT PEPPER SEEDS

11.1. General

(434) Hot Pepper seeds are differentiated on the basis of the variety of grown vegetable they produce. Based on these considerations, the Notifying Party submits that the following is the most appropriate segmentation of the product market for Hot Pepper seeds:

(a) Hot Pepper – Anaheim;

(b) Hot Pepper – Cayenne

(c) Hot Pepper – Hungarian Yellow Wax;

(d) Hot Pepper – Jalapeno; and

(e) Hot Pepper – Other Hot Pepper (such as Paprika and other specialities).

(435) The global sales of Hot Pepper seeds amounted to around EUR […] in 2016. At global level, Monsanto has a share of [10-20]% and Bayer has a share of [5-10]%.

Figure 31 – Worldwide market shares in Hot Pepper (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 83, question 3(d) [Annex 83.1].

(436) The sales of Hot Pepper seeds in the EEA amounted to around EUR […] in 2016.[265] In the EEA, Monsanto is the […] largest player with a share of [10-20]%, after Duna R Kft ([10-20]%), Syngenta ([10-20]%) and United Genetics ([10-20]%). Bayer has a share of around [0-5]%.

Figure 32 – EEA market shares in Hot Pepper seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 87, question 5 [Annex 87.5].

(437) There are five segments commercialised in the EEA, namely: Other, Cayenne, Anaheim, Jalapeno and Hungarian Yellow Wax. The Other segment accounted alone for around [50-60]% of the sales of Hot Pepper seeds in the EEA in 2016.

Figure 33 – EEA segment sizes, Hot Pepper seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 94, question 1 [Annex 94.1].

(438) In the EEA, the Parties' activities overlap in all segments, except Anaheim. The overlapping segments accounted for around [70-80]% of the sales of Hot Pepper seeds in the EEA in 2016.

Figure 34 – Parties' overlaps in Hot Pepper seeds by segment (EEA, 2016)

[…]

Source: Parties' supplementary reply to the Commission's request for information RFI 34, question 1.

11.2. Competitive assessment

11.2.1. Criteria used in the Commission's assessment

(439) The Commission has used the filters set out in Section VIII.6.3 in order to identify segments where the Transaction would likely cause a significant impediment to effective competition.

(440) The Commission has also taken into account the fact that the Parties are important and close competitors as regards seeds for the following reasons:

(a) First, the Parties are among the few players with significant geographic outreach;

(b) Second, in the EU, the Parties are both present in the main segment and countries;

(c) […].[266]

[265] The Parties provided figures and data for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

[266] BI 01630, page 4; MI 05380, slide 5.

11.2.2. Arguments of the Parties

(441) In respect of Portugal, there was no overlap either at crop or segment level in 2015. Therefore, the Notifying Party did not explain why the Transaction would not give rise to competition concerns in this geographic market based on data for 2015. As regards France, the Notifying Party argued that the Transaction will not give rise to competition concerns for the following reasons:

(a) The increments in market share[267] and HHI[268] are low;

(b) The Parties' combined market share at crop/country level has been decreasing over the past year.[269]

(c) The relatively small size of the market enhances volatility in percentage market caused by small movements in sales.[270]

(d) A significant number of competitors will remain in the market;[271]

(e) For certain countries, other competitors present in neighbouring countries may easily enter or expand in the market concerned.[272]

(442) The Commission notes that in its response to the Statement of Objections, the Notifying Party expressed its disagreement with the Commission's assessment of vegetable seeds in the Statement of Objections, without addressing specifically the Commission's assessment of Hot Pepper seeds.[273]

11.2.3. Relevant segments

(443) The Parties' combined share exceeds 20% in certain geographic markets in the following segments: Cayenne and Other.

11.2.3.1. Cayenne

(444) In the Cayenne segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

267 Form CO, part 8.1.2, paragraph 68.
268 Form CO, part 8.1.2, paragraphs 71-72.
269 Form CO, part 8.1.2, paragraph 69.
270 Form CO, part 8.1.2, paragraph 70.
271 Form CO, part 8.1.2, paragraph 73.
272 Form CO, part 8.1.2, paragraph 74-75.
273 Notifying Party's response to the Statement of Objections, paragraphs 156-173.

Table 25 – Geographic market where the Transaction would not significantly impede effective competition (Hot Pepper – Cayenne)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [274]	Comments
Cayenne	France	[…]	[30-40]%	[0-5]%	[2000-2500]	[100-200]	[…]	[…]	[…]	Four sizeable competitors; low increment in market share and HHI Delta

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[274] Excluding unidentified competitors under the "Other" category.

11.2.3.2. Other

(445) In the Other segment, the Commission has identified in the table below the geographic market where the Transaction would likely cause a significant impediment to effective competition.

Table 26 – Geographic market where the Transaction would likely cause a significant impediment to effective competition (Hot Pepper – Other)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [275]	Comments
Other	Portugal	[…]	[50-60]%	[0-5]%	[3000-3500]	[300-400]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than five times larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR) [276]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[0-5]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[275] Excluding unidentified competitors under the "Other" category.

[276] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

11.2.4. Conclusion

11.2.4.1. Market where the Transaction would likely cause a significant impediment to effective competition

(446) For the reasons set out above, in particular in the relevant table, and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to Hot Pepper seeds because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on competition, in the following segment and country:

(a) In the Other segment: Portugal (SD).

11.2.4.2. Market where the Transaction would not significantly impede effective competition

(447) On balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition in relation to Hot Pepper seeds in the following segment and country:

(a) In the Cayenne segment: France.

12. LEEK SEEDS

12.1. General

(448) Leek seeds are differentiated on the basis of seed type (hybrid or open-pollinated) and the growing season most suited to particular Leek seeds. Based on these considerations, the Notifying Party submits that the following is the most appropriate segmentation of the product market for Leek seeds:

(a) Leek – Hybrid – Summer;

(b) Leek – Hybrid – Autumn (Early and Late);

(c) Leek – Hybrid – Winter;

(d) Leek – Open Pollinated – Summer;

(e) Leek – Open Pollinated – Autumn (Early and Late); and

(f) Leek – Open Pollinated – Winter.

(449) The global sales of Leek seeds amounted to around EUR […] in 2016. At global level, Bayer is the clear leading player with a share of around [70-80]%. Monsanto is the […] largest player with a share of around [0-5]%, preceded by Bejo ([5-10]%).

Figure 35 – Worldwide market shares in Leek seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 83, question 3(d) [Annex 83.1].

(450) The EEA is the largest market worldwide for Leek seeds, with a value of around EUR […] in 2016.[277] In the EEA, Bayer is the clear leading player with a share of around [70-80]%. Bejo is the second largest player with a share of [10-20]%, followed Monsanto ([0-5]%) and Enza Zaden ([0-5]%).

Figure 36 – EEA market shares in Leek seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 87, question 5 [Annex 87.5].

(451) There are six segments commercialised in the EEA, namely: Hybrid – Winter, Hybrid – Autumn (Early And Late), Hybrid – Summer, Open Pollinated – Autumn (Early And Late), Open Pollinated – Winter, Open Pollinated – Summer. The three Hybrid segments accounted for [90-100]% of the sale of Leek seeds in the EEA in 2016.

Figure 37 – EEA segment sizes, Leek seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 94, question 1 [Annex 94.1].

(452) In the EEA, the Parties' activities overlap in three segments, namely: Hybrid – Winter, Hybrid – Autumn (Early And Late), Hybrid – Summer. These three segments accounted together for around [90-100]% of the sales of Leek seeds in the EEA in 2016.

Figure 38 – Parties' overlaps in Leek seeds by segment (EEA, 2016)

[…]

Source: Parties' supplementary reply to the Commission's request for information RFI 34, question 1.

12.2. Competitive assessment

12.2.1. Criteria used in the Commission's assessment

(453) The Commission has used the filters set out in Section VIII.6.3 in order to identify segments where the Transaction would likely cause a significant impediment to effective competition.

(454) The Commission has also taken into account the fact that the Parties are important and close competitors as regards Leek seeds for the following reasons:

(a) First, the Parties are among the few players with significant geographic outreach;

(b) Second, in the EU, the Parties are both present in the main segment and countries.

(c) […].[278]

[277] Parties' response to the Commission's request for information RFI 83, question 3(c) [Annex 83.1]; the Parties provided figures and data for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

[278] BI 01626, pages 4-5.

12.2.2. Arguments of the Parties

(455) The Notifying Party argued that the Transaction will not give rise to competition concerns in the markets for one or more of the following reasons:

(a) For certain countries, the increment in market share[279] and/or the increase in HHI is low;

(b) For certain countries, the Parties' sales overlap marginally at segment level, i.e. where one segment accounts for a significant part of one of the Parties' sales but for a more limited part of the other Parties' sales;[280]

(c) For certain countries, the Parties' combined market share at crop/country level has been decreasing over the past three years;[281]

(d) For certain countries, the relatively small size of markets enhances volatility in percentage market caused by small movements in sales;[282]

(e) For certain countries, a significant number of competitors will remain in the market;[283]

(f) For certain countries, other competitors present in neighbouring countries may easily enter or expand in the market concerned.[284]

(456) The Commission has addressed these arguments, when relevant, in the following assessment, which has been done at segment level.

(457) The Commission notes that in its response to the Statement of Objections, the Notifying Party expressed its disagreement with the Commission's assessment of vegetable seeds in the Statement of Objections, without addressing specifically the Commission's assessment of Leek seeds.[285]

12.2.3. Relevant segments

(458) The Parties' combined share exceeds 20% and the Transaction thus results in affected markets in certain countries in the following segments: Hybrid – Autumn (Early and Late), Hybrid – Summer and Hybrid – Winter.

12.2.3.1. Hybrid – Autumn (Early and Late)

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(459) In the Hybrid – Autumn (Early and Late) segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

279 Form CO, part 8.7, [country].
280 Form CO, part 8.7, [countries].
281 Form CO, part 8.7, [country].
282 Form CO, part 8.7, [countries].
283 Form CO, part 8.7, [countries].
284 Form CO, part 8.7, [countries].
285 Notifying Party's response to the Statement of Objections, paragraphs 156-173.

Table 27 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Leek – Hybrid – Autumn (Early and Late)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[286]	Comments
Hybrid – Autumn (Early and Late)	Belgium	[…]	[70-80]%	[0-5]%	[5000-5500]	[200-300]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; around nine times larger than only sizeable competitor; no evidence of recent entry
Hybrid – Autumn (Early and Late)	France	[…]	[70-80]%	[5-10]%	[5500-6000]	[700-800]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; around six times larger than second largest competitor; no evidence of recent entry
Hybrid – Autumn (Early and Late)	Germany	[…]	[90-100]%	[10-20]%	[8000-8500]	[2000-2500]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in market share and HHI; no sizeable competitor; no evidence of recent entry
Hybrid – Autumn (Early and Late)	Netherlands	[…]	[80-90]%	[0-5]%	[7500-8000]	[800-900]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than twelve times larger than second largest competitor; no evidence of recent entry
Hybrid – Autumn (Early and Late)	Poland	[…]	[60-70]%	[0-5]%	[4000-4500]	[0-100]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; more than three times larger than second largest competitor; no evidence of recent entry; key segment for Bayer[287]

[286] Excluding unidentified competitors under the "Other" category.

[287] […], BI 01641, slide 5.

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[286]	Comments
Hybrid – Autumn (Early and Late)	Spain	[…]	[60-70]%	[5-10]%	[4500-5000]	[800-900]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than eight times larger than second largest competitor; no evidence of recent entry
Hybrid – Autumn (Early and Late)	Sweden	[…]	[50-60]%	[5-10]%	[3500-4000]	[900-1000]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in HHI; more than three times larger than second largest competitor
Hybrid – Autumn (Early and Late)	United Kingdom	[…]	[70-80]%	[5-10]%	[6000-6500]	[900-1000]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than twelve times larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[288]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[80-90]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[288] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(460) The Commission notes that these markets accounted together for around [80-90]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Hybrid – Autumn (Early and Late) segment in the EEA with a combined market share of around [70-80]%.[289]

(B) Geographic market where the Transaction would not significantly impede effective competition

(461) In the Hybrid – Autumn (Early and Late) segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

[289] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 28 – Geographic market where the Transaction would not significantly impede effective competition (Leek – Hybrid – Autumn (Early and Late)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[290]	Comments
Hybrid – Autumn (Early and Late)	Italy	[…]	[20-30]%	[0-5]%	[3000-3500]	[0-100]	[…]	[…]	[…]	One larger competitor and market leader; low increment in market share; small HHI Delta

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[290] Excluding unidentified competitors under the "Other" category.

12.2.3.2. Hybrid – Summer

(462) In the Hybrid – Summer segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 29 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Leek – Hybrid – Summer)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [291]	Comments
Hybrid – Summer	Belgium	[…]	[50-60]%	[0-5]%	[5000-5500]	[100-200]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; one sizeable competitor; no evidence of recent entry
Hybrid – Summer	Finland	[…]	[70-80]%	[10-20]%	[6000-6500]	[2000-2500]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in market share and HHI; more than five times larger than second largest competitor; no evidence of recent entry
Hybrid – Summer	France	[…]	[80-90]%	[5-10]%	[7500-8000]	[1000-1100]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than eight times larger than second largest competitor; no evidence of recent entry
Hybrid – Summer	Germany	[…]	[70-80]%	[0-5]%	[5500-6000]	[0-100]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; more than twelve times larger than second largest competitor; no evidence of recent entry; key segment and country for Bayer[292]
Hybrid – Summer	Italy	[…]	[90-100]%	[5-10]%	[8500-9000]	[800-900]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; no sizeable competitor; no evidence of recent entry
Hybrid – Summer	Lithuania	[…]	[40-50]%	[10-20]%	[3000-3500]	[1000-1100]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in market share and HHI; more than twice larger than second largest competitor; no evidence of recent entry
Hybrid – Summer	Netherlands	[…]	[70-80]%	[0-5]%	[6000-6500]	[100-200]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; more than six times larger than second largest competitor; no evidence of recent entry; key segment and country for Bayer[293]

[291] Excluding unidentified competitors under the "Other" category.

[292] […], BI 01641, slides 5 and 7.

[293] […], BI 01641, slides 5 and 7.

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[291]	Comments
Hybrid – Summer	Poland	[…]	[70-80]%	[0-5]%	[6000-6500]	[500-600]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than seven times larger than second largest competitor; no evidence of recent entry
Hybrid – Summer	Portugal	[…]	[40-50]%	[0-5]%	[3000-3500]	[0-100]	[…]	[…]	[…]	Market leader, close to dominant, highly concentrated market; more than twice larger than second largest competitor; no evidence of recent entry; key segment for Bayer[294]
Hybrid – Summer	Spain	[…]	[80-90]%	[5-10]%	[7500-8000]	[1100-1200]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; no sizeable competitor; no evidence of recent entry
Hybrid – Summer	United Kingdom	[…]	[80-90]%	[10-20]%	[6500-7000]	[1500-2000]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in market share and HHI; more than thirteen times larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[295]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[90-100]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[294] […], slide 5.

[295] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(463) The Commission notes that these geographic markets accounted together for around [90-100]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Hybrid – Summer segment in the EEA with a combined market share of around [70-80]%.[296]

12.2.3.3. Hybrid – Winter

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(464) In the Hybrid – Winter segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

[296] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 30 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Leek – Hybrid – Winter)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[297]	Comments
Hybrid – Winter	Belgium	[…]	[70-80]%	[0-5]%	[5500-6000]	[0-100]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; more than thirteen times larger than second largest competitor; no evidence of recent entry; key segment and country for Bayer[298]
Hybrid – Winter	France	[…]	[60-70]%	[0-5]%	[4000-4500]	[0-100]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; more than three times larger than second largest competitor; no evidence of recent entry; key segment and country for Bayer[299]
Hybrid – Winter	Germany	[…]	[50-60]%	[0-5]%	[3500-4000]	[500-600]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than four times larger than second largest competitor; no evidence of recent entry
Hybrid – Winter	Netherlands	[…]	[80-90]%	[0-5]%	[6500-7000]	[300-400]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; no sizeable competitor; no evidence of recent entry

297 Excluding unidentified competitors under the "Other" category.
298 […], BI 01641, slides 5 and 7.
299 […], BI 01641, slides 5 and 7.

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [297]	Comments
Hybrid – Winter	Poland	[…]	[50-60]%	[0-5]%	[4000-4500]	[0-100]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; more than twice larger than second largest competitor; no evidence of recent entry; key segment and country for Bayer[300]
Hybrid – Winter	United Kingdom	[…]	[70-80]%	[5-10]%	[6000-6500]	[1000-1100]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than thirteen times larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[301]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[90-100]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[300] […], BI 01641, slides 5 and 7.

[301] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(465) The Commission notes that these geographic markets accounted together for around [90-100]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Hybrid – Winter segment in the EEA with a combined market share of around [70-80]%.

(B) Geographic markets where the Transaction would not significantly impede effective competition

(466) In the Hybrid – Winter segment, the Commission has identified in the table below the affected geographic markets where the Transaction would not significantly impede effective competition.

Table 31 – Geographic markets where the Transaction would not significantly impede effective competition (Leek – Hybrid – Winter)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [302]	Comments
Hybrid – Winter	Austria	[…]	[20-30]%	[0-5]%	[2000-2500]	[0-100]	[…]	[…]	[…]	Four sizeable competitors; low increment in market share; small HHI Delta
Hybrid – Winter	Italy	[…]	[30-40]%	[0-5]%	[3000-3500]	[0-100]	[…]	[…]	[…]	One larger competitor and market leader; two other sizeable competitors; low increment in market share; small HHI Delta

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[302] Excluding unidentified competitors under the "Other" category.

12.2.4. Conclusion

12.2.4.1. Markets where the Transaction would likely cause a significant impediment to effective competition

(467) For the reasons set out above, in particular in the relevant tables, and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to Leek seeds because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on competition, in the following segments and countries:

(a) In the Hybrid – Autumn (Early and Late) segment: Belgium (SD), France (SD), Germany (SD), Netherlands (SD), Poland (SD), Spain (SD), Sweden (CD), United Kingdom (SD);

(b) In the Hybrid – Summer segment: Belgium (SD), Finland (SD), France (SD), Germany (SD), Italy (SD), Lithuania, Netherlands (SD), Poland, Portugal (SD), Spain (SD), United Kingdom (SD);

(c) In the Hybrid – Winter segment: Belgium (SD), France (SD), Germany (SD), Netherlands (SD), Poland (SD), United Kingdom (SD).

12.2.4.2. Markets where the Transaction would not significantly impede effective competition

(468) For the reasons set out above, in particular in the relevant tables, and on the basis of the data made available during the investigation, the Commission considers that the Transaction would not significantly impede effective competition in relation to Leek seeds in the following segments and countries:

(a) In the Hybrid – Autumn (Early and Late) segment: Italy;

(b) In the Hybrid – Winter segment: Austria, Italy.

13. LETTUCE SEEDS

13.1. General

(469) Lettuce seeds are differentiated on the basis of the variety they produce, and the growing environment in which they are bred to thrive most effectively. Based on these considerations, the Notifying Party submits that the following is the most appropriate segmentation of the product market for Lettuce seeds:

(a) Lettuce – Baby Leaf – Heated Glasshouse;

(b) Lettuce – Baby Leaf – Open Field;

(c) Lettuce – Batavia – Heated Glasshouse;

(d) Lettuce – Batavia – Netted & Plastic House;

(e) Lettuce – Batavia – Open Field;

(f) Lettuce – Butterhead – Heated Glasshouse;

(g) Lettuce – Butterhead – Netted & Plastic House;

(h) Lettuce – Butterhead – Open Field;

(i) Lettuce – Crisphead – Heated Glasshouse;

(j) Lettuce – Crisphead – Netted & Plastic House;

(k) Lettuce – Crisphead – Open Field;

(l) Lettuce – Frillice – Netted & Plastic House;

(m) Lettuce – Frillice – Open Field;

(n) Lettuce – Lollo – Heated Glasshouse;

(o) Lettuce – Lollo – Netted & Plastic House;

(p) Lettuce – Lollo – Open Field;

(q) Lettuce – Multileaf – Heated Glasshouse;

(r) Lettuce – Multileaf – Netted & Plastic House;

(s) Lettuce – Multileaf – Open Field;

(t) Lettuce – Oakleaf – Heated Glasshouse;

(u) Lettuce – Oakleaf – Netted & Plastic House;

(v) Lettuce – Oakleaf – Open Field;

(w) Lettuce – Other Lettuce – Heated Glasshouse;

(x) Lettuce – Other Lettuce – Netted & Plastic House;

(y) Lettuce – Other Lettuce – Open Field;

(z) Lettuce – Romaine – Heated Glasshouse;

(aa) Lettuce – Romaine – Netted & Plastic House; and

(bb) Lettuce – Romaine – Open Field.

(470) The global sales of Lettuce seeds amounted to around EUR […] in 2016. At global level, Bayer has a share of around [5-10]%, immediately followed by Monsanto with a share of [5-10]%. The other main players are Rijk Zwaan ([30-40]%), Enza Zaden ([20-30]%) and Syngenta ([5-10]%).

Figure 39 – Worldwide market shares in Lettuce seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 83, question 3(d) [Annex 83.1].

(471) The EEA is the largest region worldwide for Lettuce seeds, with a value of around EUR […] in 2016.[303] In the EEA, Bayer is the […] largest player with a share of [10-20]%, after Rijk Zwann ([30-40]%) and Enza Zaden ([20-30]%). Monsanto has a share of [5-10]%. The other main competitors are Limagrain ([5-10]%) and Syngenta ([5-10]%).

Figure 40 – EEA market shares in Lettuce seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 87, question 5 [Annex 87.5].

(472) There are 24 segments commercialised in the EEA. The Crisphead – Open Field, Romaine – Open Field, Butterhead – Open Field, Batavia – Open Field and Baby

303 Parties' response to the Commission's request for information RFI 83, question 3(c) [Annex 83.1]; the Parties provided figures and data for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

Leaf – Open Field accounted together for around [60-70]% of the sales of Lettuce seeds in the EEA in 2016.

Figure 41 – EEA segment sizes, Lettuce seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 94, question 1 [Annex 94.1].

(473) In the EEA, the Parties' activities overlap in nine segments, namely: Crisphead – Open Field, Batavia – Open Field, Butterhead – Open Field, Butterhead – Netted & Plastic House, Lollo – Open Field, Batavia – Netted & Plastic House, Oakleaf – Open Field, Baby Leaf – Open Field and Romaine – Open Field. These segments accounted together for around [80-90]% of the sales of Lettuce seeds in the EEA in 2016.

Figure 42 – Parties' overlaps in Lettuce seeds by segment (EEA, 2016)

[…]

Source: Parties' supplementary reply to the Commission's request for information RFI 34, question 1.[304]

13.2. Competitive assessment

13.2.1. Criteria used in the Commission's assessment

(474) The Commission has used the filters set out in Section VIII.6.3 in order to identify segments where the Transaction would likely cause a significant impediment to effective competition.

(475) The Commission has also taken into account the fact that the Parties are important and close competitors as regards Lettuce seeds for the following reasons:

(a) Bayer and Monsanto are among the few players which have both a global and EU presence;

(b) In the EU, the Parties are both present in the main segments and countries;

(c) […].[305]

13.2.2. Arguments of the Parties

(476) The Notifying Party argued that the Transaction will not give rise to competition concerns in the markets for one or more of the following reasons:

(a) For certain countries, there is no affected market at crop/country level;[306]

(b) For certain countries, the Parties' sales overlap marginally at segment level, i.e. where one segment accounts for a significant part of one of the Parties' sales but for a more limited part of the other Parties' sales;[307]

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304 Colours correspond to the colour coding provided by the Commission in its request for information RFI 34, as follows:
(a) "Green flag" for markets with combined share below 20%; or, HHI post-merger below 1000; or, HHI post-merger between 1000 and 2000 and delta below 250, provided Parties' combined share is below 50%; or, HHI post-merger above 2000 and delta below 150, provided Parties' combined share is below 50%;
(b) "Red flag" for markets where the combined share is equal to or above 50% and the increment is equal to or above 1%; or, markets where the HHI is above 2500 and the delta is above 200.
(c) "Yellow flag" for markets that are neither red nor green.

305 BI 01633, page 11.

306 Form CO, part 8.8, [country].

(c) For certain countries, the Parties' combined market at crop level is less than 25%;[308]

(d) For certain countries, the increment in market share[309] and/or the increase in HHI is low;[310]

(e) For certain countries, the Parties' combined market share at crop/country level has been decreasing over the past three years;[311]

(f) For certain countries, a significant number of competitors will remain in the market;[312]

(g) For certain countries, other competitors present in neighbouring countries may easily enter or expand in the market concerned;[313]

(h) For certain countries, the relatively small size of markets enhances volatility in percentage market caused by small movements in sales.[314]

(477) The Commission has addressed these arguments, when relevant, in the following assessment, which has been done at segment level.

(478) The Commission notes that in its response to the Statement of Objections, the Notifying Party expressed its disagreement with the Commission's assessment of vegetable seeds in the Statement of Objections, without addressing specifically the Commission's assessment of Lettuce seeds.[315]

13.2.3. Relevant segments

(479) The Parties' combined share exceeds 20% and the Transaction thus results in affected markets in certain countries in the following segments: Batavia – Open Field, Butterhead – Open Field and Crisphead – Open Field.

13.2.3.1. Batavia – Open Field

(480) In the Batavia – Open Field segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

307 Form CO, part 8.8, [country].
308 Form CO, part 8.8, [countries].
309 Form CO, part 8.8, [countries].
310 Form CO, part 8.8, [countries].
311 Form CO, part 8.8, [country].
312 Form CO, part 8.8, [countries].
313 Form CO, part 8.8, [countries].
314 Form CO, part 8.8, [country].
315 Notifying Party's response to the Statement of Objections, paragraphs 156-173.

Table 32 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Lettuce – Batavia – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[316]	Comments
Batavia – Open Field	Netherlands	[…]	[30-40]%	[10-20]%	[2500-3000]	[600-700]	[…]	[…]	[…]	Market leader; concentrated market; significant increase in market share and HHI; one sizeable competitor with comparable market share; no evidence of recent entry
Batavia – Open Field	United Kingdom	[…]	[90-100]%	[30-40]%	[9500-10000]	[4000-4500]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in market share and HHI; no sizeable competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[317]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[0-5]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

316 Excluding unidentified competitors under the "Other" category.

317 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

13.2.3.2. Butterhead – Open Field

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(481) In the Butterhead – Open Field segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 33 – Geographic market where the Transaction would likely cause a significant impediment to effective competition (Lettuce – Butterhead – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[318]	Comments
Butterhead – Open Field	Romania	[…]	[30-40]%	[10-20]%	[4500-5000]	[400-500]	[…]	[…]	[…]	Highly concentrated market; significant increase in market share HHI; one sizeable competitor; no evidence of recent entry

Combined size of markets with SIEC ('000 EUR)	[…]
Segment size EEA ('000 EUR)[319]	[…]
Combined size of markets with SIEC/Segment size EEA (%)	[0-5]%

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[318] Excluding unidentified competitors under the "Other" category.

[319] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(B) Geographic market where the Transaction would not significantly impede effective competition

(482) In the Butterhead – Open Field segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

Table 34 – Geographic market where the Transaction would not significantly impede effective competition (Lettuce – Butterhead – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[320]	Comments
Butterhead – Open Field	Netherlands	[…]	[20-30]%	[0-5]%	[3000-3500]	[0-100]	[…]	[…]	[…]	Two larger sizeable competitors with identical market shares; low increment in market share; small HHI Delta

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[320] Excluding unidentified competitors under the "Other" category.

13.2.3.3. Crisphead – Open Field

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(483) In the Crisphead – Open Field segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 35 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Lettuce – Crisphead – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[321]	Comments
Crisphead – Open Field	Austria	[…]	[70-80]%	[5-10]%	[5500-6000]	[1100-1200]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than seven times larger than second largest competitor; no evidence of recent entry
Crisphead – Open Field	Germany	[…]	[30-40]%	[0-5]%	[2000-2500]	[200-300]	[…]	[…]	[…]	Market leader; concentrated market; increasing market share of Bayer over the 2013-2015 period; stable market share of Monsanto over the 2013-2015 period; one sizeable competitor with comparable market share; no evidence of recent entry; key segment for Bayer[322]
Crisphead – Open Field	Ireland	[…]	[60-70]%	[0-5]%	[5000-5500]	[400-500]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than seven times larger than second largest competitor; no evidence of recent entry
Crisphead – Open Field	Italy	[…]	[40-50]%	[10-20]%	[2500-3000]	[900-1000]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in market share and HHI; more than twice larger than second largest competitor; no evidence of recent entry
Crisphead – Open Field	Lithuania	[…]	[40-50]%	[0-5]%	[3500-4000]	[0-100]	[…]	[…]	[…]	Market leader; close to dominant; highly concentrated market; one sizeable competitor with comparable market share; no evidence of recent entry; key segment for Bayer[323]

321 Excluding unidentified competitors under the "Other" category.
322 […], BI 01642, slide 5.
323 […], BI 01642, slide 5.

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[321]	Comments
Crisphead – Open Field	Netherlands	[…]	[50-60]%	[0-5]%	[4500-5000]	[300-400]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than twice larger than second largest competitor; no evidence of recent entry
Crisphead – Open Field	Spain	[…]	[30-40]%	[5-10]%	[3000-3500]	[400-500]	[…]	[…]	[…]	Highly concentrated market; significant increase in HHI; one sizeable competitor with similar market share; no evidence of recent entry
Crisphead – Open Field	United Kingdom	[…]	[40-50]%	[10-20]%	[2500-3000]	[900-1000]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in market share and HHI; more than twice larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[324]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[80-90]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[324] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(484) The Commission notes that these geographic markets accounted together for around [80-90]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Crisphead – Open Field segment in the EEA with a combined market share of around [30-40]%.[325]

(B) Geographic markets where the Transaction would not significantly impede effective competition

(485) In the Crisphead – Open Field segment, the Commission has identified in the table below the affected geographic markets where the Transaction would not significantly impede effective competition.

[325] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 36 – Geographic markets where the Transaction would not significantly impede effective competition (Lettuce – Crisphead – Open Field

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[326]	Comments
Crisphead – Open Field	Malta	[…]	[20-30]%	[0-5]%	[1500-2000]	[0-100]	[…]	[…]	[…]	Modest combined market share; low increment in market share; small HHI Delta; one larger competitor and market leader; three other sizeable competitors
Crisphead – Open Field	Poland	[…]	[30-40]%	[0-5]%	[3500-4000]	[0-100]	[…]	[…]	[…]	One larger competitor and market leader; low increment in market share; small HHI Delta

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[326] Excluding unidentified competitors under the "Other" category.

13.2.4. Conclusion

13.2.4.1. Markets where the Transaction would likely cause a significant impediment to effective competition

(486) For the reasons set out above, in particular in the relevant tables, and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to Lettuce seeds because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on competition, in the following segments and countries:

(a) In the Batavia – Open Field segment: Netherlands, United Kingdom (SD);

(b) In the Butterhead – Open Field segment: Romania;

(c) In the Crisphead – Open Field segment: Austria (SD), Germany, Ireland (SD), Italy, Lithuania, Netherlands (SD), Spain, United Kingdom.

13.2.4.2. Markets where the Transaction would not significantly impede effective competition

(487) On balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition in relation to Lettuce seeds in the following segment and countries:

(a) In the Butterhead – Open Field segment: Netherlands;

(b) In the Crisphead – Open Field segment: Malta, Poland.

14. MELON SEEDS

14.1. General

(488) Melon seeds are differentiated on the basis of the specific properties of certain varieties, growing environment and shelf life. Based on these considerations, the Notifying Party submits that the following is the most appropriate segmentation of the product market for Melon seeds:

(a) Melon – Amarillo;

(b) Melon – Ananas;

(c) Melon – Branco De Ribatejo;

(d) Melon – Long or Extended Shelf Life – Cantaloupe;

(e) Melon – Normal or Traditional Shelf Life – Cantaloupe;

(f) Melon – Long or Extended Shelf Life – Charentais;

(g) Melon – Normal or Traditional Shelf Life – Charentais;

(h) Melon – Long or Extended Shelf Life – Galia;

(i) Melon – Normal or Traditional Shelf Life – Galia;

(j) Melon – Harper Type;

(k) Melon – Honeydew;

(l) Melon – Long or Extended Shelf Life – Italian;

(m) Melon – Normal or Traditional Shelf Life – Italian;

(n) Melon – Other Melon;

(o) Melon – Piel De Sapo;

(p) Melon – Rootstock Melon.

(489) The global sales of Melon seeds amounted to around EUR […] in 2016. At global level, Bayer ([10-20]%) is the […] largest player, after Limagrain ([10-20]%). Monsanto is the […] largest player, with a share of [10-20]%, immediately after Rijk Zwaan ([10-20]%). The other significant competitors are Syngenta ([5-10]%) and Sakata ([5-10]%).

Figure 43 – Worldwide market shares in Melon seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 83, question 3(d) [Annex 83.1].

(490) The EEA is the second largest region worldwide for Melon seeds, with a value of around EUR […] in 2016.[327] In the EEA, Bayer is the leading player with a share of [20-30]%, followed by Limagrain ([20-30]%). Monsanto is the […] largest player with as share of [10-20]%. The other significant competitors are Syngenta ([10-20]%) and Sakata ([5-10]%).

Figure 44 – EEA market shares in Melon seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 87, question 5 [Annex 87.5].

(491) There are fifteen segments commercialised in the EEA. The five largest segments (namely: Normal or Traditional Shelf Life – Charentais, Long or Extended Shelf Life – Charentais; Piel De Sapo; Normal or Traditional Shelf Life – Italian; Normal or Traditional Shelf Life – Galia) accounted together for around [70-80] sales of Melon seeds in the EEA in 2016.

Figure 45 – EEA segment sizes, Melon seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 94, question 1 [Annex 94.1].

(492) In the EEA, the Parties' activities overlap in eight segments, namely: Long or Extended Shelf Life – Charentais, Piel De Sapo, Normal or Traditional Shelf Life – Galia, Normal or Traditional Shelf Life – Charentais, Normal or Traditional Shelf Life – Italian, Long or Extended Shelf Life – Galia, Long or Extended Shelf Life – Italian, Branco De Ribatejo. These eight segments accounted together for around [90-100]% of the sales of Melon seeds in the EEA in 2016.

Figure 46 – Parties' overlaps in Melon seeds by segment (EEA, 2016)

[…]

Source: Parties' supplementary reply to the Commission's request for information RFI 34, question 1.[328]

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327 Parties' response to the Commission's request for information RFI 83, question 3(c) [Annex 83.1]; the Parties provided figures and data for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

328 Figure 46 does not display the "Ananas" segment. Colours correspond to the colour coding provided by the Commission in its request for information RFI 34, as follows:
(a) "Green flag" for markets with combined share below 20%; or, HHI post-merger below 1000; or, HHI post-merger between 1000 and 2000 and delta below 250, provided Parties' combined share is

14.2. Competitive assessment

14.2.1. Criteria used in the Commission's assessment

(493) The Commission has used the filters set out in Section VIII.6.3 in order to identify segments where the Transaction would likely cause a significant impediment to effective competition.

(494) The Commission has also taken into account the fact that the Parties are important and close competitors as regards Melon seeds for the following reasons:

(a) Bayer and Monsanto are among the few players which have both a global and EU presence;

(b) In the EU, the Parties are both present in the main segments and countries;

(c) […].[329]

14.2.2. Arguments of the Parties

(495) The Notifying Party argued that the Transaction will not give rise to competition concerns in the markets for one or more of the following reasons:

(a) For certain countries, there is no affected market at crop or segment level;[330]

(b) For certain countries, the Parties' sales overlap marginally at segment level, i.e. where one segment accounts for a significant part of one of the Parties' sales but for a more limited part of the other Parties' sales;[331]

(c) For certain countries, a significant number of competitors will remain in the market;[332]

(d) For certain countries, other competitors present in neighbouring countries may easily enter or expand in the market concerned;[333]

(e) For certain countries, the relatively small size of markets enhances volatility in percentage market caused by small movements in sales.[334]

(496) The Commission has addressed these arguments, when relevant, in the following assessment, which has been done at segment level.

(497) The Commission notes that in its response to the Statement of Objections, the Notifying Party expressed its disagreement with the Commission's assessment of vegetable seeds in the Statement of Objections, without addressing specifically the Commission's assessment of Melon seeds.[335]

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below 50%; or, HHI post-merger above 2000 and delta below 150, provided Parties' combined share is below 50%;
(b) "Red flag" for markets where the combined share is equal to or above 50% and the increment is equal to or above 1%; or, markets where the HHI is above 2500 and the delta is above 200.
(c) "Yellow flag" for markets that are neither red nor green.

329 For Bayer: BI 01627, page 6 and 9, BI 01637, slide 17; For Monsanto, MI 0713, slide 3.
330 Form CO, part 8.9, [country].
331 Form CO, part 8.9, [country].
332 Form CO, part 8.9, [countries].
333 Form CO, part 8.9, [countries].
334 Form CO, part 8.9, [country].
335 Notifying Party's response to the Statement of Objections, paragraphs 156-173.

14.2.3. Relevant segments

(498) The Parties' combined share exceeds 20% and the Transaction thus results in affected markets in certain countries in the following segments: Ananas, Branco De Ribatejo, Piel De Sapo, Long or Extended Shelf Life – Charentais, Long or Extended Shelf Life – Galia, Long or Extended Shelf Life – Italian, Normal or Traditional Shelf Life – Charentais, Normal or Traditional Shelf Life – Galia, Normal or Traditional Shelf Life – Italian.

14.2.3.1. Ananas

(499) In the Ananas segment, the Commission has identified in the table below the geographic market where the Transaction would likely cause a significant impediment to effective competition.

Table 37 – Geographic market where the Transaction would likely cause a significant impediment to effective competition (Melon – Ananas)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[336]	Comments
Ananas	Romania	[…]	[90-100]%	[10-20]%	[10000-10500]	[3000-3500]	[…]	[…]	[…]	Strengthening of dominance; no other competitor
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[337]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[20-30]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[336] Excluding unidentified competitors under the "Other" category.

[337] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

14.2.3.2. Branco De Ribatejo

(A) Geographic market where the Transaction would likely cause a significant impediment to effective competition

(500) In the Branco De Ribatejo segment, the Commission has identified in the table below the geographic market where the Transaction would likely cause a significant impediment to effective competition.

Table 38 – Geographic market where the Transaction would likely cause a significant impediment to effective competition (Melon – Branco De Ribatejo)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[338]	Comments
Branco De Ribatejo	Portugal	[…]	[50-60]%	[10-20]%	[3000-3500]	[1100-1200]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than three times larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[339]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[70-80]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[338] Excluding unidentified competitors under the "Other" category.

[339] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(501) The Commission notes that this geographic market accounts for around [70-80]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Branco De Ribatejo segment in the EEA with a combined market share of around [40-50]%.[340]

(B) Geographic market where the Transaction would not significantly impede effective competition

(502) In the Branco De Ribatejo segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

[340] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 39 – Geographic market where the Transaction would not significantly impede effective competition (Melon – Branco De Ribatejo)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[341]	Comments
Branco De Ribatejo	Spain	[…]	[20-30]%	[0-5]%	[1500-2000]	[0-100]	[…]	[…]	[…]	Modest combined market share; low increment in market share; small HHI Delta; five sizeable competitors; very

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[341] Excluding unidentified competitors under the "Other" category.

14.2.3.3. Piel De Sapo

(A) Geographic market where the Transaction would likely cause a significant impediment to effective competition

(503) In the Piel De Sapo segment, the Commission has identified in the table below the geographic market where the Transaction would likely cause a significant impediment to effective competition.

Table 40 – Geographic market where the Transaction would likely cause a significant impediment to effective competition (Melon – Piel De Sapo)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[342]	Comments
Piel De Sapo	Italy	[…]	[50-60]%	[10-20]%	[4000-4500]	[1000-1100]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than twice larger than only sizeable competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[343]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[5-10]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4]

342 Excluding unidentified competitors under the "Other" category.

343 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(B) Geographic market where the Transaction would not significantly impede effective competition

(504) In the Piel De Sapo segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

Table 41 – Geographic market where the Transaction would not significantly impede effective competition (Melon – Piel De Sapo)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[344]	Comments
Piel De Sapo	Portugal	[…]	[20-30]%	[0-5]%	[1500-2000]	[0-100]	[…]	[…]	[…]	Modest combined market share; low increment in market share; small HHI Delta; one larger competitor and market leader; two other sizeable competitors

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[344] Excluding unidentified competitors under the "Other" category.

14.2.3.4. Long or Extended Shelf Life – Charentais

(505) In the Long or Extended Shelf Life – Charentais segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 42 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Melon – Long or Extended Shelf Life – Charentais)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[345]	Comments
Long or Extended Shelf Life – Charentais	Italy	[…]	[50-60]%	[20-30]%	[3500-4000]	[1500-2000]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than three times larger than second largest competitor; no evidence of recent entry
Long or Extended Shelf Life – Charentais	Spain	[…]	[50-60]%	[5-10]%	[3500-4000]	[500-600]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in HHI; more than twice larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[346]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[40-50]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[345] Excluding unidentified competitors under the "Other" category.

[346] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(506) The Commission notes that these geographic markets account together for around [40-50]% of the overall segment in the EEA.

14.2.3.5. Long or Extended Shelf Life – Galia

(A) Geographic market where the Transaction would likely cause a significant impediment to effective competition

(507) In the Long or Extended Shelf Life – Galia segment, the Commission has identified in the table below the geographic market where the Transaction would likely cause a significant impediment to effective competition.

Table 43 – Geographic market where the Transaction would likely cause a significant impediment to effective competition (Melon – Long or Extended Shelf Life – Galia)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[347]	Comments
Long or Extended Shelf Life – Galia	Spain	[…]	[60-70]%	[10-20]%	[4000-4500]	[1200-1300]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than five times larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[348]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[80-90]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[347] Excluding unidentified competitors under the "Other" category.

[348] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(508) The Commission notes that this geographic market accounts for around [80-90]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Long or Extended Shelf Life – Galia segment in the EEA with a combined market share of around [50-60]%.[349]

(B) Geographic market where the Transaction would not significantly impede effective competition

(509) In the Long or Extended Shelf Life – Galia segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

[349] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 44 – Geographic market where the Transaction would not significantly impede effective competition (Melon – Long or Extended Shelf Life – Galia)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[350]	Comments
Long or Extended Shelf Life – Galia	Portugal	[…]	[20-30]%	[0-5]%	[2000-2500]	[0-100]	[…]	[…]	[…]	One larger competitor and market leader; two other sizeable competitors; low increment in market share; small HHI Delta

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[350] Excluding unidentified competitors under the "Other" category.

14.2.3.6. Long or Extended Shelf Life – Italian

(510) In the Long or Extended Shelf Life – Italian segment, the Commission has identified in the table below the geographic market where the Transaction would likely cause a significant impediment to effective competition.

Table 45 – Geographic market where the Transaction would likely cause a significant impediment to effective competition (Melon – Long or Extended Shelf Life – Italian)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[351]	Comments
Long or Extended Shelf Life – Italian	Italy	[…]	[50-60]%	[0-5]%	[3500-4000]	[500-600]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than three times larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[352]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[90-100]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[351] Excluding unidentified competitors under the "Other" category.

[352] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(511) The Commission notes that this geographic market accounts for around [90-100]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Long or Extended Shelf Life – Italian segment in the EEA with a combined market share of around [50-60]%.[353]

14.2.3.7. Normal or Traditional Shelf Life – Charentais

(512) In the Normal or Traditional Shelf Life – Charentais segment, the Commission has identified in the table below the geographic markets would likely cause a significant impediment to effective competition.

[353] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 46 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Melon – Normal or Traditional Shelf Life – Charentais)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[354]	Comments
Normal or Traditional Shelf Life – Charentais	France	[…]	[30-40]%	[10-20]%	[3000-3500]	[600-700]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in market share and HHI; two sizeable competitors; no evidence of recent entry
Normal or Traditional Shelf Life – Charentais	Italy	[…]	[50-60]%	[5-10]%	[3500-4000]	[600-700]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in HHI; more than twice larger than second largest competitor; no evidence of recent entry
Normal or Traditional Shelf Life – Charentais	Spain	[…]	[90-100]%	[10-20]%	[9500-10000]	[1500-2000]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in market share and HHI; no sizeable competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[355]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[90-100]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[354] Excluding unidentified competitors under the "Other" category.

[355] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(513) The Commission notes that these geographic markets account together for around [90-100]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Normal or Traditional Shelf Life – Charentais segment in the EEA with a combined market share of around [40-50]%.[356]

14.2.3.8. Normal or Traditional Shelf Life – Galia

(514) In the Normal or Traditional Shelf Life – Galia segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

[356] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 47 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Melon – Normal or Traditional Shelf Life – Galia)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[357]	Comments
Normal or Traditional Shelf Life – Galia	Italy	[…]	[50-60]%	[0-5]%	[3500-4000]	[0-100]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; more than twice larger than second largest competitor; no evidence of recent entry; key segment and country for Bayer[358]
Normal or Traditional Shelf Life – Galia	Portugal	[…]	[40-50]%	[5-10]%	[3000-3500]	[600-700]	[…]	[…]	[…]	Market leader; close to dominant; highly concentrated market; significant increase in HHI; two sizeable competitors; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[359]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[5-10]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[357] Excluding unidentified competitors under the "Other" category.

[358] […], BI 01642, slides 5 and 6.

[359] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

14.2.3.9. Normal or Traditional Shelf Life – Italian

(515) In the Normal or Traditional Shelf Life – Italian segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 48 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Melon – Normal or Traditional Shelf Life – Italian)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[360]	Comments
Normal or Traditional Shelf Life – Italian	Hungary	[…]	[80-90]%	[30-40]%	[7500-8000]	[3500-4000]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in market share and HHI; no sizeable competitor; no evidence of recent entry
Normal or Traditional Shelf Life – Italian	Italy	[…]	[50-60]%	[20-30]%	[3500-4000]	[1500-2000]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than three times larger than second largest competitor; no evidence of recent entry
Normal or Traditional Shelf Life – Italian	Slovakia	[…]	[90-100]%	[10-20]%	[9500-10000]	[2000-2500]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in market share and HHI; no sizeable competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[361]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[90-100]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[360] Excluding unidentified competitors under the "Other" category.

[361] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(516) The Commission notes that these geographic markets account together for around [90-100]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Normal or Traditional Shelf Life – Italian segment in the EEA with a combined market share of around [50-60]%.[362]

14.2.4. Conclusion

14.2.4.1. Markets where the Transaction would likely cause a significant impediment to effective competition

(517) For the reasons set out above, in particular in the relevant tables, and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to Melon seeds because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on competition, in the following segments and countries:

(a) In the Ananas segment: Romania (SD);

(b) In the Branco De Ribatejo segment: Portugal (CD);

(c) In the Piel De Sapo segment: Italy (CD);

(d) In the Long or Extended Shelf Life – Charentais segment: Italy (CD), Spain (CD);

(e) In the Long or Extended Shelf Life – Galia segment: Spain (CD);

(f) In the Long or Extended Shelf Life – Italian segment: Italy (SD);

(g) In the Normal or Traditional Shelf Life – Charentais segment: France, Italy (CD), Spain (SD);

(h) In the Normal or Traditional Shelf Life – Galia segment: Italy (SD), Portugal;

(i) In the Normal or Traditional Shelf Life – Italian segment: Hungary (SD), Italy (CD), Slovakia (SD).

14.2.4.2. Markets where the Transaction would not significantly impede effective competition

(518) On balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition in relation to Melon seeds in the following segments and countries:

(a) In the Branco De Ribatejo segment: Spain;

(b) In the Piel De Sapo segment: Portugal;

(c) In the Long or Extended Shelf Life – Galia segment: Portugal.

[362] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

15. ONION SEEDS

15.1. General

(519) Onion seeds are differentiated on the basis of seed type (hybrid or open-pollinated), the variety of grown vegetable they produce and the length of growing day most suited to a particular variety of Onion seed. Based on these considerations, the Notifying Party submits that the following is the most appropriate segmentation of the product market for Onion seeds:

(a) Onion – Hybrid – Bunching – Non Bulbing;

(b) Onion – Hybrid – Extra Long Day – Red;

(c) Onion – Hybrid – Extra Long Day – Yellow;

(d) Onion – Hybrid – Long Day – Red;

(e) Onion – Hybrid – Long Day – White;

(f) Onion – Hybrid – Long Day – Yellow & Brown;

(g) Onion – Hybrid – Mid Day – Red;

(h) Onion – Hybrid – Mid Day – White;

(i) Onion – Hybrid – Mid Day – Yellow;

(j) Onion – Hybrid – Short Day – Overwintering;

(k) Onion – Hybrid – Short Day – Red;

(l) Onion – Hybrid – Short Day – White;

(m) Onion – Hybrid – Short Day – Yellow & Brown;

(n) Onion – Open Pollinated – Bunching – Bulbing;

(o) Onion – Open Pollinated – Bunching – Non Bulbing;

(p) Onion – Open Pollinated – Extra Long Day – Red;

(q) Onion – Open Pollinated – Extra Long Day – Yellow;

(r) Onion – Open Pollinated – Long Day – Red;

(s) Onion – Open Pollinated – Long Day – White;

(t) Onion – Open Pollinated – Long Day – Yellow & Brown;

(u) Onion – Open Pollinated – Mid Day – Red;

(v) Onion – Open Pollinated – Mid Day – White;

(w) Onion – Open Pollinated – Mid Day – Yellow;

(x) Onion – Open Pollinated – Short Day – Overwintering;

(y) Onion – Open Pollinated – Short Day – Red;

(z) Onion – Open Pollinated – Short Day – White;

(aa) Onion – Open Pollinated – Short Day – Yellow & Brown.

(520) The global sales of Onion seeds amounted to around EUR […] in 2016. At global level, Bayer ([10-20]%) is the […] largest player, followed by Monsanto ([10-20]%). The other significant competitors are Bejo ([20-30]%), Enza Zaden ([10-20]%) and Takii ([5-10]%).

Figure 47 – Worldwide market shares in Onion seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 83, question 3(d) [Annex 83.1].

(521) The EEA is the largest region worldwide for Onion seeds, with a value of around EUR […] in 2016.[363] In the EEA, Monsanto is the […] largest player with a share of [5-10]%, immediately followed by Bayer ([5-10]%).The other significant competitors are Bejo ([30-40]%), Limagrain ([10-20]%), Takii ([5-10]%) and Enza Zaden ([5-10]%).

Figure 48 – EEA market shares in Onion seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 87, question 5 [Annex 87.5].

(522) There are twenty five segments commercialised in the EEA. The five largest segments (namely: Hybrid – Extra Long Day – Yellow, Hybrid – Long Day – Yellow & Brown, Hybrid – Long Day – White) accounted together for around [60-70]% of the sales of Onion seeds in the EEA in 2016.

Figure 49 – EEA segment sizes, Onion seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 94, question 1 [Annex 94.1].

(523) In the EEA, the Parties' activities overlap in six segments, namely: Hybrid – Extra Long Day – Yellow, Hybrid – Short Day – White, Hybrid – Short Day – Yellow & Brown, Hybrid – Long Day – Yellow & Brown, Hybrid – Long Day – White, Hybrid – Long Day – Red. These six segments accounted together for around [70-80]% of the sales of Onion seeds in the EEA in 2016.

Figure 50 – Parties' overlaps in Onion seeds by segment (EEA, 2016)

[…]

Source: Parties' supplementary reply to the Commission's request for information RFI 34, question 1.[364]

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363 Parties' response to the Commission's request for information RFI 83, question 3(c) [Annex 83.1]; the Parties provided figures and data for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

364 Colours correspond to the colour coding provided by the Commission in its request for information RFI 34, as follows:

(a) "Green flag" for markets with combined share below 20%; or, HHI post-merger below 1000; or, HHI post-merger between 1000 and 2000 and delta below 250, provided Parties' combined share is below 50%; or, HHI post-merger above 2000 and delta below 150, provided Parties' combined share is below 50%;

(b) "Red flag" for markets where the combined share is equal to or above 50% and the increment is equal to or above 1%; or, markets where the HHI is above 2500 and the delta is above 200.

(c) "Yellow flag" for markets that are neither red nor green.

15.2. Competitive assessment

15.2.1. Criteria used in the Commission's assessment

(524) The Commission has used the filters set out in Section VIII.6.3 in order to identify segments where the Transaction would likely cause a significant impediment to effective competition.

(525) The Commission has also taken into account the fact that the Parties are important and close competitors as regards Onion seeds for the following reasons:

(a) Bayer and Monsanto are among the few players which have both a global and EU presence;

(b) In the EU, the Parties are both present in the main segments and countries;

(c) […].[365]

15.2.2. Arguments of the Parties

(526) The Notifying Party argued that the Transaction will not give rise to competition concerns in the markets for one or more of the following reasons:

(a) For certain countries, there is no affected market at crop or segment level;[366]

(b) For certain countries, the Parties' sales overlap marginally at segment level, i.e. where one segment accounts for a significant part of one of the Parties' sales but for a more limited part of the other Parties' sales;[367]

(c) For certain countries, the Parties' combined market at crop level is less than 25%;[368]

(d) For certain countries, the increment in market share[369] and/or the increase in HHI[370] is low;

(e) For certain countries, a significant number of competitors will remain in the market;[371]

(f) For certain countries, other competitors present in neighbouring countries may easily enter or expand in the market concerned.[372]

(527) The Commission has addressed these arguments, when relevant, in the following assessment, which has been done at segment level.

(528) The Commission notes that in its response to the Statement of Objections, the Notifying Party expressed its disagreement with the Commission's assessment of vegetable seeds in the Statement of Objections, without addressing specifically the Commission's assessment of Onion seeds.[373]

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365 For Bayer: BI 01629, page 6; for Monsanto, MI 05388, slide 5.
366 Form CO, part 8.10, [countries].
367 Form CO, part 8.10, [country]
368 Form CO, part 8.10, [countries].
369 Form CO, part 8.10, [countries].
370 Form CO, part 8.10, [countries].
371 Form CO, part 8.10, [countries].
372 Form CO, part 8.10, [countries].
373 Notifying Party's response to the Statement of Objections, paragraphs 156-173.

15.2.3. Relevant segments

(529) The Parties' combined share exceeds 20% and the Transaction thus results in affected markets in certain countries in the following segments*:* Hybrid – Extra Long Day – Yellow, Hybrid – Long Day – Red, Hybrid – Long Day – White, Hybrid – Long Day – Yellow & Brown, Hybrid – Short Day – White, Hybrid – Short Day – Yellow & Brown.

15.2.3.1. Hybrid – Extra Long Day – Yellow

(530) In the Hybrid – Extra Long Day – Yellow segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

Table 49 – Geographic market where the Transaction would not significantly impede effective competition (Onion – Hybrid – Extra Long Day – Yellow)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[374]	Comments
Hybrid – Extra Long Day – Yellow	France	[…]	[30-40]%	[0-5]%	[2000-2500]	[0-100]	[…]	[…]	[…]	Four sizeable competitors; low increment in market share; small HHI Delta

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[374] Excluding unidentified competitors under the "Other" category.

15.2.3.2. Hybrid – Long Day – Red

(531) In the Hybrid – Long Day – Red segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 50 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Onion – Hybrid – Long Day – Red)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[375]	Comments
Hybrid – Long Day – Red	Germany	[…]	[90-100]%	[30-40]%	[10000-10500]	[4500-5000]	[…]	[…]	[…]	Strengthening of dominance; no other competitor
Hybrid – Long Day – Red	Poland	[…]	[20-30]%	[0-5]%	[3000-3500]	[0-100]	[…]	[…]	[…]	Highly concentrated market; no evidence of recent entry; Bayer significant player in neighbouring geographic markets; key segment for Bayer[376]
Hybrid – Long Day – Red	Spain	[…]	[40-50]%	[10-20]%	[3000-3500]	[800-900]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in market share and HHI; two other sizeable competitors; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[377]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[60-70]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

375 Excluding unidentified competitors under the "Other" category.

376 […], BI 01629, page 20.

377 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(532) The Commission notes that these geographic markets account together for around [60-70]% of the overall segment in the EEA.

15.2.3.3. Hybrid – Long Day – White

(533) In the Hybrid – Long Day – White segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 51 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Onion – Hybrid – Long Day – White)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[378]	Comments
Hybrid – Long Day – White	France	[…]	[30-40]%	[5-10]%	[2000-2500]	[400-500]	[…]	[…]	[…]	Highly concentrated market; significant increase in HHI; one sizeable competitor with comparable market share; no evidence of recent entry
Hybrid – Long Day – White	Hungary	[…]	[20-30]%	[0-5]%	[2500-3000]	[200-300]	[…]	[…]	[…]	Market leader; concentrated market; significant increase in HHI; one sizeable competitor with comparable market share
Hybrid – Long Day – White	Italy	[…]	[50-60]%	[0-5]%	[3500-4000]	[400-500]	[…]	[…]	[…]	Creation of dominance; significant increase in HHI; more than three times larger than second largest competitor; no evidence of recent entry
Hybrid – Long Day – White	Spain	[…]	[30-40]%	[10-20]%	[3000-3500]	[800-900]	[…]	[…]	[…]	Highly concentrated market; significant increase in market share and HHI; one sizeable competitor with comparable market share; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[379]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[70-80]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[378] Excluding unidentified competitors under the "Other" category.

[379] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(534) The Commission notes that these geographic markets account together for around [70-80]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Hybrid – Long Day – White segment in the EEA with a combined market share of around [30-40]%.[380]

15.2.3.4. Hybrid – Long Day – Yellow & Brown

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(535) In the Hybrid – Long Day – Yellow & Brown segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

[380] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 52 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Onion – Hybrid – Long Day – Yellow & Brown)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[381]	Comments
Hybrid – Long Day – Yellow & Brown	Romania	[…]	[20-30]%	[5-10]%	[6000-6500]	[200-300]	[…]	[…]	[…]	Highly concentrated market; significant increase in HHI; one sizeable competitor; no evidence of recent entry
Hybrid – Long Day – Yellow & Brown	Spain	[…]	[40-50]%	[0-5]%	[3000-3500]	[300-400]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in HHI; two sizeable competitors; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[382]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[50-60]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[381] Excluding unidentified competitors under the "Other" category.

[382] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(536) The Commission notes that these geographic markets account together for around [50-60]% of the overall segment in the EEA.

(B) Geographic markets where the Transaction would not significantly impede effective competition

(537) In the Hybrid – Long Day – Yellow & Brown segment, the Commission has identified in the table below the affected geographic markets where the Transaction would not significantly impede effective competition.

Table 53 – Geographic markets where the Transaction would not significantly impede effective competition (Onion – Hybrid – Long Day – Yellow & Brown)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[383]	Comments
Hybrid – Long Day – Yellow & Brown	Bulgaria	[…]	[20-30]%	[10-20]%	[1000-1100]	[200-300]	[…]	[…]	[…]	Modest combined market share; two larger competitors including the market leader; two other sizeable competitors
Hybrid – Long Day – Yellow & Brown	Poland	[…]	[20-30]%	[5-10]%	[2000-2500]	[300-400]	[…]	[…]	[…]	One larger competitor and market leader; four other sizeable competitors
Hybrid – Long Day – Yellow & Brown	Portugal	[…]	[30-40]%	[0-5]%	[4500-5000]	[0-100]	[…]	[…]	[…]	One larger competitor and market leader; low increment in market share; small HHI Delta

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[383] Excluding unidentified competitors under the "Other" category.

15.2.3.5. Hybrid – Short Day – White

(538) In the Hybrid – Short Day – White segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 54 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Onion – Hybrid – Short Day – White)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[384]	Comments
Hybrid – Short Day – White	Italy	[…]	[40-50]%	[0-5]%	[3000-3500]	[0-100]	[…]	[…]	[…]	Market leader; close to dominant; highly concentrated market; around twice larger than second largest competitor; no evidence of recent entry; key segment for Bayer[385]
Hybrid – Short Day – White	Spain	[…]	[30-40]%	[0-5]%	[2500-3000]	[200-300]	[…]	[…]	[…]	Highly concentrated market; one sizeable competitor with comparable market share; no evidence of recent entry; key segment and country for Bayer[386]
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[387]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[70-80]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

384 Excluding unidentified competitors under the "Other" category.
385 […], BI 01629, page 18.
386 […], BI 01629, pages 18 and 23.
387 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(539) The Commission notes that these geographic markets account together for around [70-80]% of the overall segment in the EEA.

15.2.3.6. Hybrid – Short Day – Yellow & Brown

(540) In the Hybrid – Short Day – Yellow & Brown segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

Table 55 – Geographic market where the Transaction would not significantly impede effective competition (Onion – Hybrid – Short Day – Yellow & Brown)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[388]	Comments
Hybrid – Short Day – Yellow & Brown	Spain	[…]	[30-40]%	[0-5]%	[2500-3000]	[0-100]	[…]	[…]	[…]	One larger competitor and market; three other sizeable competitors; low increment in market share; small HHI Delta

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[388] Excluding unidentified competitors under the "Other" category.

15.2.4. Conclusion

15.2.4.1. Markets where the Transaction would likely cause a significant impediment to effective competition

(541) For the reasons set out above, in particular in the relevant tables, and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to Onion seeds because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on competition, in the following segments and countries:

(a) In the Hybrid – Long Day – Red segment: Germany (SD), Poland, Spain;

(b) In the Hybrid – Long Day – White segment: France, Hungary, Italy (CD), Spain;

(c) In the Hybrid – Long Day – Yellow & Brown segment: Romania, Spain;

(d) In the Hybrid – Short Day – White segment: Italy, Spain.

15.2.4.2. Markets where the Transaction would not significantly impede effective competition

(542) On balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition in relation to Onion seeds in the following segments and countries:

(a) In the Hybrid – Extra Long Day – Yellow: France;

(b) In the Hybrid – Long Day – Yellow & Brown segment: Bulgaria, Poland, Portugal;

(c) In the Hybrid – Short Day – Yellow & Brown: Spain.

16. PEA SEEDS

16.1. General

(543) Pea seeds are differentiated on the basis of the intended use of the final crop (fresh consumption or processing) and the specific properties of certain varietals. Based on these considerations, the Notifying Party submits that the following is the most appropriate segmentation of the product market for pea seeds:

(a) Pea – All;

(b) Pea – Fresh – Fresh Market Type Dark Green;

(c) Pea – Fresh – Fresh Market Type Light Green;

(d) Pea – Fresh – Snap Peas;

(e) Pea – Fresh – Snow Peas;

(f) Pea – Processing – All Others – Large; and

(g) Pea – Processing – All Others – Small.

(544) The global sales of Pea seeds amounted to around EUR […] in 2016. At global level, Monsanto ([20-30]%) is the […] largest player, followed by Syngenta ([10-20]%). Bayer is the […] largest player with a share of [0-5]%, along Limagrain ([0-5]%). The other identified competitors are Birds eye ([0-5]%), Gsn ([0-5]%), Pop Vriend and Rijk Zwaan.

Figure 51 – Worldwide market shares in Pea seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 83, question 3(d) [Annex 83.1].

(545) The EEA is the largest region worldwide for Pea seeds, with a value of around EUR […] in 2016.[389] In the EEA, Monsanto is the largest player with a share of [30-40]%, followed by Syngenta ([10-20]%). Bayer is the […] largest player with a share of [5-10]%, immediately after Van Waveren and Limagrain which both have a share of [5-10]%.

Figure 52 – EEA market shares in Pea seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 87, question 5 [Annex 87.5].

(546) There are five segments commercialised in the EEA, namely: Processing – All Others – Large; Processing All Others – Small, Fresh – Fresh Market Type Dark Green, Processing – All Others – Snow Peas, Fresh – Snap Peas. The Processing – All Others – Large; Processing All Others – Small, Fresh – Fresh Market Type Dark Green accounted together for around [90-100]% of the sales of Pea seeds in the EEA in 2016.

Figure 53 – EEA segment sizes, Pea seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 94, question 1 [Annex 94.1].

(547) In the EEA, the Parties' activities overlap in the Processing – All Others – Large and the Processing All Others – Small segments. These two segments accounted together for around [80-90]% of the sales of Carrot seeds in the EEA in 2016.

Figure 54 – Parties' overlaps in Pea seeds by segment (EEA, 2016)

[…]

Source: Parties' supplementary reply to the Commission's request for information RFI 34, question 1.[390]

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389 Parties' response to the Commission's request for information RFI 83, question 3(c) [Annex 83.1]; the Parties provided figures and data for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

390 Colours correspond to the colour coding provided by the Commission in its request for information RFI 34, as follows:
(a) "Green flag" for markets with combined share below 20%; or, HHI post-merger below 1000; or, HHI post-merger between 1000 and 2000 and delta below 250, provided Parties' combined share is below 50%; or, HHI post-merger above 2000 and delta below 150, provided Parties' combined share is below 50%;
(b) "Red flag" for markets where the combined share is equal to or above 50% and the increment is equal to or above 1%; or, markets where the HHI is above 2500 and the delta is above 200.
(c) "Yellow flag" for markets that are neither red nor green.

16.2. Competitive assessment

16.2.1. Criteria used in the Commission's assessment

(548) The Commission has used the criteria set out in Section VIII.6.3 in order to identify segments where the Transaction would likely cause a significant impediment to effective competition.

(549) The Commission has also taken into account the fact that the Parties are important and close competitors as regards Pea seeds for the following reasons:

(a) Bayer and Monsanto are among the few players which have both a global and EU presence;

(b) In the EU, the Parties are both present in the main segments and countries.

16.2.2. Arguments of the Parties

(550) The Notifying Party argued that the Transaction will not give rise to competition concerns in the markets for one or more of the following reasons:

(a) For certain countries, there is no affected market at crop or segment level;[391]

(b) For certain countries, the Parties' sales overlap marginally at segment level, i.e. where one segment accounts for a significant part of one of the Parties' sales but for a more limited part of the other Parties' sales;[392]

(c) For certain countries, the combined market share of the Parties has decreased over the past years;[393]

(d) For certain countries, a significant number of competitors will remain in the market;[394]

(e) For certain countries, other competitors present in neighbouring countries may easily enter or expand in the market concerned.[395]

(551) The Commission has addressed these arguments, when relevant, in the following assessment, which has been done at segment level.

(552) The Commission notes that in its response to the Statement of Objections, the Notifying Party expressed its disagreement with the Commission's assessment of vegetable seeds in the Statement of Objections, without addressing specifically the Commission's assessment of Pea seeds.[396]

16.2.3. Relevant segments

(553) The Parties' combined share exceeds 20% and the Transaction thus results in affected markets in certain countries in the following segments: Processing – All Others – Large and Processing – All Others – Small.

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391 Form CO, part 8.11, [countries]

392 Form CO, part 8.11, [countries].

393 Form CO, part 8.11, [countries].

394 Form CO, part 8.11, [countries].

395 Form CO, part 8.11, [countries].

396 Notifying Party's response to the Statement of Objections, paragraphs 156-173.

16.2.3.1. Processing – All Others – Large

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(554) In the Processing – All Others – Large segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 56 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Pea – Processing – All Others – Large)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[397]	Comments
Processing – All Others – Large	Belgium	[…]	[80-90]%	[10-20]%	[7000-7500]	[2000-2500]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in market share and HHI; no sizeable competitor; no evidence of recent entry
Processing – All Others – Large	Finland	[…]	[90-100]%	[20-30]%	[10000-10500]	[3000-3500]	[…]	[…]	[…]	Strengthening of dominance; no other competitors
Processing – All Others – Large	France	[…]	[50-60]%	[5-10]%	[3000-3500]	[600-700]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in HHI; more than three times larger than second largest competitor; no evidence of recent entry
Processing – All Others – Large	Portugal	[…]	[50-60]%	[0-5]%	[3500-4000]	[200-300]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than four times larger than second largest competitor; no evidence of recent entry

[397] Excluding unidentified competitors under the "Other" category.

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[397]	Comments
Processing – All Others – Large	Netherlands	[…]	[40-50]%	[5-10]%	[2000-2500]	[300-400]	[…]	[…]	[…]	Market leader; concentrated market; significant increase in HHI; more than twice larger than second largest competitor; no evidence of recent entry
Processing – All Others – Large	United Kingdom	[…]	[40-50]%	[0-5]%	[2000-2500]	[300-400]	[…]	[…]	[…]	Market leader; concentrated market; significant increase in HHI; around three times larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[398]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[30-40]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[398] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(B) Geographic markets where the Transaction would not significantly impede effective competition

(555) In the Processing – All Others – Large segment, the Commission has identified in the table below the affected geographic markets where the Transaction would not significantly impede effective competition.

Table 57 – Geographic markets where the Transaction would not significantly impede effective competition (Pea – Processing – All Others – Large)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[399]	Comments
Processing – All Others – Large	Germany	[…]	[20-30]%	[0-5]%	[1500-2000]	[0-100]	[…]	[…]	[…]	Modest combined market share; low increment in market share; small HHI Delta; two larger competitors, including the market leader; one other sizeable competitor
Processing – All Others – Large	Greece	[…]	[20-30]%	[10-20]%	[2000-2500]	[400-500]	[…]	[…]	[…]	One larger competitor and market leader; three other sizeable competitors

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[399] Excluding unidentified competitors under the "Other" category.

16.2.3.2. Processing – All Others – Small

(A) Geographic market where the Transaction would likely cause a significant impediment to effective competition

(556) In the Processing – All Others – Small segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 58 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Pea – Processing – All Others – Small)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[400]	Comments
Processing – All Others – Small	Austria	[…]	[50-60]%	[20-30]%	[3500-4000]	[1400-1500]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; around six times larger than second largest competitor; no evidence of recent entry
Processing – All Others – Small	France	[…]	[50-60]%	[20-30]%	[3000-3500]	[1300-1400]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than four times larger than second largest competitor; no evidence of recent entry

Combined size of markets with SIEC ('000 EUR)	[…]
Segment size EEA ('000 EUR)[401]	[…]
Combined size of markets with SIEC/Segment size EEA (%)	[30-40]%

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

400 Excluding unidentified competitors under the "Other" category.

401 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(B) Geographic markets where the Transaction would not significantly impede effective competition

(557) In the Processing – All Others – Small segment, the Commission has identified in the table below the affected geographic markets where the Transaction would not significantly impede effective competition.

Table 59 – Geographic markets where the Transaction would not significantly impede effective competition (Pea – Processing – All Others – Small)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[402]	Comments
Processing – All Others – Small	Belgium	[…]	[20-30]%	[0-5]%	[2000-2500]	[0-100]	[…]	[…]	[…]	One larger competitor and market leader; two other sizeable competitors; low increment in market share; small HHI Delta
Processing – All Others – Small	Netherlands	[…]	[20-30]%	[0-5]%	[2000-2500]	[100-200]	[…]	[…]	[…]	One sizeable competitor with similar market share; three other sizeable competitors; low increment market share and HHI Delta
Processing – All Others – Small	Germany	[…]	[20-30]%	[0-5]%	[1500-2000]	[100-200]	[…]	[…]	[…]	Modest combined market share; low increment in market share; small HHI Delta; one larger competitor and market leader; four other sizeable competitors

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[402] Excluding unidentified competitors under the "Other" category.

16.2.4. Conclusion

16.2.4.1. Markets where the Transaction would likely cause a significant impediment to effective competition

(558) At this stage therefore, for the reasons set out above, in particular in the relevant tables, and on the basis of the data made available during the investigation, the Commission preliminarily considers that the Transaction would likely cause a significant impediment to effective competition in relation to Pea seeds because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on competition, in the following segments and countries:

(a) In the Processing – All Others – Large segment: Belgium (SD), Finland (SD), France (CD), Portugal (SD), Netherlands, United Kingdom;

(b) In the Processing – All Others – Small segment: Austria (CD), France (CD).

16.2.4.2. Markets where the Transaction would not significantly impede effective competition

(559) On balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition in relation to Pea seeds in the following segment and countries:

(a) In the Processing – All Others – Large segment: Germany, Greece;

(b) In the Processing – All Others – Small segment: Belgium, Germany, Netherlands.

17. SPINACH SEEDS

17.1. General

(560) Spinach seeds are differentiated on the basis of the intended use of the final crop – fresh consumption or processing. Based on these considerations, the Notifying Party submits that the following is the most appropriate segmentation of the product market for Spinach seeds:

(a) Spinach – Baby leaf; and

(b) Others (including processing Spinach).

(561) The global sales of Spinach seeds amounted to around EUR […] in 2016. At global level, Monsanto ([20-30]%) is the largest player, followed by Rijk Zwaan ([10-20]%). Bayer is the […] largest player ([5-10]%), after Pop Vriend.

Figure 55 – Worldwide market shares in Spinach seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 83, question 3(d) [Annex 83.1].

(562) The EEA is the third largest region worldwide for Spinach seeds, with a value of around EUR 22 million in 2016.[403] In the EEA, Monsanto is the largest player with a share of [30-40]%, followed by Rijk Zwaan ([20-30]%). Bayer is the third largest player with a share of [5-10]%, alongside Pop Vriend ([5-10]%).

Figure 56 – EEA market shares in Spinach seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 87, question 5 [Annex 87.5].

(563) There are two segments commercialised in the EEA, namely: Others and Baby Leaf. The Others segment, accounted alone for around [90-100]% of the sales of Spinach seeds in the EEA in 2016.

Figure 57 – EEA segment sizes, Spinach seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 94, question 1 [Annex 94.1].

(564) In the EEA, the Parties' activities overlap in the Others segment, which accounted alone for around [90-100]% of the sales of Spinach seeds in the EEA in 2016.

Figure 58 – Parties' overlaps in Spinach seeds by segment (EEA, 2016)

[…]

Source: Parties' supplementary reply to the Commission's request for information RFI 34, question 1.[404]

17.2. Competitive assessment

17.2.1. Criteria used in the Commission's assessment

(565) The Commission has used the filters set out in Section VIII.6.3 in order to identify segments where the Transaction would likely cause a significant impediment to effective competition.

(566) The Commission has also taken into account the fact that the Parties are important and close competitors as regards Spinach seeds for the following reasons:

(a) Bayer and Monsanto are among the few players which have both a global and EU presence;

(b) In the EU, the Parties are both present in the main segments and countries;

(c) […].[405]

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403 Parties' response to the Commission's request for information RFI 83, question 3(c) [Annex 83.1]; the Parties provided figures and data for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

404 Colours correspond to the colour coding provided by the Commission in its request for information RFI 34, as follows:
(a) "Green flag" for markets with combined share below 20%; or, HHI post-merger below 1000; or, HHI post-merger between 1000 and 2000 and delta below 250, provided Parties' combined share is below 50%; or, HHI post-merger above 2000 and delta below 150, provided Parties' combined share is below 50%;
(b) "Red flag" for markets where the combined share is equal to or above 50% and the increment is equal to or above 1%; or, markets where the HHI is above 2500 and the delta is above 200.
(c) "Yellow flag" for markets that are neither red nor green.

405 For Bayer: BI 02796, slide 7; For Monsanto, Monsanto Internal MI 05384, slide 19.

17.2.2. Arguments of the Parties

(567) The Notifying Party argued that the Transaction will not give rise to competition concerns in the markets for one or more of the following reasons:

(a) For certain countries, the Parties' combined market at crop level is less than 25%;[406]

(b) For certain countries, the increment in HHI is low;[407]

(c) For certain countries, the combined market share of the Parties has decreased over the past three years;[408]

(d) For certain countries, a significant number of competitors will remain in the market;[409]

(e) For certain countries, other competitors present in neighbouring countries may easily enter or expand in the market concerned;[410]

(f) For certain countries, the relatively small size of markets enhances volatility in percentage market caused by small movements in sales.[411]

(568) The Commission has addressed these arguments, when relevant, in the following assessment, which has been done at segment level.

(569) The Commission notes that in its response to the Statement of Objections, the Notifying Party expressed its disagreement with the Commission's assessment of vegetable seeds in the Statement of Objections, without addressing specifically the Commission's assessment of Spinach seeds.[412]

17.2.3. Relevant segment

(570) The Parties' combined share exceeds 20% and the Transaction thus results in affected markets in certain countries in the following segment: Others.

17.2.3.1. Others

(571) In the Others segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

406 Form CO, part 8.14, [country].
407 Form CO, part 8.14, [country]
408 Form CO, part 8.14, [countries].
409 Form CO, part 8.14, [countries].
410 Form CO, part 8.14, [countries].
411 Form CO, part 8.14, [country].
412 Notifying Party's response to the Statement of Objections, paragraphs 156-173.

Table 60 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Spinach – Others)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[413]	Comments
Others	Belgium	[…]	[40-50]%	[10-20]%	[2500-3000]	[800-900]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in market share and HHI; one sizeable competitor with comparable market share; no evidence of recent entry
Others	Finland	[…]	[90-100]%	[30-40]%	[10000-10500]	[4000-4500]	[…]	[…]	[…]	Strengthening of dominance; no other competitor
Others	France	[…]	[40-50]%	[5-10]%	[2500-3000]	[500-600]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in HHI; more than twice larger than second largest competitor; no evidence of recent entry
Others	Germany	[…]	[80-90]%	[5-10]%	[7000-7500]	[1300-1400]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; no sizeable competitor; no evidence of recent entry

[413] Excluding unidentified competitors under the "Other" category.

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[413]	Comments
Others	Italy	[…]	[30-40]%	[0-5]%	[2000-2500]	[100-200]	[…]	[…]	[…]	Market leader; concentrated market; one sizeable competitor with comparable market share; no evidence of recent entry
Others	Spain	[…]	[20-30]%	[10-20]%	[2000-2500]	[400-500]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in market share and HHI; one larger competitor with comparable market share; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[414]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[60-70]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

414 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(572) The Commission notes that these geographic markets account together for around [60-70]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Cut and Peel segment in the EEA with a combined market share of around [40-50]%.[415]

17.2.4. Conclusion

(573) For the reasons set out above, in particular in the relevant table, and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to Spinach seeds because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on competition, in the following segment and countries:

(a) In the Others segment: Belgium, Finland (SD), France, Germany (SD), Italy, Spain.

18. SQUASH SEEDS

18.1. General

(574) Squash seeds are differentiated on the basis of the growing environment in which they are bred to thrive most effectively and the variety of grown vegetable they produce. Based on these considerations, the Notifying Party submits that the following is the most appropriate segmentation of the product market for Squash seeds:

(a) Squash – Butternut – Open Field;

(b) Squash – Halloween – Open Field;

(c) Squash – Lebanese – Heated Glasshouse;

(d) Squash – Lebanese – Netted & Plastic House;

(e) Squash – Lebanese – Open Field;

(f) Squash – Other Squash – Heated Glasshouse;

(g) Squash – Other Squash – Netted & Plastic House;

(h) Squash – Other Squash – Open Field;

(i) Squash – Romanesco – Heated Glasshouse;

(j) Squash – Romanesco – Netted & Plastic House;

(k) Squash – Romanesco – Open Field;

(l) Squash – Rootstock Cucurbits – Netted & Plastic House;

(m) Squash – Rootstock Cucurbits – Open Field;

(n) Squash – Yellow – Netted & Plastic House;

(o) Squash – Yellow – Open Field;

(p) Squash – Zucchini Green – Heated Glasshouse;

(q) Squash – Zucchini Green – Netted & Plastic House;

[415] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

(r) Squash – Zucchini Green – Open Field;

(s) Squash – Zucchini Grey – Netted & Plastic House; and

(t) Squash – Zucchini Grey – Open Field.

(575) The global sales of Squash seeds amounted to around EUR […] in 2016. At global level, Monsanto is the second largest identified player with a share of [10-20]%. Bayer has a share of [0-5]%. The other identified competitors are Syngenta ([10-20]%), Limagrain ([10-20]%), Sakata ([5-10]%) and Enza Zaden ([0-5]%).

Figure 59 – Worldwide market shares in Squash seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 83, question 3(d) [Annex 83.1].

(576) The EEA is the second largest region worldwide for Squash seeds, with a value of around EUR […] in 2016.[416] In the EEA, Monsanto is the […] largest player with a share of [10-20]%, together with Enza Zaden ([5-10]%), after Syngenta ([30-40]%) and Limagrain ([20-30]%). Bayer has a share of [5-10]%. The other significant competitors are Rijk Zwaan ([5-10]%) and Sakata ([5-10]%).

Figure 60 – EEA market shares in Squash seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 87, question 5 [Annex 87.5].

(577) There are 10 segments commercialised in the EEA. The five largest segments (namely, Zucchini Green – Netted & Plastic House, Zucchini Green – Open Field, Rootstock Cucurbits – Open Field, Romanesco – Open Field, Lebanese – Open Field) accounted together for around [80-90]% of the sales of Squash seeds in the EEA in 2016.

Figure 61 – EEA segment sizes, Squash seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 94, question 1 [Annex 94.1].

(578) In the EEA, the Parties' activities overlap in five segments, namely: Romanesco – Open Field, Lebanese – Open Field, Zucchini Grey – Open Field, Zucchini Green – Open Field and Rootstock Cucurbits – Open Field. These three segments accounted together for around [60-70]% of the sales of Squash seeds in the EEA in 2016.

Figure 62 – Parties' overlaps in Squash seeds by segment (EEA, 2016)

[…]

Source: Parties' supplementary reply to the Commission's request for information RFI 34, question 1.[417]

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416 Parties' response to the Commission's request for information RFI 83, question 3(c) [Annex 83.1]; the Parties provided figures and data for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

417 Colours correspond to the colour coding provided by the Commission in its request for information RFI 34, as follows:
(a) "Green flag" for markets with combined share below 20%; or, HHI post-merger below 1000; or, HHI post-merger between 1000 and 2000 and delta below 250, provided Parties' combined share is below 50%; or, HHI post-merger above 2000 and delta below 150, provided Parties' combined share is

18.2. Competitive assessment

18.2.1. Criteria used in the Commission's assessment

(579) The Commission has used the filters set out in Section VIII.6.3 in order to identify segments where the Transaction would likely cause a significant impediment to effective competition.

(580) The Commission has also taken into account the fact that the Parties are important and close competitors as regards Squash seeds for the following reasons:

(a) Bayer and Monsanto are among the few players which have both a global and EU presence;

(b) In the EU, the Parties are both present in the main segments and countries.

18.2.2. Arguments of the Parties

(581) The Notifying Party argued that the Transaction will not give rise to competition concerns in the markets for one or more of the following reasons:

(a) For certain countries, the post-Transaction HHI is less than 1000;[418]

(b) For certain countries, there is no affected market at crop or segment level;[419]

(c) For certain countries, a significant number of competitors will remain in the market;[420]

(d) For certain countries, other competitors present in neighbouring countries may easily enter or expand in the market concerned.[421]

(582) The Commission has addressed these arguments, when relevant, in the following assessment, which has been done at segment level.

(583) The Commission notes that in its response to the Statement of Objections, the Notifying Party expressed its disagreement with the Commission's assessment of vegetable seeds in the Statement of Objections, without addressing specifically the Commission's assessment of Squash seeds.[422]

18.2.3. Relevant segments

(584) The Parties' combined share exceeds 20% and the Transaction thus results in affected markets in certain countries in the following segments: Lebanese – Open Field, Romanesco – Open Field, Rootstock Cucurbits – Open Field, Zucchini Green – Open Field, Zucchini Grey – Open Field segment: Italy.

18.2.3.1. Lebanese – Open Field

(585) In the Lebanese – Open Field segment, the Commission has identified in the table below the affected geographic markets where the Transaction would not significantly impede effective competition.

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below 50%;
(b) "Red flag" for markets where the combined share is equal to or above 50% and the increment is equal to or above 1%; or, markets where the HHI is above 2500 and the delta is above 200.
(c) "Yellow flag" for markets that are neither red nor green.

418 Form CO, part 8.15, [country].
419 Form CO, part 8.15, [country].
420 Form CO, part 8.15, [countries].
421 Form CO, part 8.15, [countries].
422 Notifying Party's response to the Statement of Objections, paragraphs 156-173.

Table 61 – Geographic markets where the Transaction would not significantly impede effective competition (Squash – Lebanese – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[423]	Comments
Lebanese – Open Field	Italy	[…]	[20-30]%	[0-5]%	[2000-2500]	[100-200]	[…]	[…]	[…]	Modest combined market share; low increment in market share; small HHI Delta; one larger competitor and market leader; three other sizeable competitors
Lebanese – Open Field	Spain	[…]	[30-40]%	[0-5]%	[1500-2000]	[100-200]	[…]	[…]	[…]	Four sizeable competitors; low increment in market share; the Parties stopped their breeding programmes

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[423] Excluding unidentified competitors under the "Other" category.

18.2.3.2. Romanesco – Open Field

(586) In the Romanesco – Open Field segment, the Commission has identified in the table below the geographic market where the Transaction would not significantly impede effective competition.

Table 62 – Geographic market where the Transaction would not significantly impede effective competition (Squash – Romanesco – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[424]	Comments
Romanesco – Open Field	Italy	[…]	[20-30]%	[5-10]%	[1500-2000]	[100-200]	[…]	[…]	[…]	Five sizeable competitors; the Parties stopped their breeding programmes

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[424] Excluding unidentified competitors under the "Other" category.

18.2.3.3. Rootstock Cucurbits – Open Field

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(587) In the Rootstock Cucurbits – Open Field segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 63 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Squash – Rootstock Cucurbits – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[425]	Comments
Rootstock Cucurbits – Open Field	Hungary	[…]	[60-70]%	[0-5]%	[3500-4000]	[300-400]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than six times larger than second largest competitor; no evidence of recent entry
Rootstock Cucurbits – Open Field	Portugal	[…]	[30-40]%	[10-20]%	[3000-3500]	[600-700]	[…]	[…]	[…]	Highly concentrated market; significant increase in market share and HHI; one larger competitor with comparable market share; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[426]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[5-10]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[425] Excluding unidentified competitors under the "Other" category.

[426] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(B) Geographic markets where the Transaction would not significantly impede effective competition

(588) In the Rootstock Cucurbits – Open Field segment, the Commission has identified in the table below the affected geographic markets where the Transaction would not significantly impede effective competition.

Table 64 – Geographic markets where the Transaction would not significantly impede effective competition (Squash – Rootstock Cucurbits – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[427]	Comments
Rootstock Cucurbits – Open Field	Italy	[…]	[20-30]%	[5-10]%	[1500-2000]	[100-200]	[…]	[…]	[…]	Modest combined market share; five sizeable competitors; the Parties stopped their breeding programmes
Rootstock Cucurbits – Open Field	Spain	[…]	[20-30]%	[0-5]%	[1500-2000]	[0-100]	[…]	[…]	[…]	Modest combined market share; two larger competitors, including the market leader; three other sizeable competitors; the Parties stopped their breeding programmes

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[427] Excluding unidentified competitors under the "Other" category.

18.2.3.4. Zucchini Green – Open Field

(589) In the Zucchini Green – Open Field segment, the Commission has identified in the table below the affected geographic markets where the Transaction would not significantly impede effective competition.

Table 65 – Geographic markets where the Transaction would not significantly impede effective competition (Squash – Zucchini Green – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest player (number of times)	Number of remaining sizeable competitors (market share>5%)[428]	Comments
Zucchini Green – Open Field	Finland	[…]	[30-40]%	[0-5]%	[1500-2000]	[0-100]	[…]	[…]	[…]	Four sizeable competitors; low increment in market share; small HHI Delta; Bayer stopped its breeding programme
Zucchini Green – Open Field	Hungary	[…]	[20-30]%	[10-20]%	[1400-1500]	[400-500]	[…]	[…]	[…]	Six sizeable competitors; Bayer stopped its breeding programme
Zucchini Green – Open Field	Italy	[…]	[20-30]%	[5-10]%	[5500-6000]	[100-200]	[…]	[…]	[…]	One larger competitor and market leader; Bayer stopped its breeding programme

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[428] Excluding unidentified competitors under the "Other" category.

18.2.3.5. Zucchini Grey – Open Field

(590) In the Zucchini Grey – Open Field segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

Table 66 – Geographic market where the Transaction would not significantly impede effective competition (Squash – Zucchini Grey – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest player (number of times)	Number of remaining sizeable competitors (market share>5%) [429]	Comments
Zucchini Grey – Open Field	Italy	[…]	[20-30]%	[0-5]%	[4500-5000]	[0-100]	[…]	[…]	[…]	One larger competitor and market leader; low increment in market share and HHI Delta; the Parties stopped their breeding programmes

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[429] Excluding unidentified competitors under the "Other" category.

18.2.4. Conclusion

18.2.4.1. Markets where the Transaction would likely cause a significant impediment to effective competition

(591) For the reasons set out above, in particular in the relevant tables, and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to Squash seeds because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on competition, in the following segments and countries:

(a) In the Rootstock Cucurbits – Open Field segment: Hungary (SD), Portugal.

18.2.4.2. Markets where the Transaction would not significantly impede effective competition

(592) On balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition in relation to Squash seeds in the following segments and countries:

(a) In the Lebanese – Open Field segment: Italy, Spain;

(b) In the Romanesco – Open Field segment: Italy;

(c) In the Rootstock Cucurbits – Open Field segment: Italy;

(d) In the Zucchini Green – Open Field segment; Finland, Hungary, Italy;

(e) In the Zucchini Grey – Open Field segment: Italy.

19. SWEET PEPPER SEEDS

19.1. General

(593) Sweet pepper seeds are differentiated on the basis of the growing environment in which they are bred to thrive most effectively and the variety of grown vegetable they produce. Based on these considerations, the Notifying Party submits that the following is the most appropriate segmentation of the product market for Sweet Pepper seeds:

(a) Sweet Pepper – Blocky – Open Field;

(b) Sweet Pepper – Blocky – Orange – Heated Glasshouse;

(c) Sweet Pepper – Blocky – Orange – Netted & Plastic House;

(d) Sweet Pepper – Blocky – Red & Green – Heated Glasshouse;

(e) Sweet Pepper – Blocky – Red & Green – Netted & Plastic House;

(f) Sweet Pepper – Blocky – Yellow – Heated Glasshouse;

(g) Sweet Pepper – Blocky – Yellow – Netted & Plastic House;

(h) Sweet Pepper – Half Long – Open Field;

(i) Sweet Pepper – Half Long – Orange – Netted & Plastic House;

(j) Sweet Pepper – Half Long – Red & Green – Netted & Plastic House;

(k) Sweet Pepper – Half Long – Yellow – Netted & Plastic House;

(l) Sweet Pepper – Pointed – Heated Glasshouse;

(m) Sweet Pepper – Pointed – Netted & Plastic House;

(n) Sweet Pepper – Pointed – Open Field;

(o) Sweet Pepper – Other Sweet Pepper (such as sweet pepper shaped, Mint, Dolma and White breeds);

(p) Sweet Pepper – Specialties (including mini peppers); and

(q) Sweet Pepper – Rootstock.

(594) The global sales of Sweet Pepper seeds amounted to around EUR […] in 2016. At global level, Monsanto has a share of [20-30]% and Bayer has a share of [5-10]%. The significant identified competitors are Syngenta ([10-20]%), Enza Zaden ([10-20]%), Rijk Zwaan ([10-20]%) and Limagrain ([5-10]%).

Figure 63 – Worldwide market shares in Sweet Pepper seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 83, question 3(d) [Annex 83.1].

(595) The EEA is the largest region worldwide for Sweet Pepper seeds, with a value of around EUR […] in 2016.[430] In the EEA, Monsanto is the […] largest player with a share of [10-20]%. Bayer has a share of [5-10]%. The other significant competitors are Syngenta ([10-20]%), Rijk Zwaan ([10-20]%), Enza Zaden ([10-20]%) and Limagrain ([10-20]%).

Figure 64 – EEA market shares in Sweet Pepper seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 87, question 5 [Annex 87.5].

(596) There are sixteen segments commercialised in the EEA. The five largest segments (namely: Blocky – Red & Green – Netted & Plastic House, Blocky – Orange – Heated Glasshouse, Half Long – Red & Green – Netted & Plastic House, Half Long – Open Field, Pointed – Heated Glasshouse) accounted together for around [60-70]% of the sales of Sweet Pepper seeds in the EEA in 2016.

Figure 65 – EEA segment sizes, Sweet Pepper seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 94, question 1 [Annex 94.1].

[430] Parties' response to the Commission's request for information RFI 83, question 3(c) [Annex 83.1]; the Parties provided figures and data for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(597) In the EEA, the Parties' activities overlap in seven segments, namely: Half Long – Yellow – Netted & Plastic House, Half Long – Red & Green – Netted & Plastic House, Pointed – Netted & Plastic House, Blocky – Red & Green – Netted & Plastic House, Half Long – Open Field, Other and Blocky – Open Field. These seven segments accounted together for around [60-70]% of the sales of Sweet Pepper seeds in the EEA in 2016.

Figure 66 – Parties' overlaps in Sweet Pepper seeds by segment (EEA, 2016)

[…]

Source: Parties' supplementary reply to the Commission's request for information RFI 34, question 1.[431]

19.2. Competitive assessment

19.2.1. Criteria used in the Commission's assessment

(598) The Commission has used the filters set out in Section VIII.6.3 in order to identify segments where the Transaction would likely cause a significant impediment to effective competition.

(599) The Commission has also taken into account the fact that the Parties are important and close competitors as regards Sweet Pepper seeds for the following reasons:

(a) Bayer and Monsanto are among the few players which have both a global and EU presence;

(b) In the EU, the Parties are both present in the main segments and countries;

(c) […].[432]

19.2.2. Arguments of the Parties

(600) The Notifying Party argued that the Transaction will not give rise to competition concerns in the markets for one or more of the following reasons:

(a) For certain countries, there is no affected market at crop or segment level;[433]

(b) For certain countries, the Parties' sales overlap marginally at segment level, i.e. where one segment accounts for a significant part of one of the Parties' sales but for a more limited part of the other Parties' sales;[434]

(c) For certain countries, the increase in HHI[435] is low;

(d) For certain countries, a significant number of competitors will remain in the market;[436]

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431 Colours correspond to the colour coding provided by the Commission in its request for information RFI 34, as follows:
(a) "Green flag" for markets with combined share below 20%; or, HHI post-merger below 1000; or, HHI post-merger between 1000 and 2000 and delta below 250, provided Parties' combined share is below 50%; or, HHI post-merger above 2000 and delta below 150, provided Parties' combined share is below 50%;
(b) "Red flag" for markets where the combined share is equal to or above 50% and the increment is equal to or above 1%; or, markets where the HHI is above 2500 and the delta is above 200.
(c) "Yellow flag" for markets that are neither red nor green.

432 For Bayer: BI 01631, page 7; For Monsanto, Monsanto Internal MI 05380, slide 5.

433 Form CO, part 8.13, [countries].

434 Form CO, part 8.13, [countries].

435 Form CO, part 8.13, [countries].

436 Form CO, part 8.13, [countries].

(e) For certain countries, other competitors present in neighbouring countries may easily enter or expand in the market concerned.[437]

(601) The Commission has addressed these arguments, when relevant, in the following assessment, which has been done at segment level.

(602) The Commission notes that in its response to the Statement of Objections, the Notifying Party expressed its disagreement with the Commission's assessment of vegetable seeds in the Statement of Objections, without addressing specifically the Commission's assessment of Sweet Pepper seeds.[438]

19.2.3. Relevant segments

(603) The Parties' combined share exceeds 20% and the Transaction thus results in affected markets in certain countries in the following segments: Blocky – Open Field, Blocky – Red & Green – Netted & Plastic House, Half Long – Open Field, Other Sweet Pepper, Half Long – Red & Green – Netted & Plastic House, Pointed – Netted & Plastic House.

19.2.3.1. Blocky – Open Field

(604) In the Blocky – Open Field segment, the Commission has identified in the table below the geographic market where the Transaction would likely cause a significant impediment to effective competition.

437 Form CO, part 8.13, [countries].

438 Notifying Party's response to the Statement of Objections, paragraphs 156-173.

Table 67 – Geographic market where the Transaction would likely cause a significant impediment to effective competition (Sweet Pepper – Blocky – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[439]	Comments
Blocky – Open Field	Spain	[…]	[90-100]%	[30-40]%	[10000-10500]	[4000-4500]	[…]	[…]	[…]	Strengthening of dominance; no other competitor
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[440]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[20-30]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

439 Excluding unidentified competitors under the "Other" category.

440 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

19.2.3.2. Blocky – Red & Green – Netted & Plastic House

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(605) In the Blocky – Red & Green – Netted & Plastic House segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 68 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Sweet Pepper – Blocky – Red & Green – Netted & Plastic House)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [441]	Comments
Blocky – Red & Green – Netted & Plastic House	Germany	[…]	[50-60]%	[0-5]%	[3500-4000]	[0-100]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; more than six times larger than second largest competitor; no evidence of recent entry; key segment for Bayer[442]
Blocky – Red & Green – Netted & Plastic House	Hungary	[…]	[90-100]%	[30-40]%	[10000-10500]	[4000-4500]	[…]	[…]	[…]	Strengthening of dominance; no other competitor
Blocky – Red & Green – Netted & Plastic House	Poland	[…]	[30-40]%	[10-20]%	[2000-2500]	[400-500]	[…]	[…]	[…]	Market leader; significant increase in market share and HHI; one sizeable significant competitor with comparable market share; no evidence of recent entry; key segment for Bayer[443]
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[444]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[0-5]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

441 Excluding unidentified competitors under the "Other" category.

442 […], BI 01647, slide 5.

443 […], BI 01647, slide 5.

444 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(B) Geographic market where the Transaction would not significantly impede effective competition

(606) In the Blocky – Red & Green – Netted & Plastic House segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

Table 69 – Geographic market where the Transaction would not significantly impede effective competition (Sweet Pepper – Blocky – Red & Green – Netted & Plastic House)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [445]	Comments
Blocky – Red & Green – Netted & Plastic House	Spain	[…]	[20-30]%	[10-20]%	[2000-2500]	[300-400]	[…]	[…]	[…]	One larger competitor and market leader; two other sizeable competitors

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[445] Excluding unidentified competitors under the "Other" category.

19.2.3.3. Half Long – Open Field

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(607) In the Half Long – Open Field segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 70 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Sweet Pepper – Half Long – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[446]	Comments
Half Long – Open Field	Italy	[…]	[50-60]%	[0-5]%	[3000-3500]	[100-200]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; around six times larger than second largest competitor; no evidence of recent entry
Half Long – Open Field	Poland	[…]	[90-100]%	[10-20]%	[10000-10500]	[1500-2000]	[…]	[…]	[…]	Strengthening of dominance; no other competitor
Half Long – Open Field	Portugal	[…]	[80-90]%	[0-5]%	[6500-7000]	[100-200]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; more than eight times larger than second largest competitor; no evidence of recent entry; key segment for Bayer[447]
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[448]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[50-60]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[446] Excluding unidentified competitors under the "Other" category.

[447] […], BI 01647, slide 5.

[448] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(608) The Commission notes that these geographic markets account together for around [50-60]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Half Long – Open Field segment in the EEA with a combined market share of around [40-50]%.[449]

(B) Geographic market where the Transaction would not significantly impede effective competition

(609) In the Half Long – Open Field segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

[449] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 71 – Geographic market where the Transaction would not significantly impede effective competition (Sweet Pepper – Half Long – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [450]	Comments
Half Long – Open Field	Spain	[…]	[20-30]%	[0-5]%	[2000-2500]	[100-200]	[…]	[…]	[…]	Three sizeable competitors, including two with similar market shares

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[450] Excluding unidentified competitors under the "Other" category.

19.2.3.4. Other Sweet Pepper

(610) In the Other Sweet Pepper segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 72 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Sweet Pepper – Other Sweet Pepper)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[451]	Comment
Other Sweet Pepper	Germany	[…]	[40-50]%	[0-5]%	[2500-3000]	[300-400]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in HHI; one sizeable competitor with comparable market share; no evidence of recent entry
Other Sweet Pepper	Hungary	[…]	[30-40]%	[5-10]%	[2000-2500]	[400-500]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in HHI; around three times larger than second largest competitor; no evidence of recent entry; key segment for Bayer[452]
Other Sweet Pepper	Italy	[…]	[30-40]%	[5-10]%	[2000-2500]	[400-500]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in HHI; one sizeable competitor with comparable market share; key segment and country for Bayer[453]
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[454]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[20-30]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

451 Excluding unidentified competitors under the "Other" category.

452 […], BI 01647, slide 5.

453 […], BI 01647, slides 5 and 8.

454 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

19.2.3.5. Half Long – Red & Green – Netted & Plastic House

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(611) In the Half Long – Red & Green – Netted & Plastic House segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 73 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Sweet Pepper – Half Long – Red & Green – Netted & Plastic House)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[455]	Comments
Half Long – Red & Green – Netted & Plastic House	Italy	[…]	[20-30]%	[10-20]%	[1500-2000]	[400-500]	[…]	[…]	[…]	Market leader; significant increase in market share and HHI; one sizeable competitor with comparable market share; no evidence of recent entry; key segment and country for Bayer[456]
Half Long – Red & Green – Netted & Plastic House	Spain	[…]	[20-30]%	[10-20]%	[2000-2500]	[300-400]	[…]	[…]	[…]	Market leader; concentrated market; significant increase in market share and HHI; one sizeable competitor with similar market share; key segment and country for Bayer[457]
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[458]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[90-100]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

455 Excluding unidentified competitors under the "Other" category.

456 […], BI 01647, slides 5 and 8.

457 […], BI 01647, slides 5 and 8.

458 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(612) The Commission notes that these markets account together for around [90-100]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Half Long – Red & Green – Netted & Plastic House segment in the EEA with a combined market share of around [20-30]%.[459]

(B) Geographic market where the Transaction would not significantly impede effective competition

(613) In the Half Long – Red & Green – Netted & Plastic House segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

[459] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 74 – Geographic market where the Transaction would not significantly impede effective competition (Sweet Pepper – Half Long – Red & Green – Netted & Plastic House)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[460]	Comments
Half Long – Red & Green – Netted & Plastic House	Portugal	[…]	[20-30]%	[5-10]%	[1400-1500]	[200-300]	[…]	[…]	[…]	Modest combined market share; seven sizeable competitors

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[460] Excluding unidentified competitors under the "Other" category.

19.2.3.6. Pointed – Netted & Plastic House

(614) In the Pointed – Netted & Plastic House segment, the Commission has identified in the table below the geographic markets where the Transaction would not significantly impede effective competition.

Table 75 – Geographic markets where the Transaction would not significantly impede effective competition (Sweet Pepper – Pointed – Netted & Plastic House)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[461]	Comments
Pointed – Netted & Plastic House	Croatia	[…]	[20-30]%	[0-5]%	[3000-3500]	[0-100]	[…]	[…]	[…]	Modest combined market share; low increment in market share; small HHI Delta; one larger competitor and market leader; two other sizeable competitors
Pointed – Netted & Plastic House	Romania	[…]	[20-30]%	[10-20]%	[2000-2500]	[200-300]	[…]	[…]	[…]	Modest combined market share; one larger competitor and market leader; two other sizeable competitors

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[461] Excluding unidentified competitors under the "Other" category.

19.2.4. Conclusion

19.2.4.1. Markets where the Transaction would likely cause a significant impediment to effective competition

(615) For the reasons set out above, in particular in the relevant tables, and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to Sweet Pepper seeds because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on competition, in the following segments and countries:

(a) In the Blocky – Open Field segment: Spain (SD);

(b) In the Blocky – Red & Green – Netted & Plastic House segment: Germany, Hungary, Poland:

(c) In the Half Long – Open Field segment: Italy (SD), Poland (SD), Portugal (SD);

(d) In the Other Sweet Pepper segment: Germany, Hungary, Italy;

(e) In the Half Long – Red & Green – Netted & Plastic House segment: Italy, Spain.

19.2.4.2. Markets where the Transaction would not significantly impede effective competition

(616) On balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition in relation to Sweet Pepper seeds in the following segments and countries:

(a) In the Blocky – Red & Green – Netted & Plastic House segment; Spain;

(b) In the Half Long – Open Field segment: Spain;

(c) In the Half Long – Red & Green – Netted & Plastic House segment: Portugal

(d) In the Pointed – Netted & Plastic House segment: Croatia, Romania.

20. TOMATO SEEDS

20.1. General

(617) Tomato seeds are differentiated on the basis of the growing environment in which they are bred to thrive most effectively, the use by growers' customers of the grown vegetable (fresh consumption or processing) and the variety of grown vegetable they produce. Based on these considerations, the Notifying Party submits that the following is the most appropriate segmentation of the product market for Tomato seeds:

(a) Tomato – Tomato – Fresh – FM Cherry Cocktail – Heated Glasshouse;

(b) Tomato – Fresh – FM Cherry Cocktail – Netted & Plastic House;

(c) Tomato – Fresh – FM Determinate Round – Open Field;

(d) Tomato – Fresh – FM Determinate Saladette – Open Field;

(e) Tomato – Fresh – FM Indeterminate Round – Heated Glasshouse;

(f) Tomato – Fresh – FM Indeterminate Round – Netted & Plastic House;

(g) Tomato – Fresh – FM Indeterminate Round – Open Field;

(h) Tomato – Fresh – FM Indeterminate Saladette – Heated Glasshouse;

(i) Tomato – Fresh – FM Indeterminate Saladette – Netted & Plastic House;

(j) Tomato – Fresh – FM Specialties – Heated Glasshouse;

(k) Tomato – Fresh – FM Specialties – Netted & Plastic House;

(l) Tomato – Processing – Brix – Open Field;

(m) Tomato – Processing – Processing Pear – Open Field; and

(n) Tomato – Tomato Rootstock.

(618) The global sales of Tomato seeds amounted to around EUR […] in 2016. At global level, Monsanto has a share of [20-30]% and Bayer has a share of [5-10]%. The other significant identified competitors are Syngenta ([10-20]%), Limagrain ([10-20]%) and Enza Zaden ([5-10]%).

Figure 67 – Worldwide market shares in Tomato seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 83, question 3(d) [Annex 83.1].

(619) The EEA is the second largest region worldwide for Tomato seeds, with a value of around EUR […] in 2016.[462] In the EEA, Monsanto is the largest player with a share of [30-40]%, followed by Limagrain ([10-20]%) and Syngenta ([10-20]%). Bayer has a share of [5-10]%. The other significant competitors are Rijk Zwaan ([5-10]%) and Enza Zaden ([5-10]%).

Figure 68 – EEA market shares in Tomato seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 87, question 5 [Annex 87.5].

(620) There are sixteen segments commercialised in the EEA. The five largest segments (namely: Fresh – FM Indeterminate Round – Netted & Plastic House, Tomato Rootstock, Fresh – FM Cherry Cocktail – Netted & Plastic House, Fresh – FM Indeterminate Round – Heated Glasshouse, Fresh – FM Specialties – Netted & Plastic House) accounted together for around [70-80]% of the sales of Tomato seeds in the EEA in 2016.

Figure 69 – EEA segment sizes, Tomato seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 94, question 1 [Annex 94.1].

(621) In the EEA, the Parties' activities overlap in eleven segments, namely: Fresh – FM Indeterminate Saladette – Netted & Plastic House, Fresh – FM Indeterminate Round – Netted & Plastic House, Fresh – FM Cherry Cocktail – Netted & Plastic House, Fresh – FM Indeterminate Round – Heated Glasshouse, Fresh – FM Cherry Cocktail – Heated Glasshouse, Fresh – FM Determinate Round – Open Field, Fresh – FM Specialties – Heated Glasshouse, Tomato Rootstock, Fresh – FM Specialties – Netted & Plastic House, Processing – Processing Pear – Open Field, Processing –

462 Parties' response to the Commission's request for information RFI 83, question 3(c) [Annex 83.1]; the Parties provided figures and data for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

Brix – Open Field. These segments accounted together for around [90-100]% of the sales of Tomato seeds in the EEA in 2016.

Figure 70 – Parties' overlaps in Tomato seeds by segment (EEA, 2016)

[…]

Source: Parties' supplementary reply to the Commission's request for information RFI 34, question 1.[463]

20.2. Competitive assessment

20.2.1. Criteria used in the Commission's assessment

(622) The Commission has used the filters set out in Section VIII.6.3 in order to identify segments where the Transaction would likely cause a significant impediment to effective competition.

(623) The Commission has also taken into account the fact that the Parties are important and close competitors as regards Tomato seeds for the following reasons:

(a) Bayer and Monsanto are among the few players which have both a global and EU presence;

(b) In the EU, the Parties are both present in the main segments and countries;

(c) […].[464]

20.2.2. Arguments of the Parties

(624) The Notifying Party argued the Transaction will not give rise to competition concerns in the markets for one or more of the following reasons:

(a) For certain countries, the Parties' combined market at crop level is less than 25%;[465]

(b) For certain countries, the Parties' sales overlap marginally at segment level, i.e. where one segment accounts for a significant part of one of the Parties' sales but for a more limited part of the other Parties' sales;[466]

(c) For certain countries, the combined market share of the Parties has decreased over the past three years;[467]

(d) For certain countries, the increment in market share[468] and/or the increase in HHI[469] is low;

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463 Colours correspond to the colour coding provided by the Commission in its request for information RFI 34, as follows:
(a) "Green flag" for markets with combined share below 20%; or, HHI post-merger below 1000; or, HHI post-merger between 1000 and 2000 and delta below 250, provided Parties' combined share is below 50%; or, HHI post-merger above 2000 and delta below 150, provided Parties' combined share is below 50%;
(b) "Red flag" for markets where the combined share is equal to or above 50% and the increment is equal to or above 1%; or, markets where the HHI is above 2500 and the delta is above 200.
(c) "Yellow flag" for markets that are neither red nor green.

464 For Bayer: BI 01634, page 5; BI 0637, slide 17; For Monsanto, MI 05385, slide 5.

465 Form CO, part 8.16, [countries].

466 Form CO, part 8.16, [countries].

467 Form CO, part 8.16, [countries].

468 Form CO, part 8.16, [countries].

469 Form CO, part 8.16, [countries].

(e) For certain countries, a significant number of competitors will remain in the market;[470]

(f) For certain countries, other competitors present in neighbouring countries may easily enter or expand in the market concerned.[471]

(625) The Commission has addressed these arguments, when relevant, in the following assessment, which has been done at segment level.

(626) The Commission notes that in its response to the Statement of Objections, the Notifying Party expressed its disagreement with the Commission's assessment of vegetable seeds in the Statement of Objections, without addressing specifically the Commission's assessment of Tomato seeds.

20.2.3. Relevant segments

(627) The Parties' combined share exceeds 20% and the Transaction thus results in affected markets in certain countries in the following segments: Tomato Rootstock, Fresh – Fm Cherry Cocktail – Heated Glasshouse, Fresh – Fm Cherry Cocktail – Netted & Plastic House, Fresh – Fm Determinate Round – Open Field, Fresh – Fm Determinate Saladette – Open Field, Fresh – Fm Indeterminate Round – Heated Glasshouse, Fresh – Fm Indeterminate Round – Netted & Plastic House, Fresh – Fm Specialties – Heated Glasshouse, Fresh – Fm Specialties – Netted & Plastic House, Processing – Brix – Open Field, Processing – Processing Pear – Open Field.

20.2.3.1. Tomato Rootstock

(628) In the Tomato Rootstock segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

[470] Form CO, part 8.16, [countries].
[471] Form CO, part 8.16, [countries].

Table 76 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Tomato – Tomato Rootstock)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[472]	Comments
Tomato Rootstock	Croatia	[…]	[90-100]%	[30-40]%	[10000-10500]	[4000-4500]	[…]	[…]	[…]	Strengthening of dominance; no other competitor
Tomato Rootstock	Germany	[…]	[80-90]%	[0-5]%	[7000-7500]	[100-200]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; no sizeable competitor; no evidence of recent entry
Tomato Rootstock	Italy	[…]	[70-80]%	[0-5]%	[5500-6000]	[200-300]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than five times larger than second largest competitor; no evidence of recent entry
Tomato Rootstock	Netherlands	[…]	[80-90]%	[0-5]%	[7000-7500]	[0-100]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; no sizeable competitor; no evidence of recent entry; key country for Bayer[473]
Tomato Rootstock	Spain	[…]	[50-60]%	[0-5]%	[3500-4000]	[400-500]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; around six times larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[474]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[70-80]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

472 Excluding unidentified competitors under the "Other" category.

473 […], BI 06148, slide 12.

474 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(629) The Commission notes that these geographic markets account together for around [70-80]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Tomato Rootstock segment in the EEA with a combined market share of around [60-70]%.[475]

20.2.3.2. Fresh – Fm Cherry Cocktail – Heated Glasshouse

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(630) In the Fresh – Fm Cherry Cocktail – Heated Glasshouse segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

[475] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 77 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Tomato – Fresh – Fm Cherry Cocktail – Heated Glasshouse)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[476]	Comment
Fresh – Fm Cherry Cocktail – Heated Glasshouse	Finland	[…]	[40-50]%	[5-10]%	[2000-2500]	[400-500]	[…]	[…]	[…]	Market leader; concentrated market; significant increase in HHI; more than four times larger than second largest competitor; no evidence of recent entry; key segment for Bayer[477]
Fresh – Fm Cherry Cocktail – Heated Glasshouse	Germany	[…]	[50-60]%	[5-10]%	[2500-3000]	[600-700]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in HHI; more than four times larger than second largest competitor; no evidence of recent entry
Fresh – Fm Cherry Cocktail – Heated Glasshouse	Netherlands	[…]	[80-90]%	[0-5]%	[7000-7500]	[500-600]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; no sizeable competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[478]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[40-50]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

476 Excluding unidentified competitors under the "Other" category.

477 […], BI 01648, slide 7.

478 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(631) The Commission notes that these geographic markets account together for around [40-50]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Fresh – Fm Cherry Cocktail – Heated Glasshouse segment in the EEA with a combined market share of around [40-50]%.[479]

(B) Geographic market where the Transaction would not significantly impede effective competition

(632) In the Fresh – Fm Cherry Cocktail – Heated Glasshouse segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

[479] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 78 – Geographic market where the Transaction would not significantly impede effective competition (Tomato – Fresh – Fm Cherry Cocktail – Heated Glasshouse)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [480]	Comment
Fresh – Fm Cherry Cocktail – Heated Glasshouse	France	[…]	[20-30]%	[0-5]%	[1500-2000]	[0-100]	[…]o	[…].	[…]	One larger competitor and market leader; three other sizeable competitors; low increment in market share and HHI Delta

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[480] Excluding unidentified competitors under the "Other" category.

20.2.3.3. Fresh – Fm Cherry Cocktail – Netted & Plastic House

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(633) In the Fresh – Fm Cherry Cocktail – Netted & Plastic House segment, the Commission has identified in the table below the geographic markets would likely cause a significant impediment to effective competition.

Table 79 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Tomato – Fresh – Fm Cherry Cocktail – Netted & Plastic House)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[481]	Comment
Fresh – Fm Cherry Cocktail – Netted & Plastic House	Germany	[…]	[50-60]%	[0-5]%	[3000-3500]	[0-100]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; more than five times larger than second largest competitor; no evidence of recent entry; key segment for Bayer[482]
Fresh – Fm Cherry Cocktail – Netted & Plastic House	Greece	[…]	[90-100]%	[10-20]%	[10000-10500]	[2000-2500]	[…]	[…]	[…]	Strengthening of dominance; no other competitor
Fresh – Fm Cherry Cocktail – Netted & Plastic House	Hungary	[…]	[40-50]%	[10-20]%	[3000-3500]	[1000-1100]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in market share and HHI; more than twice larger than second largest competitor; no evidence of recent entry
Fresh – Fm Cherry Cocktail – Netted & Plastic House	Portugal	[…]	[90-100]%	[30-40]%	[10000-10500]	[4000-4500]	[…]	[…]	[…]	Strengthening of dominance; no other competitor
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[483]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[0-5]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[481] Excluding unidentified competitors under the "Other" category.

[482] […], BI 01648, slide 7.

[483] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(B) Geographic market where the Transaction would not significantly impede effective competition

(634) In the Fresh – Fm Cherry Cocktail – Netted & Plastic House segment, the Commission has identified in the table below the affected geographic market would not significantly impede effective competition.

Table 80 – Geographic market where the Transaction would not significantly impede effective competition (Tomato – Fresh – Fm Cherry Cocktail – Netted & Plastic House)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[484]	Comment
Fresh – Fm Cherry Cocktail – Netted & Plastic House	Spain	[…]	[20-30]%	[5-10]%	[2000-2500]	[200-300]	[…]	[…]	[…]	One larger competitor and market leader; two other sizeable competitors including one with similar market share

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[484] Excluding unidentified competitors under the "Other" category.

20.2.3.4. Fresh – Fm Determinate Round – Open Field

(635) In the Fresh – Fm Determinate Round – Open Field segment, the Commission has identified in the table below the affected geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 81 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Tomato – Fresh – Fm Determinate Round – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[485]	Comments
Fresh – Fm Determinate Round – Open Field	France	[…]	[90-100]%	[30-40]%	[10000-10500]	[4500-5000]	[…]	[…]	[…]	Strengthening of dominance; no other competitor
Fresh – Fm Determinate Round – Open Field	Italy	[…]	[90-100]%	[20-30]%	[10000-10500]	[3500-4000]	[…]	[…]	[…]	Strengthening of dominance; no other competitor
Fresh – Fm Determinate Round – Open Field	Spain	[…]	[90-100]%	[0-5]%	[10000-10500]	[600-700]	[…]	[…]	[…]	Strengthening of dominance; no other competitor
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[486]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[10-20]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[485] Excluding unidentified competitors under the "Other" category.

[486] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

20.2.3.5. Fresh – Fm Determinate Saladette – Open Field

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(636) In the Fresh – Fm Determinate Saladette – Open Field segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 82 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Tomato – Fresh – Fm Determinate Saladette – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[487]	Comment
Fresh – Fm Determinate Saladette – Open Field	Italy	[…]	[90-100]%	[5-10]%	[10000-10500]	[1200-1300]	[…]	[…]	[…]	Strengthening of dominance; no other competitor
Fresh – Fm Determinate Saladette – Open Field	Spain	[…]	[90-100]%	[5-10]%	[10000-10500]	[1100-1200]	[…]	[…]	[…]	Strengthening of dominance; no other competitor
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[488]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[20-30]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[487] Excluding unidentified competitors under the "Other" category.

[488] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(637) The Commission notes that these geographic markets account together for around [20-30]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Fresh – Fm Determinate Saladette – Open Field segment in the EEA with a combined market share of around [40-50]%.[489]

(B) Geographic market where the Transaction would not significantly impede effective competition

(638) In the Fresh – Fm Determinate Saladette – Open Field segment, the Commission has identified in the table below the affected geographic market where the Transaction would likely cause a significant impediment to effective competition.

[489] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 83 – Geographic market where the Transaction would not significantly impede effective competition (Tomato – Fresh – Fm Determinate Saladette – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[490]	Comment
Fresh – Fm Determinate Saladette – Open Field	France	[…]	[20-30]%	[0-5]%	[4000-4500]	[0-100]	[…]	[…]	[…]	Modest combined market share; low increment in market share; small HHI Delta; one larger competitor and market leader

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[490] Excluding unidentified competitors under the "Other" category.

20.2.3.6. Fresh – Fm Indeterminate Round – Heated Glasshouse

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(639) In the Fresh – Fm Indeterminate Round – Heated Glasshouse segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 84 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Tomato – Fresh – Fm Indeterminate Round – Heated Glasshouse)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[491]	Comments
Fresh – Fm Indeterminate Round – Heated Glasshouse	Finland	[…]	[40-50]%	[0-5]%	[2000-2500]	[0-100]	[…]	[…]	[…]	Market leader; concentrated market; more than three times larger than second largest competitor; no evidence of recent entry
Fresh – Fm Indeterminate Round – Heated Glasshouse	France	[…]	[40-50]%	[0-5]%	[2000-2500]	[0-100]	[…]	[…]	[…]	Market leader; concentrated market; more than four times larger than second largest competitor; no evidence of recent entry; key country for Bayer[492]
Fresh – Fm Indeterminate Round – Heated Glasshouse	Hungary	[…]	[60-70]%	[0-5]%	[4000-4500]	[0-100]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; more than three times larger than second largest competitor; no evidence of recent entry;
Fresh – Fm Indeterminate Round – Heated Glasshouse	Netherlands	[…]	[80-90]%	[5-10]%	[7000-7500]	[800-900]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; no sizeable competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[493]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[40-50]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

491 Excluding unidentified competitors under the "Other" category.

492 […], BI 06148, slide 12.

493 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(640) The Commission notes that these geographic markets account together for around [40-50]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Fresh – Fm Indeterminate Round – Heated Glasshouse segment in the EEA with a combined market share of around [40-50]%.[494]

(B) Geographic markets where the Transaction would not significantly impede effective competition

(641) In the Fresh – Fm Indeterminate Round – Heated Glasshouse segment, the Commission has identified in the table below the affected geographic markets where the Transaction would not significantly impede effective competition.

[494] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 85 – Geographic markets where the Transaction would not significantly impede effective competition (Tomato – Fresh – Fm Indeterminate Round – Heated Glasshouse)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[495]	Comment
Fresh – Fm Indeterminate Round – Heated Glasshouse	Belgium	[…]	[20-30]%	[0-5]%	[1300-1400]	[100-200]	[…]	[…]	[…]	Seven sizeable competitors; low increment in market share and HHI Delta
Fresh – Fm Indeterminate Round – Heated Glasshouse	Denmark	[…]	[20-30]%	[0-5]%	[1500-2000]	[100-200]	[…]	[…]	[…]	Six sizeable competitors; low increment in market share and HHI Delta

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[495] Excluding unidentified competitors under the "Other" category.

20.2.3.7. Fresh – Fm Indeterminate Round – Netted & Plastic House

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(642) In the Fresh – Fm Indeterminate Round – Netted & Plastic House segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 86 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Tomato – Fresh – Fm Indeterminate Round – Netted & Plastic House)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[496]	Comment
Fresh – Fm Indeterminate Round – Netted & Plastic House	Germany	[…]	[30-40]%	[5-10]%	[2000-2500]	[500-600]	[…]	[…]	[…]	Market leader; concentrated market; significant increase in market share and HHI; more than twice larger than second largest and competitor; no evidence of recent entry
Fresh – Fm Indeterminate Round – Netted & Plastic House	Italy	[…]	[50-60]%	[5-10]%	[3500-4000]	[500-600]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; seven times larger than second largest competitor; no evidence of recent entry
Fresh – Fm Indeterminate Round – Netted & Plastic House	Lithuania	[…]	[90-100]%	[5-10]%	[8500-9000]	[1100 - 1200]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; no sizeable competitor; no evidence of recent entry
Fresh – Fm Indeterminate Round – Netted & Plastic House	Netherlands	[…]	[80-90]%	[0-5]%	[7000-7500]	[0-100]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market more than sixteen times larger than second largest competitor; no evidence of recent entry; key country for Bayer[497]
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[498]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[10-20]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[496] Excluding unidentified competitors under the "Other" category.

[497] […], BI 06148, slide 12.

[498] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(B) Geographic markets where the Transaction would not significantly impede effective competition

(643) In the Fresh – Fm Indeterminate Round – Netted & Plastic House segment, the Commission has identified in the table below the affected geographic markets where the Transaction would not significantly impede effective competition.

Table 87 – Geographic markets where the Transaction would not significantly impede effective competition (Tomato – Fresh – Fm Indeterminate Round – Netted & Plastic House)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[499]	Comment
Fresh – Fm Indeterminate Round – Netted & Plastic House	Poland	[…]	[20-30]%	[0-5]%	[2000-2500]	[0-100]	[…]	[…]	[…]	One larger competitor and market leader; three other sizeable competitors; low increment in market share and HHI Delta
Fresh – Fm Indeterminate Round – Netted & Plastic House	Romania	[…]	[20-30]%	[0-5]%	[1500-2000]	[100-200]	[…]	[…]	[…]	One larger competitor and market leader; four other sizeable competitors; low increment in market share and HHI Delta
Fresh – Fm Indeterminate Round – Netted & Plastic House	Spain	[…]	[20-30]%	[0-5]%	[1400-1500]	[0-100]	[…]	[…]	[…]	Six sizeable competitors; low increment in market share; small HHI Delta

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[499] Excluding unidentified competitors under the "Other" category.

20.2.3.8. Fresh – Fm Specialties – Heated Glasshouse

(644) In the Fresh – Fm Specialties – Heated Glasshouse segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 88 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Tomato – Fresh – Fm Specialties – Heated Glasshouse)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [500]	Comments
Fresh – Fm Specialties – Heated Glasshouse	Germany	[…]	[50-60]%	[10-20]%	[3000-3500]	[1300-1400]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than five times larger than second largest competitor; no evidence of recent entry
Fresh – Fm Specialties – Heated Glasshouse	Italy	[…]	[70-80]%	[0-5]%	[5500-6000]	[400-500]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than seven times larger than second largest competitor; no evidence of recent entry
Fresh – Fm Specialties – Heated Glasshouse	Netherlands	[…]	[80-90]%	[10-20]%	[7000-7500]	[2000-2500]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in market share and HHI; no sizeable competitor; no evidence of recent entry
Fresh – Fm Specialties – Heated Glasshouse	Poland	[…]	[70-80]%	[20-30]%	[5000-5500]	[2500-3000]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than seven times larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR) [501]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[40-50]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[500] Excluding unidentified competitors under the "Other" category.

[501] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(645) The Commission notes that these geographic markets account together for around [40-50]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Fresh – Fm Specialties – Heated Glasshouse segment in the EEA with a combined market share of around [40-50]%.[502]

20.2.3.9. Fresh – Fm Specialties – Netted & Plastic House

(A) Geographic market where the Transaction would likely cause a significant impediment to effective competition

(646) In the Fresh – Fm Specialties – Netted & Plastic House segment, the Commission has identified in the table below the geographic market where the Transaction would likely cause a significant impediment to effective competition.

[502] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 89 – Geographic market where the Transaction would likely cause a significant impediment to effective competition (Tomato – Fresh – Fm Specialties – Netted & Plastic House)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[503]	Comments
Fresh – Fm Specialties – Netted & Plastic House	Italy	[…]	[80-90]%	[40-50]%	[7000-7500]	[3500-4000]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than fourteen times larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[504]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[30-40]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

503 Excluding unidentified competitors under the "Other" category.

504 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(B) Geographic market where the Transaction would not significantly impede effective competition

(647) In the Fresh – Fm Specialties – Netted & Plastic House segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

Table 90 – Geographic market where the Transaction would not significantly impede effective competition (Tomato – Fresh – Fm Specialties – Netted & Plastic House)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[505]	Comments
Fresh – Fm Specialties – Netted & Plastic House	Malta	[…]	[20-30]%	[0-5]%	[1500-2000]	[200-300]	[…]	[…]	[…]	Six sizeable competitors; low increment in market share and HHI

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[505] Excluding unidentified competitors under the "Other" category.

20.2.3.10. Processing – Brix – Open Field

(648) In the Processing – Brix – Open Field segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 91 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Tomato – Processing – Brix – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[506]	Comments
Processing – Brix – Open Field	France	[…]	[70-80]%	[10-20]%	[5000-5500]	[1500-2000]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in market share and HHI; more than four times larger than second largest competitor; no evidence of recent entry
Processing – Brix – Open Field	Italy	[…]	[50-60]%	[20-30]%	[3500-4000]	[1500-2000]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than three times larger than second largest competitor; no evidence of recent entry
Processing – Brix – Open Field	Poland	[…]	[30-40]%	[10-20]%	[2000-2500]	[500-600]	[…]	[…]	[…]	Market leader; concentrated market; significant increase in market share and HHI; more than twice larger than second largest competitor; no evidence of recent entry
Processing – Brix – Open Field	Spain	[…]	[60-70]%	[10-20]%	[4500-5000]	[1300-1400]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than twice larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[507]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[70-80]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[506] Excluding unidentified competitors under the "Other" category.

[507] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(649) The Commission notes that these geographic markets account together for around [70-80]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Processing – Brix – Open Field segment in the EEA with a combined market share of around [40-50]%.[508]

20.2.3.11. Processing – Processing Pear – Open Field

(650) In the Processing – Processing Pear – Open Field segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

[508] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 92 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Tomato – Processing – Processing Pear – Open Field)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%) [509]	Comment
Processing – Processing Pear – Open Field	Greece	[…]	[90-100]%	[20-30]%	[10000-10500]	[4000-4500]	[…]	[…]	[…]	Strengthening of dominance; no other competitor
Processing – Processing Pear – Open Field	Italy	[…]	[50-60]%	[20-30]%	[3500-4000]	[1500-2000]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than five times larger than second largest competitor; no evidence of recent entry
Processing – Processing Pear – Open Field	Poland	[…]	[30-40]%	[5-10]%	[2000-2500]	[300-400]	[…]	[…]	[…]	Market leader; concentrated market; significant increase in HHI; one sizeable competitor with comparable market share; no evidence of recent entry
Processing – Processing Pear – Open Field	Spain	[…]	[60-70]%	[5-10]%	[4000-4500]	[700-800]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than six times larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR) [510]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[90-100]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[509] Excluding unidentified competitors under the "Other" category.

[510] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(651) The Commission notes that these geographic markets account together for around [90-100]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in Processing – Processing Pear – Open Field segment in the EEA with a combined market share of around [50-60]%.[511]

20.2.4. Conclusion

20.2.4.1. Markets where the Transaction would likely cause a significant impediment to effective competition

(652) For the reasons set out above, in particular in the relevant tables, and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to Tomato seeds because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on competition, in the following segments and countries:

(a) In the Tomato Rootstock segment: Croatia (SD), Germany (SD), Italy (SD), Netherlands (SD), Spain (SD);

(b) In the Fresh – Fm Cherry Cocktail – Heated Glasshouse segment: Finland, Germany, Netherlands (SD);

(c) In the Fresh – Fm Cherry Cocktail – Netted & Plastic House: Germany (SD), Greece (SD), Hungary, Portugal (SD);

(d) In the Fresh – Fm Determinate Round – Open Field segment: France (SD), Italy (SD), Spain (SD);

(e) In the Fresh – Fm Determinate Saladette – Open Field segment: Italy (SD), Spain (SD);

(f) In the Fresh – Fm Indeterminate Round – Heated Glasshouse segment: Finland, France, Hungary (SD), Netherlands (SD);

(g) In the Fresh – Fm Indeterminate Round – Netted & Plastic House segment: Germany, Italy (SD), Lithuania (SD), Netherlands (SD);

(h) In the Fresh – Fm Specialties – Heated Glasshouse segment: Germany (CD), Italy (SD), Netherlands (SD), Poland (CD);

(i) In the Fresh – Fm Specialties – Netted & Plastic House segment: Italy (CD);

(j) In the Processing – Brix – Open Field segment: France (SD), Italy (CD), Poland, Spain (CD);

(k) In the Processing – Processing Pear – Open Field segment: Greece (SD), Italy (CD), Poland, Spain (SD).

20.2.4.2. Markets where the Transaction would not significantly impede effective competition

(653) On balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition in relation to Tomato seeds in the following segments and countries:

(a) In the Fresh – Fm Cherry Cocktail – Heated Glasshouse segment: France;

(b) In the Fresh – Fm Cherry Cocktail – Netted & Plastic House: Spain;

[511] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

(c) In the Fresh – Fm Determinate Saladette – Open Field segment: France;

(d) In the Fresh – Fm Indeterminate Round – Heated Glasshouse segment: Belgium, Denmark;

(e) In the Fresh – Fm Indeterminate Round – Netted & Plastic House segment: Poland, Romania, Spain;

(f) In the Fresh – Fm Specialties – Netted & Plastic House segment: Malta.

21. WATERMELON SEEDS

21.1. General

(654) Watermelon seeds are differentiated on the basis of the specific properties of certain varietals – particularly size and the distinction between seedless and seeded Watermelons. Based on these considerations, the Notifying Party submits that the following is the most appropriate segmentation of the product market for watermelon seeds:

(a) Watermelon – Seeded – Dark Green Round;

(b) Watermelon – Seedless – Dark Green Round;

(c) Watermelon – Seeded – Grey Oblong Elong;

(d) Watermelon – Seeded – Mini Watermelon;

(e) Watermelon – Seedless – Mini Watermelon;

(f) Watermelon – Seeded – Other Watermelon;

(g) Watermelon – Seedless – Other Watermelon;

(h) Watermelon – Pollenizer;

(i) Watermelon – Seeded – Stripe Oblong Elong;

(j) Watermelon – Seedless – Stripe Oblong Elong;

(k) Watermelon – Seeded – Stripe Round; and

(l) Watermelon – Seedless – Stripe Round.

(655) The global sales of Watermelon seeds amounted to around EUR […] in 2016. At global level, Monsanto has a share of [20-30]% and Bayer has a share of [10-20]%. Significant competitors include Syngenta ([10-20]%) and Limagrain ([5-10]%).

Figure 71 – Worldwide market shares in Watermelon seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 83, question 3(d) [Annex 83.1].

(656) The EEA is the fourth largest region worldwide for Watermelon seeds, with a value of around EUR […] in 2016.[512] In the EEA, Bayer is the largest player with a share of [50-60]%, followed by Monsanto ([10-20]%). The other significant competitor is Syngenta ([10-20]%).

Figure 72 – EEA market shares in Watermelon seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 87, question 5 [Annex 87.5].

(657) There are eleven segments commercialised in the EEA. The five largest segments (namely: Seed – Dark Green Round, Seedless – Stripe Round, Seeded – Mini Watermelon, Seeded – Stripe Oblong Elong and Seeded – Stripe Round) accounted for around [70-80]% of the sales of Watermelon seeds in the EEA in 2016.

Figure 73 – EEA segment sizes, Watermelon seeds (2016)

[…]

Source: Parties' response to the Commission's request for information RFI 94, question 1 [Annex 94.1].

(658) In the EEA, the Parties' activities overlap in five segments, namely: Seeded – Stripe Round, Seeded – Dark Green Round, Seedless – Dark Green Round, Seedless – Stripe Round, Seeded – Stripe Oblong Elong. These five segments accounted together for around [70-80]% of the sales of Watermelon seeds in the EEA in 2016.

Figure 74 – Parties' overlaps in Watermelon seeds by segment (EEA, 2016)

[…]

Source: Parties' supplementary reply to the Commission's request for information RFI 34, question 1.[513]

21.2. Competitive assessment

21.2.1. Criteria used in the Commission's assessment

(659) The Commission has used the filters set out in Section VIII.6.3 in order to identify segments where the Transaction would likely cause a significant impediment to effective competition.

(660) The Commission has also taken into account that the fact the Parties are important and close competitors as regards Watermelon seeds for the following reasons:

(a) Bayer and Monsanto are among the few players which have both a global and EU presence;

(b) In the EU, the Parties are both present in the main segments and countries;

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[512] Parties' response to the Commission's request for information RFI 83, question 3(c) [Annex 83.1]; the Parties provided figures and data for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

[513] Colours correspond to the colour coding provided by the Commission in its request for information RFI 34, as follows:
(a) "Green flag" for markets with combined share below 20%; or, HHI post-merger below 1000; or, HHI post-merger between 1000 and 2000 and delta below 250, provided Parties' combined share is below 50%; or, HHI post-merger above 2000 and delta below 150, provided Parties' combined share is below 50%;
(b) "Red flag" for markets where the combined share is equal to or above 50% and the increment is equal to or above 1%; or, markets where the HHI is above 2500 and the delta is above 200.
(c) "Yellow flag" for markets that are neither red nor green.

(c) […].[514]

21.2.2. Arguments of the Parties

(661) The Notifying Party argued that the Transaction will not give rise to competition concerns in the markets for one or more of the following reasons:

(a) For certain countries, there is no affected market at crop or segment level;[515]

(b) For certain countries, the Parties' combined market at crop level is less than 25%;[516]

(c) For certain countries, the Parties' sales overlap marginally at segment level, i.e. where one segment accounts for a significant part of one of the Parties' sales but for a more limited part of the other Parties' sales;[517]

(d) For certain countries, the relatively small size of markets enhances volatility in percentage market caused by small movements in sales;[518]

(e) For certain countries, the combined market share of the Parties has decreased over the past three years;[519]

(f) For certain countries, a significant number of competitors will remain in the market;[520]

(g) For certain countries, other competitors present in neighbouring countries may easily enter or expand in the market concerned.[521]

(662) The Commission has addressed these arguments, when relevant, in the following assessment, which has been done at segment level.

(663) The Commission notes that in its response to the Statement of Objections, the Notifying Party expressed its disagreement with the Commission's assessment of vegetable seeds in the Statement of Objections, without addressing specifically the Commission's assessment of Watermelon seeds.[522]

21.2.3. Relevant segments

(664) The Parties' combined share exceeds 20% and the Transaction thus results in affected markets in certain countries in the following segments: Seeded – Dark Green Round, Seeded – Stripe Oblong Elong, Seeded – Stripe Round, Seedless – Dark Green Round, Seedless – Stripe Round

21.2.3.1. Seeded – Dark Green Round

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(665) In the Seeded – Dark Green Round segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

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514 For Bayer, BI 01620, page 16; for Monsanto, MI 05383, slide 7.
515 Form CO, part 8.17, [country].
516 Form CO, part 8.17, [country].
517 Form CO, part 8.17, [country].
518 Form CO, part 8.17, [country].
519 Form CO, part 8.17, [country].
520 Form CO, part 8.17, [countries].
521 Form CO, part 8.17, [countries].
522 Notifying Party's response to the Statement of Objections, paragraphs 156-173.

Table 93 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Watermelon – Seeded – Dark Green Round)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[523]	Comments
Seeded – Dark Green Round	France	[…]	[40-50]%	[0-5]%	[2500-3000]	[100-200]	[…]	[…]	[…]	Market leader; close to dominant; highly concentrated market; more than twice larger than second largest and sizeable competitor; no evidence of recent entry
Seeded – Dark Green Round	Italy	[…]	[40-50]%	[5-10]%	[2500-3000]	[500-600]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in HHI; twice larger than second largest competitor; no evidence of recent entry
Seeded – Dark Green Round	Romania	[…]	[50-60]%	[10-20]%	[3500-4000]	[1200-1300]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than twice larger than second largest competitor; no evidence of recent entry
Seeded – Dark Green Round	Spain	[…]	[50-60]%	[0-5]%	[3000-3500]	[0-100]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; more than twice larger than second largest competitor; no evidence of recent entry; key country for Bayer[524]
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[525]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[60-70]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

523 Excluding unidentified competitors under the "Other" category.

524 […], BI 01649, slide 12.

525 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(666) The Commission notes that these geographic markets account together for around [60-70]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Seeded – Dark Green Round segment in the EEA with a combined market share of around [40-50]%.[526]

(B) Geographic market where the Transaction would not significantly impede effective competition

(667) In the Seeded – Dark Green Round segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

[526] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 94 – Geographic market where the Transaction would not significantly impede effective competition (Watermelon – Seeded – Dark Green Round)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[527]	Comments
Seeded – Dark Green Round	Portugal	[…]	[20-30]%	[0-5]%	[1500-2000]	[0-100]	[…]	[…]	[…]	Four sizeable competitors; low increment in market share; small HHI Delta

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[527] Excluding unidentified competitors under the "Other" category.

21.2.3.2. Seeded – Stripe Oblong Elong

(668) In the Seeded – Stripe Oblong Elong segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 95 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Watermelon – Seeded – Stripe Oblong Elong)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[528]	Comments
Seeded – Stripe Oblong Elong	France	[…]	[30-40]%	[10-20]%	[2500-3000]	[700-800]	[…]	[…]	[…]	Market leader; highly concentrated market; significant increase in market share and HHI; one sizeable competitor with comparable market share; no evidence of recent entry
Seeded – Stripe Oblong Elong	Greece	[…]	[70-80]%	[20-30]%	[6000-6500]	[2000-2500]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in market share and HHI; more than five larger than second largest competitor; no evidence of recent entry
Seeded – Stripe Oblong Elong	Hungary	[…]	[60-70]%	[10-20]%	[4000-4500]	[1500-2000]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than four times larger than second largest competitor; no evidence of recent entry
Seeded – Stripe Oblong Elong	Italy	[…]	[60-70]%	[20-30]%	[4500-5000]	[2000-2500]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than eight times larger than second largest competitor; no evidence of recent entry
Seeded – Stripe Oblong Elong	Portugal	[…]	[60-70]%	[10-20]%	[4000-4500]	[1100-1200]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in market share and HHI; more than four times larger than second largest competitor; no evidence of recent entry

[528] Excluding unidentified competitors under the "Other" category.

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[528]	Comments
Seeded – Stripe Oblong Elong	Slovakia	[…]	[80-90]%	[30-40]%	[6500-7000]	[3000-3500]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; around nine time larger than second largest competitor; no evidence of recent entry
Seeded – Stripe Oblong Elong	Spain	[…]	[90-100]%	[20-30]%	[8500-9000]	[3000-3500]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in market share and HHI; no sizeable competitor; no evidence of recent entry

Combined size of markets with SIEC ('000 EUR)	[…]
Segment size EEA ('000 EUR)[529]	[…]
Combined size of markets with SIEC/Segment size EEA (%)	[80-90]%

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[529] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(669) The Commission notes that these geographic markets account together for around [80-90]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Seeded – Stripe Oblong Elong segment in the EEA with a combined market share of around [30-40]%.[530]

21.2.3.3. Seeded – Stripe Round

(670) In the Seeded – Stripe Round segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

[530] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 96 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Watermelon – Seeded – Stripe Round)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[531]	Comments
Seeded – Stripe Round	Hungary	[…]	[50-60]%	[0-5]%	[3500-4000]	[200-300]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than twice larger than second largest competitor; no evidence of recent entry
Seeded – Stripe Round	Portugal	[…]	[20-30]%	[10-20]%	[3000-3500]	[400-500]	[…]	[…]	[…]	Highly concentrated market; significant increase in market share and HHI; one sizeable competitor with comparable market share; no evidence of recent entry
Seeded – Stripe Round	Slovakia	[…]	[50-60]%	[5-10]%	[3500-4000]	[400-500]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in HHI; one sizeable competitor with comparable market share; no evidence of recent entry
Seeded – Stripe Round	Spain	[…]	[70-80]%	[20-30]%	[5500-6000]	[2000-2500]	[…]	[…]	[…]	Creation of dominance; highly concentrated market; significant increase in market share and HHI; more than twice larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[532]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[30-40]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[531] Excluding unidentified competitors under the "Other" category.

[532] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

21.2.3.4. Seedless – Dark Green Round

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(671) In the Seedless – Dark Green Round segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 97 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Watermelon – Seedless – Dark Green Round)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[533]	Comments
Seedless – Dark Green Round	France	[…]	[60-70]%	[0-5]%	[5000-5500]	[600-700]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than four times larger than second largest competitor; no evidence of recent entry
Seedless – Dark Green Round	Italy	[…]	[80-90]%	[5-10]%	[8000-8500]	[1500-2000]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; no sizeable competitor; no evidence of recent entry
Seedless – Dark Green Round	Spain	[…]	[90-100]%	[10-20]%	[8000-8500]	[2500-3000]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in market share and HHI; no sizeable competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[534]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[90-100]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[533] Excluding unidentified competitors under the "Other" category.

[534] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(672) The Commission notes that these geographic markets account together for around [90-100]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Seedless – Dark Green Round segment in the EEA with a combined market share of around [80-90]%.[535]

(B) Geographic market where the Transaction would not significantly impede effective competition

(673) In the Seedless – Dark Green Round segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

[535] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 98 – Geographic market where the Transaction would not significantly impede effective competition (Watermelon – Seedless – Dark Green Round)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[536]	Comments
Seedless – Dark Green Round	Hungary	[…]	[40-50]%	[0-5]%	[2500-3000]	[0-100]	[…]	[…]	[…]	Three sizeable competitors; low increment in market share; small HHI Delta

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[536] Excluding unidentified competitors under the "Other" category.

21.2.3.5. Seedless – Stripe Round

(A) Geographic markets where the Transaction would likely cause a significant impediment to effective competition

(674) In the Seedless – Stripe Round segment, the Commission has identified in the table below the geographic markets where the Transaction would likely cause a significant impediment to effective competition.

Table 99 – Geographic markets where the Transaction would likely cause a significant impediment to effective competition (Watermelon – Seedless – Stripe Round)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[537]	Comments
Seedless – Stripe Round	Italy	[…]	[50-60]%	[5-10]%	[3500-4000]	[500-600]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than twice larger than second largest competitor; no evidence of recent entry
Seedless – Stripe Round	Malta	[…]	[20-30]%	[0-5]%	[2500-3000]	[100-200]	[…]	[…]	[…]	Highly concentrated market; substantial market share increment only one sizeable competitor with comparable market share
Seedless – Stripe Round	Spain	[…]	[60-70]%	[5-10]%	[5000-5500]	[800-900]	[…]	[…]	[…]	Strengthening of dominance; highly concentrated market; significant increase in HHI; more than three times larger than second largest competitor; no evidence of recent entry
Combined size of markets with SIEC ('000 EUR)		[…]								
Segment size EEA ('000 EUR)[538]		[…]								
Combined size of markets with SIEC/Segment size EEA (%)		[90-100]%								

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[537] Excluding unidentified competitors under the "Other" category.

[538] The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

(675) The Commission notes that these geographic markets account together for around [90-100]% of the overall segment in the EEA. In addition, the Parties would become post-Transaction the leading player in the Seedless – Stripe Round segment in the EEA with a combined market share of around [60-70]%.[539]

(B) Geographic market where the Transaction would not significantly impede effective competition

(676) In the Seedless – Stripe Round segment, the Commission has identified in the table below the affected geographic market where the Transaction would not significantly impede effective competition.

[539] Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

Table 100 – Geographic market where the Transaction would not significantly impede effective competition (Watermelon – Seedless – Stripe Round)

Segment	Country	Market Size (`000 EUR)	Combined market share	Market share increment	HHI post merger	HHI Delta	Parties will be the largest player (Yes/No)	Size of Parties compared to the second largest competitor (number of times)	Number of remaining sizeable competitors (market share>5%)[540]	Comments
Seedless – Stripe Round	Portugal	[…]	[30-40]%	[0-5]%	[1500-2000]	[0-100]	[…]	[…]	[…]	Five identified competitors; low increment in market share; small HHI Delta

Source: Data from the Parties' response to the Commission's request for information RFI 83, question 2 [Annex 83.4].

[540] Excluding unidentified competitors under the "Other" category.

21.2.4. Conclusion

21.2.4.1. Markets where the Transaction would likely cause a significant impediment to effective competition

(677) For the reasons set out above and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to Watermelon seeds because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects competition, in the following segments and countries:

(a) In the Seeded – Dark Green Round segment: France, Italy, Romania (CD), Spain (SD);

(b) In the Seeded – Stripe Oblong Elong segment: France, Greece (SD), Hungary (CD), Italy (CD), Portugal (SD), Slovakia (CD), Spain (SD);

(c) In the Seeded – Stripe Round segment: Hungary (SD), Portugal, Slovakia (CD), Spain (CD);

(d) In the Seedless – Dark Green Round segment: France (SD), Italy (SD), Spain (SD);

(e) In the Seedless – Stripe Round segment: Italy (SD), Malta, Spain (SD).

21.2.4.2. Markets where the Transaction would not significantly impede effective competition

(678) On balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition in relation to Watermelon seeds in the following segments and countries:

(a) In the Seeded – Dark Green Round segment: Portugal;

(b) In the Seedless – Dark Green Round segment: Hungary;

(c) In the Seedless – Stripe Round segment: Portugal.

22. CONCLUSION

22.1. Markets where the Transaction would likely cause a significant impediment to effective competition

(679) For the reasons set out above, in particular in the relevant tables, and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to vegetable seeds because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on competition, in the following markets:

(a) Carrot seeds:

  (a) In the Cut and Peel segment: Germany (strengthening of dominance, "SD"), Italy, Netherlands (SD), United Kingdom (SD);

  (b) In the Nantes segment: Bulgaria (creation of dominance, "CD"), Czech Republic, Lithuania, Poland, Romania, Slovakia;

(b) Cucumber seeds:

  (a) In the American Slicer – Netted & Plastic House segment: Italy (CD);

(b) In the Beit Alpha Parth – Heated Glasshouse segment: Germany (SD), Poland;

(c) In the Beit Alpha Parth – Netted & Plastic House segment: Germany (SD);

(d) In the Long Dutch Parth – Heated Glasshouse segment: Belgium, Finland, Germany, Netherlands, United Kingdom;

(e) In the Long Dutch Parth – Netted & Plastic House segment: Bulgaria, Spain;

(f) In the Parth Slicer – Netted & Plastic Houses segment: Italy (CD), Portugal, Spain;

(g) In the Parth Spined – Open Field segment: Germany (SD), Hungary (SD), Lithuania (SD), Poland, Portugal (SD);

(c) Eggplant seeds:

(a) In the Long – Netted & Plastic House segment: Italy;

(d) Garden Bean seeds:

(a) In the Processing segment: Belgium, Poland (SD), United Kingdom (SD);

(e) Hot Pepper seeds:

(a) In the Other segment: Portugal (SD);

(f) Leek seeds:

(a) In the Hybrid – Autumn (Early and Late) segment: Belgium (SD), France (SD), Germany (SD), Netherlands (SD), Poland (SD), Spain (SD), Sweden (CD), United Kingdom (SD);

(b) In the Hybrid – Summer segment: Belgium (SD), Finland (SD), France (SD), Germany (SD), Italy (SD), Lithuania, Netherlands (SD), Poland, Portugal, (SD), Spain (SD), United Kingdom (SD);

(c) In the Hybrid – Winter segment: Belgium (SD), France (SD), Germany (SD), Netherlands (SD), Poland (SD), United Kingdom (SD);

(g) Lettuce seeds:

(a) In the Batavia – Open Field segment: Netherlands, United Kingdom (SD);

(b) In the Butterhead – Open Field segment: Romania;

(c) In the Crisphead – Open Field segment: Austria (SD), Germany, Ireland (SD), Italy, Lithuania, Netherlands (SD), Spain, United Kingdom;

(h) Melon seeds:

(a) In the Ananas segment: Romania (SD);

(b) In the Branco De Ribatejo segment: Portugal (CD);

(c) In the Piel De Sapo segment: Italy (CD);

(d) In the Long or Extended Shelf Life – Charentais segment: Italy (CD), Spain (CD);

(e) In the Long or Extended Shelf Life – Galia segment: Spain (CD);

(f) In the Long or Extended Shelf Life – Italian segment: Italy (SD);

(g) In the Normal or Traditional Shelf Life – Charentais segment: France, Italy (CD), Spain (SD);

(h) In the Normal or Traditional Shelf Life – Galia segment: Italy (SD), Portugal;

(i) In the Normal or Traditional Shelf Life – Italian segment: Hungary (SD), Italy (CD), Slovakia (SD);

(i) Onion seeds:

(a) In the Hybrid – Long Day – Red segment: Germany (SD), Poland, Spain;

(b) In the Hybrid – Long Day – White segment: France, Hungary, Italy (CD), Spain;

(c) In the Hybrid – Long Day – Yellow & Brown segment: Romania, Spain;

(d) In the Hybrid – Short Day – White segment: Italy, Spain;

(j) Pea seeds:

(a) In the Processing – All Others – Large segment: Belgium (SD), Finland (SD), France (CD), Portugal (SD), Netherlands, United Kingdom;

(b) In the Processing – All Others – Small segment: Austria (CD), France (CD);

(k) Spinach seeds:

(a) In the Others segment: Belgium, Finland (SD), France, Germany (SD), Italy, Spain;

(l) Squash seeds:

(a) In the Rootstock Cucurbits – Open Field segment: Hungary (SD), Portugal;

(m) Sweet Pepper seeds:

(a) In the Blocky – Open Field segment: Spain (SD);

(b) In the Blocky – Red & Green – Netted & Plastic House segment: Germany, Hungary, Poland;

(c) In the Half Long – Open Field segment: Italy (SD), Poland (SD), Portugal (SD);

(d) In the Other Sweet Pepper segment: Germany, Hungary, Italy;

(e) In the Half Long – Red & Green – Netted & Plastic House segment: Italy, Spain;

(n) Tomato seeds:

(a) In the Tomato Rootstock segment: Croatia (SD), Germany (SD), Italy (SD), Netherlands (SD), Spain (SD);

(b) In the Fresh – Fm Cherry Cocktail – Heated Glasshouse segment: Finland, Germany, Netherlands (SD);

(c) In the Fresh – Fm Cherry Cocktail – Netted & Plastic House: Germany (SD), Greece (SD), Hungary, Portugal (SD);

(d) In the Fresh – Fm Determinate Round – Open Field segment: France (SD), Italy (SD), Spain (SD);

(e) In the Fresh – Fm Determinate Saladette – Open Field segment: Italy (SD), Spain (SD);

(f) In the Fresh – Fm Indeterminate Round – Heated Glasshouse segment: Finland, France, Hungary (SD), Netherlands (SD);

(g) In the Fresh – Fm Indeterminate Round – Netted & Plastic House segment: Germany, Italy (SD), Lithuania (SD), Netherlands (SD),

(h) In the Fresh – Fm Specialties – Heated Glasshouse segment: Germany (CD), Italy (SD), Netherlands (SD), Poland (CD);

(i) In the Fresh – Fm Specialties – Netted & Plastic House segment: Italy (CD);

(j) In the Processing – Brix – Open Field segment: France (SD), Italy (CD), Poland, Spain (CD);

(k) In the Processing – Processing Pear – Open Field segment: Greece (SD), Italy (CD), Poland, Spain (SD);

(o) Watermelon seeds:

(a) In the Seeded – Dark Green Round segment: France, Italy, Romania (CD), Spain (SD);

(b) In the Seeded – Stripe Oblong Elong segment: France, Greece (SD), Hungary (CD), Italy (CD), Portugal (SD), Slovakia (CD), Spain (SD);

(c) In the Seeded – Stripe Round segment: Hungary (SD), Portugal, Slovakia (CD), Spain (CD);

(d) In the Seedless – Dark Green Round segment: France (SD), Italy (SD), Spain (SD);

(e) In the Seedless – Stripe Round segment: Italy (SD), Malta, Spain (SD).

22.2. Markets where the Transaction would not significantly impede effective competition

(680) On balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition in relation to in the following affected markets:

(a) Carrot seeds:

(a) In the Nantes segment: Austria, France, Germany, Sweden;

(b) Cucumber seeds:

(a) In the Beit Alpha Parth – Heated Glasshouse segment: Netherlands;

(b) In the Parth Spined – Open Field segment: Slovakia;

(c) Eggplant seeds:

(a) In the Oval – Heated Glasshouse segment: France, Germany;

(b) In the Oval – Netted & Plastic House segment: Italy;

(d) Garden Bean seeds:

(a) In the Processing segment: France, Germany, Italy, Spain;

(e) Hot Pepper seeds:

(a) In the Cayenne segment: France;

(f) Leek seeds:

(a) In the Hybrid – Autumn (Early and Late) segment: Italy;

(b) In the Hybrid – Winter segment: Austria, Italy;

(g) Lettuce seeds:

(a) In the Butterhead – Open Field segment: Netherlands;

(b) In the Crisphead – Open Field segment: Malta, Poland;

(h) Melon seeds:

(a) In the Branco De Ribatejo segment: Spain;

(b) In the Piel De Sapo segment: Portugal;

(c) In the Long or Extended Shelf Life – Galia segment: Portugal;

(i) Onion seeds:

(a) In the Hybrid – Extra Long Day – Yellow: France;

(b) In the Hybrid – Long Day – Yellow & Brown segment: Bulgaria, Poland, Portugal;

(c) In the Hybrid – Short Day – Yellow & Brown: Spain;

(j) Pea seeds:

(a) In the Processing – All Others – Large segment: Germany, Greece;

(b) In the Processing – All Others – Small segment: Belgium, Germany, Netherlands;

(k) Squash seeds:

(a) In the Lebanese – Open Field segment: Italy, Spain;

(b) In the Romanesco – Open Field segment: Italy;

(c) In the Rootstock Cucurbits – Open Field segment: Italy;

(d) In the Zucchini Green – Open Field segment; Finland, Hungary, Italy;

(e) In the Zucchini Grey – Open Field segment: Italy;

(l) Sweet Pepper seeds:

(a) In the Blocky – Red & Green – Netted & Plastic House segment; Spain;

(b) In the Half Long – Open Field segment: Spain;

(c) In the Half Long – Red & Green – Netted & Plastic House segment: Portugal;

(d) In the Pointed – Netted & Plastic House segment: Croatia, Romania;

(m) Tomato seeds:

(a) In the Fresh – Fm Cherry Cocktail – Heated Glasshouse segment: France;

(b) In the Fresh – Fm Cherry Cocktail – Netted & Plastic House: Spain;

(c) In the Fresh – Fm Determinate Saladette – Open Field segment: France;

(d) In the Fresh – Fm Indeterminate Round – Heated Glasshouse segment: Belgium, Denmark;

(e) In the Fresh – Fm Indeterminate Round – Netted & Plastic House segment: Poland, Romania, Spain;

(f) In the Fresh – Fm Specialties – Netted & Plastic House segment: Malta;

(n) Watermelon seeds:

(a) In the Seeded – Dark Green Round segment: Portugal;

(b) In the Seedless – Dark Green Round segment: Hungary;

(c) In the Seedless – Stripe Round segment: Portugal.

SECTION IX: BROAD ACRE CROP SEEDS

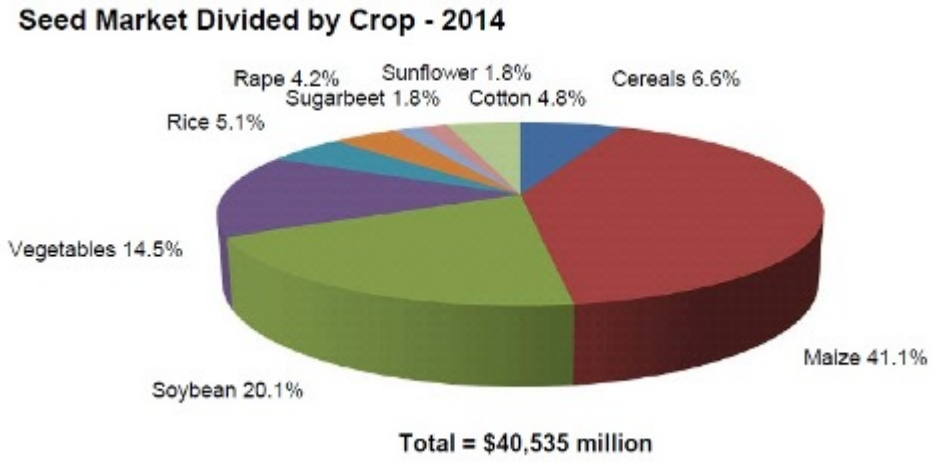
1. BROAD ACRE CROP SEEDS

(681) After a brief introduction to broad acre crop seeds (Section IX.1.1), the Commission will analyse the markets for broad acre crops where the Parties' activities overlap: oilseed rape and cotton. None of the Parties is active in wheat. However, the wheat markets are considered for the assessment of whether both Bayer and Monsanto would be potential competitors with respect to wheat seeds.

1.1. Introduction

(682) Figure 75 provides a high-level view of the relative size of the worldwide market for each broad acre crop. Maize is the biggest market, followed by soybean and cereals. Maize is the biggest broad acre crop market also at European level, followed by cereals (wheat and barley), oilseed rape, sunflower and sugar beet (see Table 101).

Figure 75 – World-wide seed market by crop (2014)



Source: Phillips McDougall Seed industry overview 2015.

Table 101 – Share of European seed market by crop

Key Crops	Market Share (% of Regional Value)
Vegetables	29.4
Maize	28.4
Cereals	15.4
Rapeseed	7.8
Sunflower	7.4
Sugarbeet	6.9
Soybean	3.5
Rice	0.8
Cotton	0.3

Source: Phillips McDougall Seed industry overview 2015.

(683) Table 102 outlines the growth in value of each crop seed sector in 2014 against 2013, the last available data, at a global level. In 2014 overall seed market growth was led by soybean seed sales, which increased mainly as a result of growers moving away from the cultivation of maize (due to declining maize prices).

Table 102 – Seed market: crop sector performance (2014)

Crop	Sales 2013 ($m)	Sales 2014 ($m)	Growth 2014/2013 (%)
Maize	17353	16662	-4.0
Soybean	7087	8153	15.1
Vegetables	5637	5865	4.1
Cereals	2507	2673	6.6
Rice	2031	2063	1.5
Cotton	1819	1960	7.8
Rapeseed	1609	1714	6.6
Sugarbeet	677	733	8.3
Sunflower	706	710	0.5
Total	**39425**	**40535**	**2.8**

Source: Phillips McDougall Seed industry overview 2015.

(684) When measured in terms of planted areas worldwide, wheat is the biggest crop (223 Ha million), followed by maize (177,8 Ha million), rice (159,4 Ha million), soybean (118 Ha million), cotton (34,1 Ha million) and oil seed rape (35,7 Ha million) (see Table 103). Cereals is biggest crop market also in Europe (56,9 Ha million), followed by oil seed rape (6,7 Ha million) and sunflower (4,2 Ha million). The difference between the ranking in terms of seed traded commercially and planted areas is mainly due to the fact that the former does not include farmer saved seed or seed for the pasture.

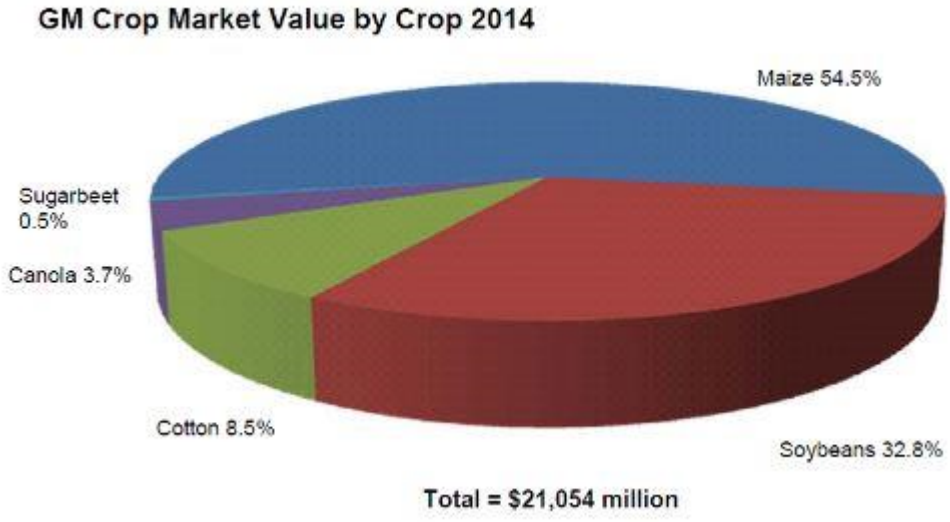
Table 103 – Crops by planted areas

	Wheat	Maize	Rice	Soybean	Cotton	Rape
Planted Area 2014 (ha. m.)	223.5	177.8	159.4	118.0	34.1	35.7
Growth 2014/2013 (%)	1.0	-2.0	-1.0	4.2	4.0	-1.2
Growth 2014/2009 (% p.a.)	-0.3	2.4	0.5	2.9	2.5	2.6

Source: Phillips McDougall Seed industry overview 2015.

(685) Compared to vegetable crops, a distinguishing feature of broad acre crops is the widespread presence of transgenic traits in seeds. Crops containing GM traits were first introduced in the mid-nineties. Since then, the uptake and utilization of crops containing transgenic traits have been rapidly increasing, particularly in North America. Comparing the total GM market value in Figure 76 (USD 21,054 million) with total broad acre crop seeds market value in Figure 75 (USD 40,535 million), it follows that GM crops represent more than one half of the total worldwide market for broad acre crop seeds. Due to regulatory restrictions, GM broad acre crop seeds are to a very large extent cultivated outside Europe.

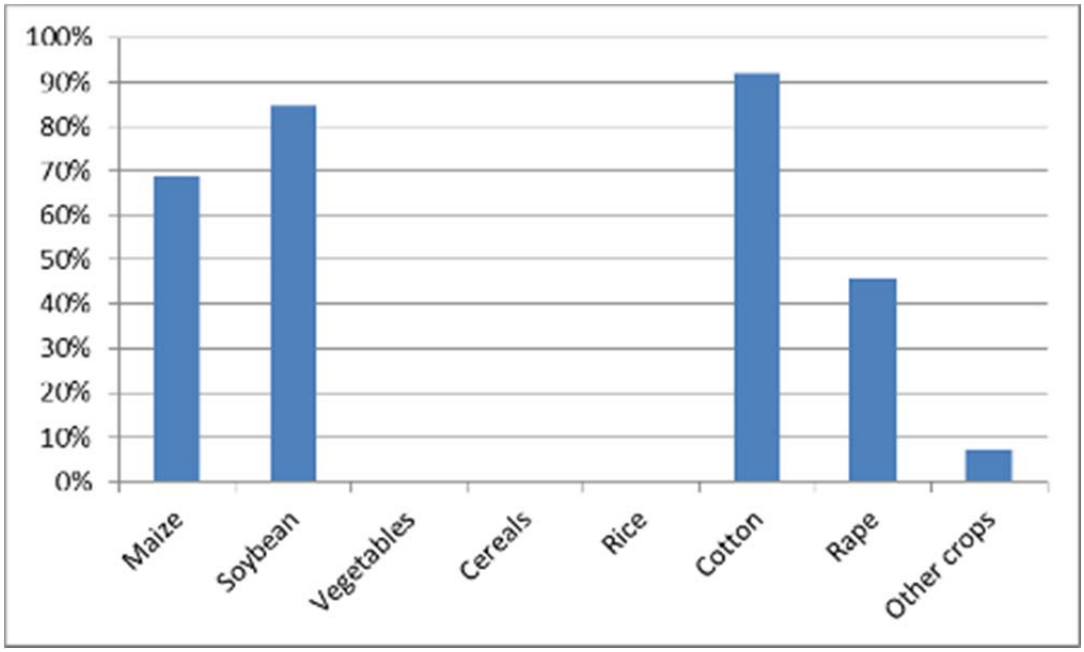
Figure 76 – GM crop market value by Crop (2014)



Source: Phillips McDougall Seed industry overview 2015.

(686) Figure 77 displays the split between GM and non-GM crops by crop. Cotton is the crop where the incidence of GM is highest (92%), followed by soybean and maize. By contrast, there are no GM seeds in vegetables, cereals and rice. This is essentially because there is increasing uneasiness by public opinion towards GM food and cereals (in particular wheat) and rice are primary sources of food. As a result, trait research efforts in wheat have been oriented towards the development of non-GM traits such as, for example, Yield & Stress traits and HT traits.

Figure 77 – Share of crops containing GM traits by crop in terms of value (2014)



Source: Commission's elaboration on data contained in Phillips McDougall Seed industry overview 2015.

(687) Compared to other broad acre crops, there are almost no hybrids in wheat seeds, i.e. wheat seeds are almost exclusively open-pollinated[541], which means that farmers are able to save seeds from open-pollinated varieties for future crops. […].[542] […].[543]

[541] OPV (Open Pollinated Varieties) represent almost 100% of certified and royalty seed sales. Hybrid varieties have been developed and commercialised in Europe (mostly in France, first introduced in 1995) but so far without commercial success. In Europe, new OPV varieties are almost always developed by private sector plant breeders who fund their R&D by collecting royalties on their IP (estimated royalty revenues from certified seed amount to USD 130-300 million according to the Parties).

[542] MI 08334, ID005672, slide 6.

[543] MI 07676, [internal document], ID001594-000094, slide 3.

(688) This is going to change, however. The major seeds companies have plans to develop and launch hybrid wheat by early-mid 2020. Farmers will then have the option of continuing to plant open pollinated varieties or switching to hybrids, which promise higher yields. The introduction of hybrid wheat is considered to have the potential to transform and significantly expand the wheat seed market. For example, Bayer expects the market to triple over the next 20 years: from EUR 3,6 billion in 2015 to EUR 8,3 billion in 2036 (see Figure 78).

Figure 78 – Expected growth of the wheat seeds market (EUR million)

[…]

Source: BI-EDISC-0577344, [internal document], ID5609-73060, slide 16.

1.2. Oilseed rape

(689) Oilseed rape (brassica napus) ("OSR") is a bright yellow flowering member of the Brassicaceae (cabbage) family. There are two types of OSR that are cultivated across Europe: winter oilseed rape ("WOSR") and summer (or spring) oilseed rape ("SOSR").

(690) Throughout most of Western Europe, milder winters permit the growth of WOSR, These winter varieties require a period of cold to flower without delay in the following spring, a process known as vernalisation. WOSR varieties have a vegetation period that ranges, on average, from 250-353 days. Seeds generally sown in late summer to early autumn produce plants which flower in April to May of the following year and are harvested in July.

(691) SOSR differs from WOSR in that its varieties have considerably shorter vegetation periods, ranging from 150-175 days. Also, SOSR does not require a cold period to trigger flowering in May to June. The crop is typically sown from February to April and harvested from August to September.

(692) For many farmers, WOSR is the preferred type of OSR because its varieties have greater yield and oil content than SOSR. In Europe, SOSR is cultivated mainly in the Baltics. Bayer estimates that SOSR represents only around 2%-8% of the total OSR cultivation acreage in the EEA.[544]

(693) Certain types of OSR varieties can be categorised as "specialties" because they express specific traits. The so-called "semi-dwarf hybrid varieties" are shorter, stiff varieties that have less lodging, making them easier to harvest. High oleic, low linoleic ("HOLL") varieties are low in trans fatty acid and saturated fat, and perform well at high temperature. They are targeted specifically at processors of OSR oil for human consumption (for example fast food companies for industrial scale frying applications). High erucic acid rape ("HEAR") varieties are used in industrial processes, such as inks and lubrication and as a slip agent in the production of polythene. These varieties are niche products that each account for less than 1% of the total OSR cultivated area in the EEA.

(694) Traditionally used by farmers as a rotational crop to rest soils between grain harvests, OSR is now principally grown for its oil, which is used for biodiesel and for human consumption, and as animal feed.

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544 The Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

1.2.1. Overview of the OSR industry

(695) The OSR industry is a two-stage industry, comprising (i) the breeding of new OSR varieties and (ii) the commercial production of seed from these varieties and the sale of the seeds to customers.

1.2.1.1. Breeding of new OSR varieties

(696) As explained at Section VI.2.1.1, breeding refers to the process of developing new plant varieties. The aim of a seed company is to create varieties with desired characteristics such as high yield performance, high oil content, resilience to challenging environmental conditions, and resistance to specific insects and diseases.

(697) Breeding of new OSR varieties is a time-consuming process. In recent years, breeding has been accelerated through the use of marker-assisted breeding which helps breeders to predict whether a gene is present in a plant.

(698) Breeding requires the creation and testing of male and female parental lines, crossing of these lines and testing of the new varieties that have been developed from the crosses. Parental lines are chosen for the desirable plant characteristics that they exhibit and for their ability to pass on these traits to their offspring. OSR varieties are either hybrid varieties (which result from crossing plants of different varieties by controlled pollination) or open-pollinated varieties (which result from crossing plants of the same variety by uncontrolled pollination in isolation from other varieties). The time it takes from developing new parental lines to being able to market new commercial varieties of OSR is approximately eight to ten years for open pollinated varieties and eight to twelve years for hybrid varieties.

(699) The diagram below illustrates the breeding process. The codes F1, F2, F3, etc. denote the successive generations resulting from this process of breeding. According to common industry practice, a line is only fixed in the F6 generation (i.e., after six generations of breeding). Only then can the breeder trust that the resulting seeds will produce plants with the same traits as the parent. To arrive at the F6 generation (which is considered fixed) takes five years in total.

Figure 79 – Overview of the breeding process

[…]

Source: Form CO, part 7.1, paragraph 37.

(700) OSR hybrids are more expensive to produce than open-pollinated varieties. They are produced by crossing a male-sterile "female" plant with a pollen-producing "male" plant. Hybrid production enables a wide range of characteristics to be incorporated into a new variety, potentially increasing the adaptability of the variety to a range of growing conditions. It is important to note that the subsequent generation of offspring resulting from the "F1 hybrid" (the "F2 hybrid" generation) no longer exhibits heterosis due to the random combination of the inherited traits from the two parents (male and female). In order to produce consistent F1 hybrids, the original cross must be repeated each season. Therefore, the seeds of hybrids cannot be saved for the next growing season. The general trend across Europe is that hybrids are replacing open-pollinated varieties due to their better return on investment.

1.2.1.2. Production and Distribution of OSR seeds

(701) The second stage of the OSR industry comprises the production of commercial quantities of OSR seed, including cleaning and processing the seed, chemical

treatment and pelleting, marketing and distribution. These activities can be either carried out in-house by seeds companies or out-sourced to other companies.

(702) An overview of the stages involved in the production and distribution of OSR is set out in the diagram below.

Figure 80 – Overview of the production and distribution of hybrid OSR seeds

[…]

Source: Form CO, part 7.1, paragraph 51.

(703) The first step in the hybrid OSR supply chain is the production of parental "breeder" seed (parental seed production in the Figure above). Only the highest quality "pure" seed is used for commercial seed production.

(704) Once parental seeds have been produced and certified, they are used for the production of commercial seed, a process also known as multiplication. Multiplication takes approximately one year and occurs simultaneously with variety registration. Multiplication usually occurs as soon as the variety is submitted for registration with the relevant seeds authorities, which is a prerequisite for marketing the variety. Multiplication is at the commercial risk of the breeder, given the long lead time before a variety can successfully be brought to the market.

(705) After multiplication, seeds are cleaned and processed. Seeds may also undergo seed treatment, which consists of direct application of crop protection products to seeds. Then, seeds are packaged in bags. Specific seed profile information labels and stewardship recommendations (if seeds are treated) are applied to the seed bag. The seeds are then automatically weighed and stacked on pallets, wrapped in plastic ready for transport to customers. OSR has a carrying capacity of between three and five years, meaning that it can maintain its germination performance whilst being stored as a seed during this time.

(706) Once packed, seeds are delivered to the customer. In general, seeds companies sell their seeds to independent (national) distributors and agricultural co-operatives for onward distribution to growers rather than directly to growers due to the infrastructure necessary to service end customers.

1.2.2. Parties' activities

(707) Bayer and Monsanto both breed and commercialise new varieties of OSR throughout the EU, as well as in other parts of the world. Both have fully-fledged breeding programmes in Europe where they select and test parental lines to produce, test and register new OSR varieties. The table below provides an overview of the Parties' activities in OSR in Europe.

Table 104 – Overview Bayer and Monsanto's activities in OSR in Europe

[…]

Source: Form CO, part 7.1., table 7.1.1.

1.2.3. Competitors

(708) The main competitors of Bayer and Monsanto in OSR in Europe are large seed companies: NPZ, DuPont/Pioneer, Limagrain, DSV, Syngenta, RAGT, Euralis, KWS/Momont and Lantmännen.

(709) In addition there are several more small and medium-sized seed companies, some with local and regional presences and others with pan-European footprints. These include Senova Ltd. (United Kingdom), BayWa AG (Germany), W. von Borries-Eckendorf GmbH & Co. KG (Germany), Bázismag (Hungary), Caussade Semences S.A. (France), Maïsadour Semences S.A. (France), Saatzucht Donau GesmbH & CoKG (Austria) which is a joint venture of Saatbau Linz (Austria) and Probstdorfer Saatzucht GesmbH & Co KG (Austria), RWA (Austria) which is majority-owned by BayWa AG, HR Strzelce (Poland), Nordic Seed (Denmark), Scandinavian Seed (Sweden), Saaten Union GmbH (Germany), OÜ Asat (Estonia), Masstock Arable (United Kingdom) Ltd trading as Agrii, Dotnuva projektai, UAB (Lithuania), Hankkija Oy (Finland), and G. Schneider (Germany).

1.2.4. Market definition

1.2.4.1. Product market definition

(A) Commission precedents

(710) In Case M.5675 – *Syngenta/Monsanto's sunflower seeds business,* which dealt with the breeding and commercialisation of sunflower seeds[545] the Commission distinguished between (i) the upstream market for the trading (namely the exchange and licensing) of seed varieties (parental lines and hybrids) and (ii) the downstream market for the commercialisation of seed hybrids.[546] Moreover, the Commission identified separate relevant product markets for each crop seed (for example sunflower seeds constituted a product market separate from those for other seeds).[547]

(711) In Case M.3465 – *Syngenta CP/Advanta*, the Commission considered a sub-segmentation of OSR seeds between WOSR and SOSR, but ultimately left open the precise market definition.[548]

(B) Notifying Party views

(712) The Notifying Party submits that the relevant product markets are (i) the upstream market for the licensing of germplasm for the purposes of breeding new OSR varieties; (ii) the upstream market for the licensing of OSR varieties for the purposes of commercialisation; and, (iii) the downstream market for the commercialisation of OSR seeds.

(713) The Notifying Party submits that it can be left open whether the upstream and downstream markets should be further segmented by WOSR and SOSR as well as by hybrids and open pollinated. The Notifying Party also submits that a sub-segmentation by traits is not necessary.

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545 The Commission considers that it is a relevant precedent due to the similarities in the organisation of the sunflower and oilseed rape industries. The Notifying Party also acknowledges that the Syngenta/Monsanto Decision "*is instructive for the analysis of the OSR industry*", see Form CO, part 7.1, paragraph 254.

546 Commission Decision in Case M.5675 – Syngenta/Monsanto's sunflower seeds business (2010), recital 89.

547 Commission Decision in Case M.5675 – Syngenta/Monsanto's sunflower seeds business (2010), recital 98.

548 Commission Decision in Case M.3465 – Syngenta CP/Advanta (2004), recital 16.

(C) Commission assessment

(714) The Commission agrees with the approach proposed by the Notifying Party. In the Syngenta/Monsanto decision, the upstream market for the trading of seed varieties covers both the licensing of parental lines and hybrids. However, the Commission considers that the market for the licensing of parental lines (germplasm) for the purposes of breeding new OSR varieties has to be distinguished from the market from the licensing of OSR varieties (essentially hybrids) for the purpose of commercialisation for the reasons explained by the Notifying Party.[549] From the licensor's perspective, the licensing of germplasm and hybrids pursue different purposes. From the licensee's perspective, the licensing of germplasm and hybrids requires different capabilities. While the licensing of germplasm requires breeding capabilities, the licensing of hybrids only requires production capabilities.

(D) Conclusion

(715) The Commission considers that the relevant product markets are:

(a) The upstream market for the licensing of germplasm for the purposes of breeding new OSR varieties;

(b) The upstream market for the licensing of OSR varieties for the purposes of commercialisation; and,

(c) The downstream market for the commercialisation of OSR seeds.

(716) The Notifying Party explains that the Parties do not conduct OSR breeding with a view to licensing germplasm and/or hybrids for the purposes of generating licence fees. The Notifying Party further argues that their breeding activities are driven first and foremost by the demand for OSR seed on the downstream commercialisation markets.[550] This is confirmed by the relatively modest amount of revenues generated by the Parties' respective licensing activities.

Table 105 – Bayer's OSR out-licensing revenue and in-licensing expenditures in EMEA (kEUR)

[…]

Source: Form CO, part 7.1, table 7.1.14.

Table 106 – Monsanto's OSR out-licensing revenue and in-licensing expenditures in EMEA (kEUR)

[…]

Source: Form CO, part 7.1, table 7.1.30.

(717) The Commission considers that the effects of the Transaction on competition are more appropriately assessed on the downstream market for the commercialisation of OSR seeds than on the upstream markets for the licensing of germplasm and hybrids. The Commission has therefore focused its assessment on the downstream market for the commercialisation of OSR seeds.

(718) For the purposes of the assessment of this case, the question of whether the downstream markets should be further sub-divided between WOSR and SOSR can

549 Form CO, part 7.1, paragraph 263.

550 Form CO, part 7.1, paragraph 262.

be left open as the Transaction gives rise to serious doubts about its compatibility with the internal market irrespective of the product market definition.

1.2.4.2. Geographic market definition

(A) Commission precedents

(719) In Case M.5675 – *Syngenta/Monsanto's sunflower seeds business*, the Commission concluded that the geographic scope of the upstream market for the trading of seed varieties is Union-wide. The Commission found that the downstream market for the commercialisation of seed hybrids is national in scope.[551]

(B) Notifying Party views

(720) The Notifying Party submits that the geographic scope of the relevant product markets is likely to be:

(a) EEA-wide for the upstream market for the licensing of germplasm for the purposes of breeding new OSR varieties;

(b) EEA-wide for the upstream market for the licensing of OSR varieties for the purposes of commercialisation;

(c) At least national for the downstream market for the commercialisation of OSR seeds.[552]

(C) Conclusion

(721) In light of the precedents and the views of the Notifying Party, the Commission considers that:

(a) The geographic scope of the market for the licensing of germplasm is EU-wide;

(b) The market for the licensing of OSR varieties is EU-wide in scope; and

(c) The geographic scope of the marker for the commercialisation of OSR varieties is national.

(722) As noted above, the Commission has focused its assessment on the downstream market for the commercialisation of OSR seeds, which is thus reviewed at national level.

1.2.5. Competitive assessment

(723) Table 107 below sets out market shares in the downstream market for the commercialisation of OSR seeds. The Commission notes that these market shares may theoretically underestimate the Parties' actual positions, as they do not include sales of seeds allocated to the Parties as licensors of parental lines and varieties. In this particular instance, the magnitude of such underestimation is small as the combined sales by the Parties as licensors were rather limited in 2016.

(724) The below tables provide estimates for the Parties' and their competitors' market shares for WOSR and SOSR separately as well as for OSR as a whole. For the sake of completeness, Table 108 provides estimates for the Parties' market shares at

551 Commission Decision in Case M.5675 – Syngenta/Monsanto's sunflower seeds business (2010), recitals 118 and 131.

552 Form CO, part 7.1, paragraph 291.

breeder level, which allocate the sales of seeds to the licensors of the varieties that are sold (as opposed to allocating them to the actual seller of the seeds).[553] This shows that the Parties' market position would not significantly change if assessed at breeder level.[554]

Table 107 – WOSR market shares at commercialization level in the EEA (2016)

	Sales (kEUR)	Share (%)
Bayer	[…]	[0-5]%
Monsanto	[…]	[20-30]%
Combined	*[…]*	*[30-40]%*
Rapool-Ring	[…]	[10-20]%
KWS	[…]	[10-20]%
DuPont/Pioneer	[…]	[5-10]%
LMG EU	[…]	[5-10]%
Syngenta	[…]	[5-10]%
Euralis	[…]	[0-5]%
RAGT	[…]	[0-5]%
DSV	[…]	[0-5]%
Advanta Seeds Europe	[…]	[0-5]%
Elsoms Seed Ltd.	[…]	[0-5]%
Semences de France	[…]	[0-5]%
NPZ	[…]	[0-5]%
RWA/Baywa	[…]	[0-5]%
Unknown	[…]	[0-5]%
Others	[…]	[0-5]%
Total	[…]	100%

Source: Form CO, part 7.3, table 7.3.23.

553 Similar data is not provided for SOSR given the relatively minor relevance of SOSR in the EEA.

554 As regards Tables 7, 8, 10 and 12, the Parties provided figures for the EEA. The Commission considers that these figures are informative for the EU because the differences are unlikely to be significant.

Table 108 – WOSR breeder-level market shares in the EEA (2016)

	Sales (kEUR)	Share (%)
Bayer	[…]	[0-5]%
Monsanto	[…]	[20-30]%
Combined	*[…]*	*[30-40]%*
NPZ	[…]	[10-20]%
KWS	[…]	[10-20]%
DuPont/Pioneer	[…]	[5-10]%
LMG EU	[…]	[5-10]%
DSV	[…]	[5-10]%
Syngenta	[…]	[5-10]%
RAGT	[…]	[0-5]%
Euralis	[…]	[0-5]%
Elsoms Seed Ltd.	[…]	[0-5]%
Unknown	[…]	[0-5]%
Others	[…]	[0-5]%
Total	[…]	100%

Source: Form CO, part 7.2, table 7.2.15.

(725) Monsanto is currently the leading supplier in the EEA, with a share of supply of [20-30]% for WOSR. As shown in Table 109 below, at national level, Monsanto is the leader in several EU countries including Austria, Belgium, Bulgaria, Denmark, France, Ireland, Luxembourg and Portugal. […].[555] A majority of respondents to the market investigation that expressed a view indicated that (i) Monsanto's OSR seeds are both of high quality and diversity and that (ii) Monsanto's level of innovation is high.[556]

[555] MI 02905, ID000930-008304, slide 10.

[556] Questionnaire to Row Crop Competitors (Q1), question 44.

(726) Bayer's share of supply in the EEA for WOSR is around [0-5]% at both commercialization and breeder levels.

Table 109 – WOSR Parties' market shares at commercialization level, by country (2016)[557]

Country	Total market (kEUR)	Bayer market share	Monsanto market share	Combined market share
Austria	[…]	[0-5]%	[50-60]%	*[50-60]%*
Belgium	[…]	[0-5]%	[40-50]%	*[50-60]%*
Bulgaria	[…]	[0-5]%	[30-40]%	*[40-50]%*
Croatia	[…]	[0-5]%	[5-10]%	*[5-10]%*
Czech Republic	[…]	[0-5]%	[20-30]%	*[20-30]%*
Denmark	[…]	[0-5]%	[40-50]%	*[40-50]%*
Estonia	[…]	[10-20]%	[20-30]%	*[40-50]%*
Finland	[…]	[0-5]%	[10-20]%	*[10-20]%*
France	[…]	[0-5]%	[40-50]%	*[40-50]%*
Germany	[…]	[5-10]%	[10-20]%	*[20-30]%*
Greece	[…]	[10-20]%	[5-10]%	*[20-30]%*
Hungary	[…]	[0-5]%	[10-20]%	*[20-30]%*
Ireland	[…]	[0-5]%	[50-60]%	*[50-60]%*
Italy	[…]	[5-10]%	[20-30]%	*[30-40]%*
Latvia	[…]	[0-5]%	[20-30]%	*[20-30]%*
Lithuania	[…]	[0-5]%	[0-5]%	*[0-5]%*
Luxembourg	[…]	[0-5]%	[50-60]%	*[50-60]%*
Netherlands	[…]	[0-5]%	[20-30]%	*[20-30]%*
Poland	[…]	[0-5]%	[10-20]%	*[10-20]%*
Portugal	[…]	[0-5]%	[60-70]%	*[60-70]%*
Romania	[…]	[0-5]%	[30-40]%	*[30-40]%*
Slovakia	[…]	[0-5]%	[10-20]%	*[10-20]%*
Slovenia	[…]	[0-5]%	[0-5]%	*[0-5]%*
Spain	[…]	[0-5]%	[20-30]%	*[20-30]%*
Sweden	[…]	[0-5]%	[30-40]%	*[30-40]%*
United Kingdom	[…]	[0-5]%	[20-30]%	*[30-40]%*

Source: Form CO, part 7.3.

[557] Data for Austria are breeders' level data, which include sales of seeds allocated to the Parties as licensor, source: Form CO, part 7.2, table 7.2.51.

(727) Given that EEA sales of SOSR are less than EUR […], the Parties' and competitors' shares do not change materially if SOSR is assessed on its own (SOSR only) or together with WOSR (see Table 110 and Table 111).

Table 110 – SOSR market shares at commercialization level in the EEA (2016)

	Sales (kEUR)	Shares (%)
Bayer	[…]	[10-20]%
Monsanto	[…]	[0-5]%
Combined	*[…]*	*[10-20]%*
NPZ	[…]	[20-30]%
Lantmännen SW Seed	[…]	[20-30]%
KWS	[…]	[10-20]%
Rapool-Ring	[…]	[10-20]%
DSV	[…]	[0-5]%
Nordsaat	[…]	[0-5]%
HR Strzelce	[…]	[0-5]%
John Turner	[…]	[0-5]%
DLF-Trifolium	[…]	[0-5]%
Mike Pickford	[…]	[0-5]%
Unknown	[…]	[0-5]%
Others	[…]	[0-5]%
Total	[…]	100%

Source: Form CO, part 7.4, table 7.4.19.

Table 111 – SOSR Parties' market shares at commercialization level, by country (2016)[558]

Country	Total market (kEUR)	Bayer market share	Monsanto market share	Combined market share
Estonia	[…]	[5-10]%	[0-5]%	*[5-10]%*
Finland	[…]	[0-5]%	[20-30]%	*[20-30]%*
Germany	[…]	[0-5]%	[0-5]%	*[0-5]%*
Ireland	[…]	[10-20]%	[0-5]%	*[10-20]%*
Latvia	[…]	[20-30]%	[5-10]%	*[30-40]%*
Lithuania	[…]	[5-10]%	[0-5]%	*[5-10]%*
Poland	[…]	[20-30]%	[0-5]%	*[20-30]%*
Portugal	[…]	[0-5]%	[20-30]%	*[20-30]%*
Spain	[…]	[5-10]%	[0-5]%	*[5-10]%*
Sweden	[…]	[10-20]%	[0-5]%	*[10-20]%*
United Kingdom	[…]	[10-20]%	[0-5]%	*[10-20]%*

Source: Form CO, part 7.4.

[558] […]. The Parties have not been able to provide detailed information for the SOSR market in France.

Table 112 – WOSR + SOSR market shares at commercialization level in the EEA (2016)

	Sales (kEUR)	Share (%)
Bayer	[…]	[0-5]%
Monsanto	[…]	[20-30]%
Combined	*[…]*	*[30-40]%*
Rapool-Ring	[…]	[10-20]%
KWS	[…]	[10-20]%
DuPont/Pioneer	[…]	[5-10]%
LMG EU	[…]	[5-10]%
Syngenta	[…]	[5-10]%
Euralis	[…]	[0-5]%
RAGT	[…]	[0-5]%
DSV	[…]	[0-5]%
Advanta Seeds Europe	[…]	[0-5]%
Elsoms Seed Ltd.	[…]	[0-5]%
Semences de France	[…]	[0-5]%
NPZ	[…]	[0-5]%
RWA/Baywa	[…]	[0-5]%
Unknown	[…]	[0-5]%
Others	[…]	[5-10]%
Total	[…]	100%

Source: Commission's elaborations on data presented in the Form CO.

Table 113 – WOSR + SOSR Parties' market shares at commercialization level, by country (2016)[559]

Country	Total market (kEUR)	Bayer market share	Monsanto market share	Combined market share
Austria	[…]	[0-5]%	[50-60]%	[50-60]%
Belgium	[…]	[0-5]%	[40-50]%	[50-60]%
Bulgaria	[…]	[0-5]%	[30-40]%	[40-50]%
Croatia	[…]	[0-5]%	[5-10]%	[5-10]%
Czech Republic	[…]	[0-5]%	[20-30]%	[20-30]%
Denmark	[…]	[0-5]%	[40-50]%	[40-50]%
Estonia	[…]	[5-10]%	[10-20]%	[10-20]%
Finland	[…]	[10-20]%	[10-20]%	[20-30]%
France	[…]	[0-5]%	[40-50]%	[40-50]%
Germany	[…]	[5-10]%	[10-20]%	[20-30]%
Greece	[…]	[10-20]%	[5-10]%	[20-30]%
Hungary	[…]	[0-5]%	[10-20]%	[20-30]%
Ireland	[…]	[5-10]%	[40-50]%	[40-50]%
Italy	[…]	[5-10]%	[20-30]%	[30-40]%

[559] Data for Austria are breeders' level data, which include sales of seeds allocated to the Parties as licensor, source: Form CO, part 7.2, table 7.2.51.

Country	Total market (kEUR)	Bayer market share	Monsanto market share	Combined market share
Latvia	[…]	[5-10]%	[20-30]%	[20-30]%
Lithuania	[…]	[0-5]%	[0-5]%	[0-5]%
Luxembourg	[…]	[0-5]%	[50-60]%	[50-60]%
Netherlands	[…]	[0-5]%	[20-30]%	[20-30]%
Poland	[…]	[0-5]%	[10-20]%	[10-20]%
Portugal	[…]	[0-5]%	[30-40]%	[30-40]%
Romania	[…]	[0-5]%	[30-40]%	[30-40]%
Slovakia	[…]	[0-5]%	[10-20]%	[10-20]%
Slovenia	[…]	[0-5]%	[0-5]%	[0-5]%
Spain	[…]	[0-5]%	[10-20]%	[10-20]%
Sweden	[…]	[0-5]%	[30-40]%	[30-40]%
United Kingdom	[…]	[0-5]%	[20-30]%	[30-40]%

Source: Commission's elaborations on data presented in the Form CO, parts 7.3 and 7.4.

(728) The Commission considers that a review of market share data alone merely gives a measure of the current market position of market participants, and may be subject to important fluctuations over time if companies have important products which will gain relevance in the market. This is the case for Bayer, which is at present the global leader in OSR and has the strategic objective to gain prominence in the national OSR markets in the EU.

(729) Against this background, the Commission considers that the market shares listed in the tables above do not take into consideration Bayer's leading products in canola, the OSR varieties for the Canadian market,[560] and its overall strategy for OSR in the EU, which the Commission considers to be relevant for the competitive assessment. Thus, the Commission considers that current calculations of combined market shares may understate the Parties' competitive position, in particular in light of the expected success on Bayer's leading products in Canola and its overall strategy for OSR in the EU.

1.2.5.1. Bayer is the global leader in OSR

(730) Bayer is currently the global leading player in OSR, with a market share of around [20-30]%[561] thanks to its strong position in Canola in North America. In North America (Canada and the US), Bayer is the leading Canola player, through its brand InVigor. In 2016, Bayer achieved a [60-70]% market share in the US and a [50-60]% market share in Canada (both in acreage). In the same year, its sales amounted to EUR […]. Canada accounted for approximately [80-90]% of Bayer's total sales, and the US for the remaining [5-10]%.

(731) Over the last 20 years, Bayer has exploited several assets to become the leading Canola player in North America. Bayer owns a hybridization technology that is

[560] Canola is an OSR variety, developed in Canada through traditional breeding in Canada in the 1970s. Canola seeds contain less than 30 micromoles of glucosinolates and less than 2% of erucic acid. Canola is mainly cultivated in Canada and the US. Canola seeds are crushed in order to produce oil for food and industrial applications. Source: Canola Council of Canada, http://www.canolacouncil.org/.

[561] BI 03091, ID001638, slides 13 and 14.

described [quote from Bayer internal document].[562] A participant to the market investigation also stated that Bayer's "*innovative hybridization system offers superior performance compared to the […] systems used by other breeders*".[563] This technology is supported [quote from Bayer internal document].[564]

(732) This hybridization technology has allowed Bayer to develop and commercialise a broad range of successful Canola hybrids (see Figure 82 below). For example, Bayer has developed technologies, such as pod shatter reduction, that are described by [quote from Bayer internal document] (see Figure 81 below).[565] [Information on technologies].[566,567]

Figure 81 – […]

[…]

Source: BI-EDISC-0912989, [internal document], ID005943-033125, page 5.

Figure 82 – […]

[…]

Source: BI-EDISC-0912989, [internal document], ID005943-033125, page 41.

Figure 83 – […]

[…]

Source: BI-EDISC-0912989, [internal document], ID005943-033125, page 43.

Figure 84 – […]

[…]

Source: BI-EDISC-0912989, [internal document], ID005943-033125, page 44.

(733) Figure 85 shows clearly the success that Bayer has managed to achieve in Canada with its canola business. Bayer launched its first hybrids in Canada in 1997, after the acquisition of Plant Genetic Systems ("PGS"). Bayer has since increased its market share by 14 percentage points in just 4 years (from 1997 to 2001). Today, Bayer is the market leader with [50-60]% of the Canadian market.

Figure 85 – […]

[…]

Source: BI-EDISC-0912989, [internal document], ID005943-033125, page 6.

562 BI 01851, ID000854, slide 5.
563 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), question 41.1.
564 BI 01851, ID000854, slide 5.
565 BI 01851, ID000854, slide 5.
566 BI 01851, ID000854, slides 6 and 26.
567 BI 01851, ID000854, slide 27.

1.2.5.2. Bayer plans to become a leading OSR player in the EU

(734) [Commercial plans].

Figure 86 – […]

[…]

Source: BI-EDISC-0581224, [internal document], ID5609-76940, page 38.

(735) [Business strategy].

(736) [Business strategy].[568,569,570]

1.2.5.3. Bayer's plans to further develop OSR in the EU are credible and show signs of success

(737) There are several elements which make Bayer's plans credible. Firstly, Bayer is the global leader for canola/OSR. It is likely that Bayer will leverage its know-how and capabilities in North America into a strong position in the EU. One participant to the market investigation confirmed that Bayer's "*knowledge and capabilities it holds for Canola in Canada can be leveraged into WOSR in Europe*".[571] The same participant further indicated that Bayer's non GM trait portfolio in Canada "*can be leveraged and transferred to WOSR in Europe*".[572]

(738) [Pipeline products and strategy].[573,574,575]

(739) [Extract from Bayer internal document].[576,577]

(740) Bayer's plans and capabilities are also considered as credible by its OSR competitors. In this regard, one competitor noted "*Bayer is still a small player in the European OSR market. However, Bayer is expected to become a leading competitive force in the three to five years due to promising and high performing varieties in the official trials. Bayer is expected to step up its investments. Bayer recently acquired the OSR business of a German company called Raps Gbr. (P.H. Petersen) […]. Bayer will be able to leverage its leading position in North America to Europe, by transferring its technologies and know-how developed and acquired in and for North America to Europe. Bayer already uses its research facilities in Ghent to support its activities in Canada, possibly also to transform their GM efforts for North America back into non-GM germplasm for the EU.*"[578]

(741) Another OSR competitor noted "*Bayer has recently started its OSR activities in the EU. Bayer currently has a 3% market share. Four years ago Bayer acquired an OSR breeding programme from the German company Raps GbR and it is expected that Bayer will increase its WOSR activities further. Bayer can credibly become a significant WOSR and SOSR player in Europe in the next 5 to 10 years, for the*

568 BI 01600, ID000451-000219, slide 30.
569 BI 03091, [internal document], ID001638-000030, slide 31.
570 BI 00841, ID000451-000977, slide 14.
571 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), question 40.1.
572 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), question 40.1.
573 BI 01600, ID000451-000219, slides 32, 38 and 51.
574 Form CO, part 7.1, paragraph 118.
575 Form CO, part 7.1, paragraph 118.
576 BI 03091, [internal document], ID001638-000030, slide 14.
577 BI 03091, [internal document], ID001638-000030, slide 14.
578 Agreed non-confidential minutes of a call with a competitor, 12 September 2017 (ID08986).

following reasons. Bayer has a very good access to market through distributors, thanks to its strong crop protection portfolio […] By contrast with pure seeds players who can only compete by the quality of their germplasm, Bayer has the ability to combine crop protection products with OSR seeds […] Bayer has also very good information on farmers. Access to information will also be enhanced by digital farming, which can also help them to tune their offers […] Bayer also has the opportunity to fund its OSR breeding efforts with its crop protection revenues. In addition, it is probable that Bayer will leverage its technology and know-how from North America, where Bayer is the market leader, to Europe. In North America, Bayer has an exceptional hybridisation system called "Seed Link", which is patented. Bayer also has an outstanding portfolio of genetically-modified varieties. Bayer has therefore all the tools to credibly become a significant player in Europe in the [next] 5 to 10 years."[579]

(742) These views on the importance of Bayer's suite of crop protection products & leverage with distributors have been confirmed also by other competitors. For example, a third OSR competitor observed "*Bayer currently has a 4% market share in the EU, while being globally the leading player. Bayer is dominant in the SOSR/Canola market in Canada, thanks to its Liberty Link technology and its InVigor platform. Although Bayer's North American SOSR germplasm is not transferable to Europe, Bayer has the technology and know-how to grow their segment in Europe. Furthermore, with their strong position in crop protection, particularly in Germany and the Ukraine, Bayer has already been able to leverage its distribution network to achieve significant WOSR market share. Leveraging the crop protection position to the WOSR market is likely to continue as Bayer is expected to be one of the few companies to offer both insecticide and fungicide seed treatment solutions on the European market.*"[580]

(743) The Commission considers that Bayer's strategy for the EU is already showing positive results. [Bayer's performance]. In all these markets, therefore, Bayer's competitive relevance is higher than its market share would suggest.

Figure 87 – […]

[…]

Source: BI-EDISC-0364160, [internal document], ID5421-31651, slide 14.

(744) On the basis of the above considerations, the Commission takes the view that, pre-Transaction, Bayer had credible plans and strong capabilities to become a leading OSR player in the EU and that such plans were already showing some positive results. The Transaction with Monsanto risks jeopardising such plans with the likely effect of harming OSR customers.

1.2.5.4. Bayer likely to become strong in markets where Monsanto is also strong

(745) The Commission considers that Bayer is likely to become a strong competitor in markets where Monsanto is also strong. With the exception of Germany, Poland, Latvia and Lithuania (see Table 109, Table 111, Table 113), Monsanto is among the strongest competitors in all the other markets where Bayer's growth strategy is proving to be successful (Estonia, France, Ireland and the UK). In these markets,

[579] Agreed non-confidential minutes of a call with a competitor, 15 September 2017 (ID06037).

[580] Agreed non-confidential minutes of a call with a competitor, 14 September 2017 (ID07996).

therefore, the loss of Bayer as a competitor as result of the Transaction would likely have severe effects on competition. In what follows, the Commission will assess in detail the effects of the Transaction on these national markets for OSR.

(746) In Estonia, Monsanto has [20-30]% of the market for commercialization of WOSR and Bayer has a further [10-20]%. Rapool-Ring is the largest competitor with [30-40]%. The market is already very concentrated (HHI is [2500-3000]) and increment of the HHI brought by the Transaction is very significant (Delta HHI is [800-900]). Had the present Transaction not taken place, it would be reasonable to assume that, due to the execution of its strategy, Bayer would continue to gain market share at the expense of Monsanto (as well as of the other competitors). [Extract from internal documents].

(747) Therefore, the Commission concludes that the Transaction would be likely to lead to a significant impediment of effective competition on the market for WOSR in Estonia because of the removal of a competitor of growing importance.

Table 114 – WOSR market shares at commercialization level in Estonia (2016)

	Sales (kEUR)	**Shares (%)**
Bayer	[…]	[10-20]%
Monsanto	[…]	[20-30]%
Combined	*[…]*	*[40-50]%*
Rapool-Ring	[…]	[30-40]%
Others	[…]	[20-30]%
Total	[…]	100%
HHI		[2500-3000]
Delta HHI		[800-900]

Source: Form CO, Table 7.3.108.

(748) [Parties' position in SOSR and WOSR], the Commission considers that Transaction would be unlikely to lead to a significant impediment of effective competition in those markets in Estonia.

(749) In France, Monsanto has [40-50]% of the market for commercialization of WOSR and Bayer has a further [0-5]% of the market. KWS ([10-20]%) and Advanta Seeds Europe ([10-20]%) are the largest players after Monsanto; the rest of the market is shared among a fringe of smaller competitors with less than 10% each. The market is already very concentrated (HHI is [2500-3000]), though the increment of the HHI brought by the Transaction is not very significant (Delta HHI is [0-100]). Had the present Transaction not taken place, it would be reasonable to assume that, due to the execution of its strategy, Bayer would continue to gain market share at the expense of Monsanto (as well as of the other competitors). In this respect, [reference to Bayer's internal documents] (see Figure 87).

(750) Therefore, the Commission concludes that the Transaction would be likely to lead to a significant impediment of effective competition on the market for WOSR in France because of the removal of a competitor of growing importance.

Table 115 – WOSR market shares at commercialization level in France (2016)

	Sales (kEUR)	Shares (%)
Bayer	[…]	[0-5]%
Monsanto	[…]	[40-50]%
Combined	*[…]*	*[40-50]%*
KWS	[…]	[10-20]%
Advanta Seed Europe	[…]	[10-20]%
Euralis	[…]	[5-10]%
Semences de France	[…]	[5-10]%
DSV	[…]	[5-10]%
RAGT	[…]	[0-5]%
DuPont/Pioneer	[…]	[0-5]%
Syngenta	[…]	[0-5]%
Laboulet	[…]	[0-5]%
Unknown	[…]	[0-5]%
Others	[…]	[0-5]%
Total	[…]	100%
HHI		[2500-3000]
Delta HHI		[0-100]

Source: Form CO, Table 7.3.117.

(751) The Parties do not overlap in SOSR in France. [Parties' position in SOSR and WOSR] (Monsanto: [40-50]%; Bayer [0-5]%), the Commission considers that Transaction would be likely to lead to a significant impediment of effective competition also if SOSR and WOSR in France were taken together.

(752) In Ireland, [Parties' position in WOSR]. Had the present Transaction not taken place, it would be reasonable to assume that, due to the execution of its strategy, Bayer would have gained market share at the expense of Monsanto (as well as of the other competitors). In this respect, the Commission refers to Bayer's internal documents showing that: [Bayer's growth and future plans].[581]

(753) Therefore, the Commission concludes that the Transaction would likely lead to a significant impediment of effective competition on the market for WOSR in Ireland because of the removal of a competitor of growing importance.

(754) [Parties' position in SOSR and WOSR] (Monsanto: [40-50]%; Bayer [5-10]%), the Commission considers that Transaction would be likely to lead to a significant impediment of effective competition also if SOSR and WOSR in Ireland were taken together.

(755) In the UK, Monsanto has [20-30]% of the market for commercialization of WOSR and Bayer has a further [0-5]% of the market. KWS ([20-30]%) and Elsoms Seed

[581] BI-EDISC-0581224, [internal document], ID5609-76940, page 30.

Europe ([10-20]%) are the largest players after Monsanto; the remaining of the market is shared among a fringe of smaller competitors with less than 10% of the market each. Had the present Transaction not taken place, it would be reasonable to assume that, due to the execution of its strategy, Bayer would continue to gain market share at the expense of Monsanto (as well as of the other competitors). [Extract from Bayer internal document] (see Figure 87).

(756) Therefore, the Commission concludes that the Transaction would be likely to lead to a significant impediment of effective competition on the market for WOSR in the UK because of the removal of a competitor of growing importance.

Table 116 – WOSR market shares at commercialization level in the UK (2016)

	Sales (kEUR)	**Shares (%)**
Bayer	[…]	[0-5]%
Monsanto	[…]	[20-30]%
Combined	*[…]*	*[30-40]%*
KWS	[…]	[20-30]%
Elsoms Seeds Ltd.	[…]	[10-20]%
DSV	[…]	[5-10]%
LMG EU	[…]	[5-10]%
NPZ	[…]	[5-10]%
RAGT	[…]	[0-5]%
Technology Crops	[…]	[0-5]%
Syngenta	[…]	[0-5]%
DuPont/Pioneer	[…]	[0-5]%
Grainseed Ltd.	[…]	[0-5]%
DLF-Trifolium	[…]	[0-5]%
Unknown	[…]	[0-5]%
Others	[…]	[0-5]%
Total	[…]	100%
HHI		[1500-2000]
Delta HHI		[100-200]

Source: Form CO, Table 7.3.262.

(757) [Parties' position in SOSR and WOSR] (Monsanto: [20-30]%; Bayer [0-5]%), the Commission considers that Transaction would be likely to lead to a significant impediment of effective competition also in the combined market for SOSR and WOSR in the UK.

1.2.6. Conclusion

(758) For the reasons set out above, the Commission concludes that the Transaction would likely cause a significant impediment to effective competition in relation to OSR seeds in France, Ireland, Estonia and the UK, because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on product and price competition.

1.3. Cotton

1.3.1. Introduction

(759) The global Cotton seeds industry size is about EUR 1.1 billion. The EU is not among the major cotton growing regions of the world. […] [0-5]% of the worldwide cotton production occurs in the EU. In fact, the only EU Member States in which cotton is cultivated are Greece, Spain and to a very limited extent Bulgaria.[582]

1.3.2. Parties' activities

(760) Bayer's cotton seeds are marketed under two brands: 1) FiberMax varieties, which are bred in Australia, USA and Brazil and commercialised in the EU, and 2) Stoneville (ST) varieties, which originate from the former Stoneville company (which Bayer acquired from Monsanto in 2007), licensed to Monsanto in Greece via a licence agreement. Bayer sells cotton seeds directly to growers in Greece, but it is not directly present on the market in Spain, where its cotton seed varieties are licenced to Limagrain Iberica for commercialization.

(761) Monsanto's cotton seed varieties are marketed under the Deltapine brand and are bred in the USA. In 2010 Monsanto stopped its cotton breeding programme for the EU and exited from the direct (downstream) sale of branded cotton seeds in the EU. […],[583] […].[584]

(762) Therefore, the only relevant overlap in the Parties' activities in the cotton seed business in the EU arises in the (upstream) market for licensing of cotton seeds for commercialization.

1.3.3. Market definition

1.3.3.1. Product market definition

(763) In line with the Commission's previous decisions relating to broad acre crop seeds, the Notifying Party submits that there are two separate product markets in the cotton seed value chain: (i) the upstream market for the licensing of cotton varieties for production and sale (but not breeding), and (ii) the downstream market for the commercialisation of cotton seeds.[585]

(764) As regards the possible segmentation of different cotton seed varieties, the Notifying Party considers that there is significant demand-side substitutability between cotton varieties from the perspective of growers' customers, and therefore, also from the perspective of growers.[586]

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582 Bulgaria has only 1,500 hectares of cotton under cultivation. Neither Bayer nor Monsanto licenses or commercialises cotton seeds in Bulgaria.

583 […].

584 […].

585 The main differentiating factor for growers is to find the most productive variety of cotton with the best fibre quality which would thrive in the conditions specific to each cotton area (such as weather conditions, crop management and tolerance to fungal disease). For these reasons, different varieties of cotton seeds are developed for the same usage and each variety could be considered as part of a single product market comprising all cotton varieties.

586 The main differentiating factor for growers is to find the most productive variety of cotton with the best fibre quality which would thrive in the conditions specific to each cotton area (such as weather conditions, crop management and tolerance to fungal disease). For these reasons, different varieties of cotton seeds are developed for the same usage and each variety could be considered as part of a single product market comprising all cotton varieties.

(765) Consequently, the Notifying Party submits that the competitive effects of the Transaction in cotton seeds in the EU should be analysed on (i) the (upstream) market for licensing cotton varieties for production and sale and (ii) the (downstream) market for the commercialisation of cotton seeds.

(766) For the reasons explained in recitals (714) and (715), the Commission takes the view that a further upstream market should be distinguished, i.e. the (upstream) market for the licensing of germplasm/parental lines for the purposes of breeding new varieties. However, […],[587] the Commission considers that, for the purposes of the assessment of the Transaction, the relevant market is the licensing of cotton seed varieties for production and sale.

1.3.3.2. Geographic market definition

(767) The Commission has previously found that, for certain broad acre crop seeds, the geographic scope of the market is Union-wide for the (upstream) licensing market and national for the (downstream) commercialisation market.[588]

(768) The Notifying Party agrees with the Commission and submits that the relevant geographic market is at least EEA-wide for the upstream market of licensing cotton seed varieties.

(769) The Commission is of the view that the considerations made in its decision making practice also apply to the present case and therefore considers that the relevant geographic scope for the market for licensing of cotton varieties for production and sale is EU-wide.

1.3.3.3. Conclusion

(770) The Commission considers that the relevant market to retain for the competitive analysis in this case is the licensing of cotton varieties for production and sale. The geographic scope of such market is EU-wide.

587 Parties' response to the Commission's request for information RFI 18, question 5.

588 Commission Decision in Case M.5675 – Syngenta/Monsanto's Sunflower Seed Business (2010), recitals 76-89.

1.3.4. Competitive assessment

(771) The Commission considers that the Transaction brings together the two most important competitors in the EU market for the licensing of cotton varieties for production and sale. The combined share of the Parties would be particularly high reaching [60-80]% of the market (Bayer [20-30]%, Monsanto [45-55]%). Spirou is the only other noticeable competitor with [5-10]% of the market. According to the Parties, the rest of the market is accounted for by independent breeders, small seed companies, public and private breeding institutes (including universities).

Table 117 – Market shares re licensing of cotton seeds for commercialization (2016)[589]

Company	Market shares by planted area	Market shares by volume	Market shares by value
Bayer	[20-30]%	[20-30]%	[20-30]%
Monsanto	[40-50]%	[50-60]%	[50-60]%
Combined	*[60-70]%*	*[70-80]%*	*[70-80]%*
Spyrou	[5-10]%	[5-10]%	[5-10]%
Others[590]	[20-30]%	[20-30]%	[10-20]%
Total	100%	100%	100%
HHI	[2500-3000]	[3000-3500]	[3500-4000]
Delta HHI	[2000-2500]	[2000-2500]	[2000-2500]

Source: Form CO, part 6, Tables 6.3, 6.4 and 6.5.
Note: In the table above, HHI and Delta HHI are Commission's elaborations on data presented in the Form CO, part 6, Tables 6.3, 6.4 and 6.5.

(772) The Transaction would significantly strengthen Monsanto's already clear market leading position, only followed by a fringe of smaller competitors. […]. Such levels of HHI and delta HHI are strong indicators that the Transaction would *prima facie* cause a significant impediment to effective competition in this market.

(773) The Parties' strong position in the EU market for licensing of cotton varieties for production and sale follows from their global position in cotton seeds. [Parties' business activities].

589 The cotton variety licensing market shares have been calculated by ascribing the downstream sales to the owner of the variety. […].

590 Independent breeders, small seed companies, public and private breeding institutes (including universities).

(774) When assessed on a global basis, the Parties emerge as the most important competitors in cotton seeds and only with one seemingly strong competitor (Dow AgroSciences). Figure 88 shows how Bayer sees itself and its competitors in the global business of cotton. Bayer's germplasm for cotton, the one from which its varieties for the European market are bred, is considered "best in class" and its traits for cotton are considered in a similar way. Monsanto is the only other player whose germplasm and traits can match Bayer's. It is again worth remembering that Monsanto's US germplasm is the one from which the varieties licensed for the European market are bred. All the other competitors against whom Bayer benchmarks itself are weaker or significantly weaker and not even present on the cotton licencing market in the EU (see Table 117).

Figure 88 – Comparison chart of companies owning germplasm and traits for cotton seeds

[…]

Source: BI-EDISC-0959397, [internal document], ID5610-2959, slide 26.
Note: […].

(775) The Parties' global leadership in relation to cotton seeds was also broadly confirmed by the market investigation undertaken by the Commission. One of the main competitors of the Parties observed that "*Bayer (via its Stoneville and Fibermax Brands) is one of two main global cotton breeders, and the Stoneville products have a long history (since 2000 at least) of presence in Spain, Greece and Turkey (ex-EEA, but common products in many cases).*"[591]

(776) The quality of the Parties' germplasm pool, their breeding capacities, their R&D programs, their ability to develop traits and their capacity to access cotton customers were also pointed at as elements of strength in the market investigation. In this regard, one respondent stated that "*[t]he germplasm they both have at the moment is leading the markets in some crops like cotton. They both have the biggest and most successful R&D programs for cotton planting seeds and their companied [sic] market share for their material (under their brands and under licence) in cotton is more than 70% in the EU market.*"[592] And that "*[t]hey are market leaders in cotton and way ahead in R&D than any other company in the world*"[593]. Another participant noted that "*Bayer / Monsanto will have most of the cotton genetique [sic]*".[594]

(777) When asked to rate the Parties' capabilities with respect to cotton, the majority of respondents to the market investigation rated as "strong" the breeding capacities for cotton of both Bayer and Monsanto[595], their germplasm pool[596] and the traits portfolio for cotton of Monsanto.[597] The Parties' capacity to access cotton seeds

591 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), question 45.1.
592 Questionnaire to Row Crop Competitors (Q5), question 38.1.
593 Questionnaire to Row Crop Competitors (Q5), question 42.1.
594 Questionnaire to Row Crop Competitors (Q5), question 38.1.
595 Questionnaire to Row Crop Competitors (Q5), questions 57 and 61.
596 Questionnaire to Row Crop Competitors (Q5), questions 58 and 62.
597 Questionnaire to Row Crop Competitors (Q5), question 59.

customers was clearly rated as "strong" by the majority of respondents to the market investigation.[598]

(778) The Parties have argued that […]. While this is factually correct, the Commission's investigation has shown that what matters for the assessment of the Parties' strengths in licencing cotton seeds is their global program for cotton. In this space, Bayer's internal documents clearly show that the Parties are the most important competitors and with limited alternatives.

(779) Finally, the Transaction was seen as having a "negative" impact in terms of higher prices, narrower choice and less innovation by all respondents to the market investigation who expressed an opinion.[599] One licensee even noted that "*[a]s the two leading companies will become one organisation, access to new varieties will become difficult. The best material will be used by them and I don't know if they will continue their licence agreements. As for pricing having one company with so big market share, competition levels will be very low*."[600]

(780) In conclusion, the Commission finds that the Parties are the most important competitors in the market for licencing of cotton seeds and that the competitive constraints imposed by competitors are limited.

1.3.5. Conclusion

(781) For the reasons set out above, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to licensing of cotton varieties for production and sale in the EU due to non-coordinated effects, because it is likely that it would strengthen or at least create a dominant position.

1.4. Wheat

1.4.1. Introduction

(782) Wheat is a *Gramineae* (i.e., a species of grass) originally grown in Mesopotamia and has been cultivated for 10,000 years. Wheat is the largest small-grain cereal crop by area, grown on approximately 220 million hectares globally, representing 25% of the global arable land.

(783) Wheat is cultivated primarily in temperate regions, either as a spring crop or a winter crop, with the majority of production from winter cropping. The primary wheat producing countries are in the EU, Australia, Canada, China, India, Russia, and the USA. World trade in wheat, currently more than 170 million tonnes, is expected to continue to grow in response to population growth, particularly in many of the import-dependent countries.

(784) Wheat varieties in the seed market are currently almost exclusively self-pollinating. Also known as Open Pollinated Varieties ("OPV"), they represent almost 100% of certified and royalty seed sales. Hybrid varieties have been developed and commercialised in Europe (mostly in France) in recent years, and in the past in the USA, South Africa, and Australia, but with no commercial success to date.

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598 Questionnaire to Row Crop Competitors (Q5), questions 60 and 64.

599 Questionnaire to Row Crop Competitors (Q5), question 71.

600 Questionnaire to Row Crop Competitors (Q5), question 71.1.

(785) The Parties submit that there are two main species of wheat: bread wheat (*Triticum aestivum*) and durum wheat (*Triticum durum*). Bread wheat accounts for approximately 90% of wheat production. Durum wheat accounts for most of the remaining approximately 10% of wheat production.

1.4.2. Parties' activities

(786) Bayer had no breeding activities in wheat seed prior to 2011. Bayer's initial investments in breeding began in 2011 and involved the acquisition of copies of germplasm, the establishment of breeding stations, the training of staff, and the initiation of breeding activities. Bayer began breeding operations in Ukraine with the acquisition of Eurosort. In the same year, Bayer began breeding activities in Australia, USA and Canada. This was followed by breeding activities in France and Germany. […].

(787) [Details of Monsanto's wheat business]. Monsanto's commercial wheat activities take place in the U.S. [details of Monsanto's wheat business].[601]

1.4.3. Market definition

1.4.3.1. Product market definition

(788) In line with the Commission's previous decisions relating to broad acre crop seeds, a distinction can be made between two separate product markets in the wheat seed value chain: (i) the upstream market for the licensing of wheat varieties for production and sale (but not breeding), and (ii) the downstream market for the commercialisation of wheat seeds.

(789) The Commission takes the view that the considerations made in its precedents also apply to the present case and therefore does not see any reasons to deviate from them for the purpose of the present decision.

1.4.3.2. Geographic market definition

(790) The Commission has previously found that, for certain broad acre crop seeds, the geographic scope of the market is Union-wide for the (upstream) licensing market and national for the (downstream) commercialisation market.[602]

(791) The Commission takes the view that the considerations made in its decision making practice also apply to the present case and therefore does not see any reasons to deviate from them for the purpose of the present decision.

1.4.3.3. Conclusion

(792) Given that Bayer plans to commercialize wheat seeds, the Commission considers that the effects of the Transaction on competition will be more appropriately assessed on the downstream market for the commercialisation of wheat seeds at national level. However, for the purpose of this decision, the precise dimension of the downstream product and geographic market can be left open, as the Transaction does not give rise to serious doubts about its compatibility with the internal market under any plausible alternative market definition (hybrid vs open pollinated varieties; national vs wider than national).

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601 [Details of Monsanto's wheat business].

602 Commission Decision in Case M.5675 – Syngenta/Monsanto's Sunflower Seed Business (2010), recitals 76-89.

1.4.4. Competitive assessment

(793) None of the Parties is active in the commercialization of wheat seeds in the EU countries. However, those markets are considered for the assessment of whether both Bayer and Monsanto would be potential entrants with respect to wheat seeds.

1.4.4.1. The legal framework

(794) The Horizontal Merger Guidelines describe a horizontal merger with a potential competitor as follows:

"Concentrations where an undertaking already active on a relevant market merges with a potential competitor in this market can have similar anti-competitive effects to mergers between two undertakings already active on the same relevant market and, thus, significantly impede effective competition, in particular through the creation or the strengthening of a dominant position."[603]

(795) According to the Horizontal Merger Guidelines, two conditions must be present for a merger with a potential competitor to have significant anticompetitive effects[604]. First, the potential competitor must already exert a significant constraining influence or there must be a significant likelihood that it would grow into an effective competitive force. Evidence that a potential competitor has plans to enter a market in a significant way could help the Commission to reach such a conclusion. Second, there must not be a sufficient number of other potential competitors, which could maintain sufficient competitive pressure after the merger.

1.4.4.2. Parties' view

(796) The Parties argue that the Transaction will not give rise to competition concerns in relation to the commercialisation of wheat seeds in the EU, or in relation to innovation in wheat seeds. This is due to a number of reasons.

(797) First, there is no horizontal overlap between the Parties' activities or products. Monsanto's activities in the breeding and commercialisation of wheat seeds take place in the U.S. […]. In contrast, Bayer's activities in wheat are primarily focused on R&D in relation to hybrid wheat varieties.

(798) Second, […].

(799) Third, [future plans].

(800) Fourth, Bayer faces strong third party competitors for hybrid wheat. There are numerous companies that can develop, and are developing, hybrid wheat seeds in competition to Bayer. They include Syngenta, Dow/DuPont, Saaten Union, Limagrain, KWS, RAGT and a number of regional wheat seed suppliers.

(801) Fifth, Bayer and Monsanto would not be close competitors. Even if Monsanto was to enter the EU with an OPV wheat seed, it would not be the closest competitor to Bayer's hybrid wheat seed. Differences in, amongst other things, yield, price and quality, mean that the Bayer and Monsanto wheat offerings would be highly differentiated, limiting competition between them.

603 Horizontal Merger Guidelines, paragraph 58.

604 Horizontal Merger Guidelines, paragraph 59.

1.4.4.3. Commission's assessment

(A) Bayer is a new entrant with hybrid wheat

(802) The Commission finds that, at present, there is significant likelihood that Bayer would enter the wheat seeds markets and grow into an effective competitive force. However, the same cannot be convincingly argued for Monsanto.

(803) The Commission considers that Bayer has developed convincing plans to become a leading competitor in wheat seeds. For this objective, Bayer is (i) investing heavily into wheat in Europe with a roll-out plan for hybrid wheat seeds, (ii) is making significant R&D investments in native traits and non-GM traits.

(804) […] (see Figure 89).

Figure 89 – […]

[…]

Source: Commission's analysis on data provided by the Parties and main competitors

(805) [Bayer's strategies] (see Figure 90 below).

Figure 90 – […]

[…]

Source: BI-EDISC-0577344, [internal document], ID005609-073060, slide 35.

(B) Entry of Monsanto unlikely and distant

(806) The Commission finds that there is no significant likelihood that Monsanto would enter the wheat markets in Europe and grow into an effective competitive force.[605] Although it cannot be excluded that Monsanto would enter the European wheat seed market in future, the Commission finds that this unlikely to happen in a sufficiently short period of time. This is for a number of reasons.

(807) First, Monsanto is […]. Based on the most recent budget numbers, Monsanto's total wheat budget is approximately […], of which […] is dedicated to the U.S. wheat breeding programme to deliver better yields and better disease resistance to growers in the U.S. The total budget of approximately […] allocated to wheat projects still constitutes approximately […] of the overall R&D budget allocated Monsanto's Technology Organisation.

(808) Second, Monsanto does not have at present the full set of capabilities required for a successful entry in wheat seeds in Europe. In this respect, the Commission refers to a Bayer internal document where Bayer's wheat competitors are ranked on a number of different criteria. Monsanto is clearly presented as not having wheat germplasm readily available for the EU markets.

Figure 91 – Bayer's ranking of its key competitors in wheat

[…]

Source: BI-EDISC-0579805, [internal document], ID005609-075521, slide 25.

(809) […].[606]

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605 [Monsanto's future plans].

606 White Paper on Wheat. [Reference to Monsanto's future plans].

(C) Bayer and Monsanto are not close competitors

(810) In light of Bayer's strategy focused on hybrid wheat, the Commission considers that, if Monsanto were to enter with OPVs, Bayer and Monsanto would not be close competitors in the EU.

(811) In this respect, the Commission notes that the value proposition for hybrids (Bayer's focus) is substantially different from that of OPVs. The value of hybrids is based on the level of incremental yield delivered (as compared with OPVs and/or farm-saved seed) against the additional cost for seed, and the degree of certainty of achieving such yield across seasons. The primary competition would therefore be from alternative hybrids and the level of heterosis or trait performance delivered between the hybrid varieties. The only competition from OPVs would be, (i) if the level of yield of OPVs could be increased to minimise the yield advantage of hybrids and thus mitigate the benefit which justifies the higher seed cost, or (ii) in environments with lower stress or yield where the hybrid yield advantage will be routinely lower.

(812) A further indication of absence of closeness between hybrid and OPV wheat is given by the significant price difference between the two. [Bayer's cost estimates].

(813) Moreover, the business model for hybrid seeds is wholly different from that of OPVs. Because hybrid wheat seeds must be produced from the same male and female parental lines each time, the supply chain for hybrid wheat seeds is different from the supply chain for OPV wheat seeds. Bayer intends to sell hybrid wheat seeds to farmers through a network of established local hybrid grower-seedsman / multiplier / cooperative / agricultural retailer. By contrast, OPV wheat is sold to farmers via a seed multiplier who receives "breeders seed" from the breeder/wheat seed company which then multiply, clean and bag the seeds to sell directly to farmers.

(D) Competitive constraints imposed by competitors are sufficient

(814) The Commission finds that, at present, there is a sufficient number of other wheat competitors, which would maintain sufficient competitive pressure after the merger. These competitors include primarily Limagrain, KWS, RAGT and Saaten Union, which at present supply a large share of European demand with open pollinated varieties.

(815) The Commission considers that these competitors have already developed hybrid wheat or have the capabilities to develop hybrid wheat, thus becoming potential competitors to Bayer. Saaten Union is already commercializing hybrid wheat; other players have the advantage to deploy technology, experience and infrastructure from adjacent small-grain hybrid cereal crops to their hybrid wheat programmes (e.g. KWS – Hybrid Rye, Syngenta – Hybrid Barley). Moreover, Syngenta began to develop hybrid wheat before Bayer started its programme.

(816) The Commission refers to the following internal documents of Bayer, which contain valuable evidence in this regard. [Extract from internal documents] (see Figure 91).

Figure 92 – Bayer's views regarding the competitive environment for wheat

[…]

Source: BI-EDISC-0577344, [internal document], ID005609-073060, slide 22.

1.4.5. Conclusion

(817) Therefore, on balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition in relation to the markets for wheat seeds in the EU.

SECTION X: BROAD ACRE CROP TRAITS

1. BROAD ACRE CROP TRAITS

(818) Broad acre is a term used to describe farms or industries engaged in the production of crops requiring the use of extensive parcels of land. Broad acre crops include grains, oilseeds and other crops, such as wheat, barley, peas, sorghum, maize, hemp, safflower, and sunflower.[607]

(819) In respect of traits, after a short overview of the industry (Section X.1.1) and of the activities of the Parties and their competitors (Section X.1.2), the Commission will first explain why it has jurisdiction also over the broad acre crop traits-aspects of the proposed Transaction (Section X.1.3). Then, it will present its definition of the relevant markets in traits (Section X.1.4 and Section X.1.5) and the concerns regarding the compatibility of the Transaction with the internal market, namely: concerns regarding the effects on product and price competition between existing and forthcoming products (Section X.1.6); concerns on innovation competition (Section X.1.7); and concerns regarding the strengthening of the dominant position of Monsanto (Section X.1.8). The strengthening of Monsanto's dominant position in the overall trait industry will be presented in a separate section because it concerns a number of elements that are common to the broad acre crop traits and entail horizontal effects on product price competition as well as innovation competition and the outcome is not necessarily specific to the single relevant markets concerned defined elsewhere in the present Decision.

1.1. Industry overview

(820) Farmers perform a cost-benefit analysis that considers input costs (the costs of seeds, chemicals, fuel, etc.), crop yield (which drives crop revenue) and other factors (e.g. safety and convenience) when choosing how to grow their crop. The use of a traited seed can affect each of these factors. By using traited seeds with a herbicide tolerance gene, a farmer may be able to use more effective and less expensive herbicides. For example, Monsanto's Roundup-Ready trait allows the use of glyphosate herbicides, which are non-selective, highly effective and also relatively inexpensive. As a consequence of the economic benefits for the farmers, global adoption of traited seeds increased considerably in the last years, in particular in crops like soybean and cotton (see Figure 93).

Figure 93 – Worldwide adoption of traited seeds versus non-traited ones

[…]

Source: Form CO, part 14, figure 2.

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607 Agricultural Policies in OECD Countries: Monitoring and Evaluation 2000: Glossary of Agricultural Policy Terms, OECD.

(821) Moreover, there has recently been a clear trend toward stacking together more than one trait in order to provide farmers with the benefits associated to each of them. The main reasons for a grower to opt for seeds with a stack include:

(a) Flexibility – for example, a glyphosate and glufosinate herbicide tolerance ("HT") stack – with a stack, a grower can choose which herbicide to use at the time of application after assessing need, rather than being required to choose a herbicide programme prior to planting a seed;

(b) Performance/spectrum – particularly for insect control, each component of a stack may perform better on some insects as compared with others, but multiple modes of actions combined offer a better and broader spectrum and performance overall;

(c) Resistance management – multiple modes of action insect resistance ("IR") or HT stacks provide more options to manage against resistance development.

(822) Nevertheless there are still growers who choose seeds with single traits, rather than a stack, for a number of reasons as, for example, the need to avoid the incremental cost of a stack or the absence of the need for more than one functionality.

1.2. Activities and capabilities of the Parties and their competitors

1.2.1. Monsanto

(823) Monsanto began research into genetically modified ("GM") traits[608] in the 1980s and launched its first GM traits in 1995 (a virus resistant squash) and 1996 (Roundup-Ready soybeans and Bollgard insect protected corn).[609] Today, the Roundup-Ready branded trait continues to be the most successful Monsanto trait on the market. However, Monsanto's trait portfolio is widely diversified across functionalities and crops.

(824) Monsanto seed and trait R&D spending in 2016 amounted to about […], which is in line with the spending in the previous years.

(825) In terms of R&D partnerships, Monsanto cooperates with companies like, for example, BASF in the area of Yield & Stress traits, or Sumitomo […].

(826) Monsanto has also commercial and licensing agreements with other trait development organisations, as for example with DowDuPont, Bayer, Syngenta, and also […].[610]

(827) In the last years, Monsanto also acquired a number of seed companies, which allow deploying their traits in their own branded seeds, in addition to the licensing to other seed companies.

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608 For the purpose of the present Decision, the definition provided in Article 2(2) of Directive 2001/18/EC of the European Parliament and of the Council of 12 March 2001 on the deliberate release into the environment of genetically modified organisms and repealing Council Directive 90/220/EEC, OJ L 106, 17.4.2001, p. 1, is employed, i.e. "'*Genetically Modified Organism (GMO)' means an organism, with the exception of human beings, in which the genetic material has been altered in a way that does not occur naturally by mating and/or natural recombination*", where "organism" means "*any biological entity capable of replicating or of transferring genetic material*".

609 Although a large part of this Section is about GM traits, the Commission emphasises that the analysis in this Section is not limited to GM traits. See on that point also Section X.1.3 on jurisdiction, or Section X.1.7.5.7 on non-GM wheat traits.

610 Parties' response to the Commission's request for information RFI 26, [Annex 26.1.1].

(828) Monsanto's portfolio is sustained by a pipeline that is periodically presented to investors[611], and is composed of […] staged phases. The definition of each stage, a short description and the level of certainty of launch of the associated product is reported in Table 118.

Table 118 – Monsanto pipeline phases

[…]

Source: Parties' response to the Commission's request for information RFI 36, Annex 36.2.

1.2.2. Bayer

(829) Bayer's activities in traits date back to 2002, i.e. with the acquisition of Aventis. At the time of the acquisition, Aventis had a small trait research program and the only commercialised trait was Liberty-Link. Bayer's traits business expanded and evolved subsequently including new brands like GlyTol and Twin Link as well as a portfolio of forthcoming products under development, as for example trait stacks in soybean (see Section X.1.6 for more details on Bayer's commercial and forthcoming traits).

(830) Although Bayer was a latecomer to the trait business compared to, for example, Monsanto, it appears that it managed to position itself in the market place and to build R&D and strategic and commercial capabilities. In addition, despite its relatively limited position in soybean seeds […][612], […].[613]. […].[614] […].[615] […]:

(a) […].[616] […].[617] […][618].

(b) **Partnerships** are important for its trait business, in the area of gene discovery and further development. It appears that Bayer established collaborations and license agreements for creating trait platforms, independent from or minimally reliant on Monsanto traits. These partnerships and agreements include those with Biogen for the Bar/Pat gene responsible for glufosinate tolerance in the branded trait Liberty-Link; [agreements].[619] Other co-operations include, but are not limited to, those with CSIRO, Evogene, Nature Source Genetics and Forschungszentrum Juelich.

(c) **Licensing and cross-licensing of traits with the largest competitors**. Bayer has a number of such agreements in place (see Section X.1.6.3.4). […].[620]

(831) Moreover, Bayer has achieved significant success with its R&D efforts that led to its current relatively favourable position in terms of successful innovation.

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611 Monsanto annual R&D pipeline reviews are periodically published on Monsanto website. For the 2017 review, for example, see https://monsanto.com/app/uploads/2017/05/2017.01.05_q1f17_mon_pipeline_update.pdf.

612 BI-EDISC-0188265 [internal document], ID005893-017307, page 7.

613 See for example BI 03762, ID5075-6, page 6.

614 BI 03762, ID5075-6, page 1.

615 BI-EDISC-0188265 [internal document], ID005893-017307, page 35.

616 Parties' response to the Commission's request for information RFI 36, question 1.

617 BI 02467, ID1402-863, slide 7; BI 02470, ID1445-864, slide 5; BI 02471, ID1402-867, slide 5.

618 MI 08985 [internal document], ID3807-17.

619 BI 03142, ID2298-45.

620 See Section X.1.7.3.

(832) Similarly to Monsanto, Bayer has also a well-defined gated process for defining the various stages of its pipelines, as described in Table 119:

Table 119 – Bayer pipeline phases

[…]

Source: Parties response to RFI 36, Annex 36.1.

1.2.3. Main competitors

(833) The main competitors of the Parties in trait development and licensing are summarised in Table 120. The table provides a simplified overview. It puts in evidence the limited number of stack developers that can compete with Bayer and Monsanto.

Table 120 – Main competitors in trait development and licensing

[…][621]

Source: Commission analysis based on Form CO and publicly available information.

1.3. The Commission's jurisdiction to look at competition in traits

1.3.1. Notifying Party arguments

(834) The Notifying Party submits that the Commission does not have jurisdiction to assess competition in traits, for the following main reasons[622]:

(a) The relevant geographic market for trait licensing is no broader than EEA-wide, because the scope of the IP licenses is typically granted on "a specific geographic basis, which varies from case to case";[623]

(b) The Transaction does not have any immediate effects because only few GM traits are allowed or under authorisation for cultivation in the EEA and the Parties do not have any trait under approval in the EEA; the effects would not be substantial because any potential effect of competition concern would be limited to a very reduced amount of varieties cultivated in Europe or to only few seed companies selling their traited varieties outside the EEA; and, finally, the effects would not be foreseeable because the only GM trait approved in Europe (MON810) is currently under renewal approval, with no certainty of a positive outcome, and no other trait from the Parties is under authorisation for cultivation in the EEA;

(c) The input cost of traits to the final cost of crops imported into the EEA is not significant, thus any potential trait price increase outside the EEA would not produce an appreciable effect in the EEA.

1.3.2. Commission assessment

(835) The Commission continues to consider that it is competent to assess the effects of the Transaction on the markets for the licensing of traits for the following reasons.

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621 Internal documents of the Parties as for example BI-EDISC-0182928, ID005893-011970, page 4, indicate that […] (BI-EDISC-0170249, ID032635, slide 13).

622 Parties' response to the Statement of Objections, ID4491, section III.

623 Parties' response to the Statement of Objections, ID4491, paragraph 119.

(836) **First** and foremost, the transaction has direct and immediate effects on European players active on the global upstream market for the licensing of traits. On this market the Transaction affects directly important European seed companies (e.g. KWS, Limagrain), which in-license Bayer's and/or Monsanto's traits, and also affects other European market players (e.g. BASF, Genective and Syngenta) that are competitors to the Parties. This link with the EU is not theoretical as players such as Bayer have important GM trait discovery and development activities (these are the main activities to create products for the licensing markets) in Europe. Bayer, for example, is engaged in Ghent in trait discovery and development including GM traits for the global trait licensing market.

(837) As discussed in Section X.1.5, this upstream technology market for the licensing of traits is global.

(838) The existence of this upstream licensing market for traits which is relevant for the EU, has been established and confirmed by the Commission in its decision on the creation of a JV active in the development and marketing of GM traits for corn and other crops.[624,625] Also, in case M.6844 – GE/Avio, the Commission concluded that - although the export market was the main market for the Eurojet - "*the Commission has therefore to safeguard that the merger will not negatively affect the market structure, in particular with a view to the export markets, where only a few players are active and investment barriers are significant in terms of know-how and cost*".[626] In line with this decision, the Commission has to safeguard that the Transaction will not negatively affect the market structure, which concerns exports of technologies in the form of licensing.

(839) In their response to the Statement of Objections, the Parties failed to refute the arguments why the trait licensing market described above is global.

(840) The Commission reiterates that the participants to the trait licensing market are based in different parts of the world, including the EU.

(841) In addition, gene discovery, trait and stack development occur on a global scale. Bayer's gene discovery for traits, for example, takes place both in Ghent (Belgium) and in Morrisville (US).[627]

(842) Out of the entire trait value chain, the only activity with a scope narrower than global is the trait introgression process, which is a breeding process,[628] and, as such, is not part of the trait product market definition (see Section X.1.4).

(843) Therefore, contrary to what the Parties argue, the scope of the IP licenses does not affect the geographic market definition, because this scope relates only to the place where seeds are sold and traits are eventually introgressed into the seeds. For

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624 Commission Decision in Case M.6454 – Limagrain/KWS/Genective JV (2013).

625 In the Parties' response to the Statement of Objections, ID4491, paragraph 124, it is argued that the case M.6454 – Limagrain/KWS/Genective JV concerns only the GM crop currently grown in the EEA, i.e. corn, and not any other broad acre crop trait. The Commission agrees with the Parties that corn is the only GM crop currently cultivated in the EEA, but, at the same time it notes that this is also the only crop where Genective is active, which explains why this precedent is solely focused on corn. The fact that the Limagrain/KWS/Genective JV decision does not deal with other crops is not related to jurisdictional issues, but rather with the business focus of Genective.

626 Commission Decision in Case M.6844 – GE/AVIO (2013), recital 219.

627 See for example recital (1101), Figure 142 and Figure 143.

628 See Section IX.1.2.4.2.

example, an HT trait for soybean developed, say, by Bayer in Belgium and in the US, once fully developed, is licensed to, for example, a European seed company that introgresses such a trait to the different varieties developed in several parts of the world covered by the license scope.[629]

(844) The Commission considers that the existence of a licensing market for trait, with global dimension and European players affected by the merger as competitors and customers of the Parties is by itself sufficient for providing the Commission with jurisdiction related to competition in traits. However, the additional three arguments discussed below provide further bases for the Commission`s jurisdiction or at least reinforce the Commission position regarding its jurisdiction regarding competition in traits.

(845) **Second**, GM crops are not as such banned from Europe. In fact, a Monsanto IR trait conferring corn resistance to Lepidoptera, called MON810, is approved for cultivation in a number of Member States, namely Spain, Portugal, the Czech Republic and Slovakia. There are also a number of other GM traits currently undergoing authorisation for cultivation in the EU (see Table 121). The expected dates for the authorisation are currently unknown.

Table 121 – GM events undergoing approval in the EU for cultivation

[…]

Source: Form CO, part 14, paragraph 82.

(846) The Parties do not contest that such approval processes as listed in Table 121 are underway,[630] but argue, first, that […]. Second, they argue that even if authorisations like the ones listed in Table 121 were granted, it would take approximately 8-10 years until transgenic seeds were available there.[631]

(847) However, the Parties' arguments that currently there is only one trait of the Parties authorised in Europe and that they are currently not applying for other ones, is an argument about the ultimate price effects of the transaction on seeds sales in Europe, but does not deprive the Commission of its jurisdiction to look into competition on the upstream technology licensing market. Moreover, the Parties can at any moment apply for approval of a GM event in Europe.

(848) **Third**, the EU is a very significant importer of GM crops. [Parties' estimates on GM imports in the EEA].[632,633] The figures provided below likely underestimate total

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629 In the Parties' response to the Statement of Objections, ID4491, paragraph 125, the Parties consider that in the case M.6844 – GE/Avio, the concerned export market is from the EEA, while, according to the Parties, the licensing market of traits would be from outside the EEA. The Commission does not agree with this view of the Parties and notes that, as stated in recital (899), there is a global licensing market with players and activities taking place in the EU and the resulting trait products are exported to outside the EU.

630 For instance they do not do so in Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 52.

631 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 53.

632 The Parties provided figures for the EEA. The Commission considers these figures are informative for the EU because the differences are unlikely to be significant.

633 Parties' response to the Commission's request for information RFI 107, [Annex 107.1] (Import Analysis).

imports of GM crops in the EEA as they do not cover crops processed into finished products.[634]

Table 122 – GM crops imports in the EEA in 2016

[…]

Source: Parties' response to the Commission's request for information RFI 107, Annex 107.1 (Import Analysis).

(849) Contrary to what the Parties argue, traits represent a non-negligible part of the total production cost of GM crops (with important variations depending on the crop and country of cultivation). As can be seen from Table 123 below, they can represent up to […]% of the cost of a crop.

(850) Moreover, as discussed in greater detail in Section XI.1.1, when farmers select to grow a GM crop carrying a certain HT trait they also effectively decide to use, if necessary, the corresponding herbicide. […] (Table 123). Therefore, the proposed Transaction will in all likelihood affect both the costs and characteristics – including quality - of the traits used, but as well as of the herbicides used. This reinforces the Commission's finding that the proposed Transaction can have a very significant effect on the total production cost of GM crops as imported into the EU.

(851) Moreover, Table 122 shows that the absolute value of GM crops imports into the EEA was more than […], thus it becomes evident that even a small fluctuation in the cost of such imports would have a very large financial impact in the EU.

Table 123 – GM crops traits and herbicides share of total production costs (2016)

[…]

Source: [Parties' response to information request] 107.4 (Crop Production Costs).

(852) The Parties argue that the prices of broad acre crops like soybean, cotton and oilseed rape are influenced by a number of other factors adding-up to the cost to the farmers. Thus a potential price increase in traits would have non-appreciable effect on the crop selling price. This, in turn, would not generate appreciable effects in the EU.[635]

(853) However, the Commission restates the consideration made in recital (850) and Table 123, and also notes that the Transaction strengthens Monsanto's dominant position in a number of trait markets (see Section X.1.6.5), and brings together two leading companies in non-selective herbicides (see Section XI). As shown in Table 123, herbicides and traits together represent up to […]% of crop production costs, thus any cost increase which might result from the proposed Transaction would at the very least in some cases have an immediate substantial and foreseeable effect in the EU.

634 Parties' response to the Commission's request for information RFI 107, [Annex 107.5] (Methodology and Data Description).

635 Parties' response to the Statement of Objections, ID9941, section 4.

(854) In addition, as stated in recital (847), the arguments of the Parties are merely on the effects, and not on whether the Commission has jurisdiction on competition in traits.[636]

(855) Moreover, as discussed in Sections X.1.6 and X.1.7, the Transaction would bring together the two main trait stacks and likely lead to a significant reduction of traits R&D capabilities and ongoing R&D projects. Such reduction in competition would in turn lead to fewer choices for consumers and less innovation going forward.

(856) **Fourth**, not all traits are of GM type. Some non-GM traits are commercially available today. For example, BASF currently commercialises an HT trait called Clearfield for a number of crops including corn, wheat, rice and sunflowers. This trait was obtained by mutagenesis and as such is not considered as GM. It is commercialised in seeds sold in the EU.

(857) Similarly, a non-GM trait resistant to the broadleaf herbicide STS was developed via traditional breeding techniques and commercialised by DuPont/Pioneer.

(858) Moreover, both Bayer and Monsanto are innovators in non-GM traits.

(859) As described in Section X.1.7.5.7, each of Bayer and Monsanto are developing non-GM traits for use in various world regions, with particular focus on Europe. […].[637] This point was made in the Article 6(1)(c) Decision[638] and in the Statement of Objections, and was not contested by the Parties.

(860) Therefore, a reduction in competition in the traits licensing business due to the proposed Transaction may adversely affect the number, quality, and price of traits as well as traited seeds available in Europe. Such potential reduction in trait innovation would impact future products which might be targeting the EU markets.[639] The Commission therefore has jurisdiction also over this aspect of the proposed Transaction.

1.4. Product market definition

1.4.1. Commission precedents

(861) In a previous decision,[640] the Commission considered that the development and licensing of traits (and the related activities) constituted a separate product market from the respective seeds markets because they involved specific technical skills, investments, expertise and regulatory approval processes that separately added value. In addition, the Commission acknowledged the existence of specialised organisations which are only active in the trait value chain, but not in seed breeding and commercialisation. Ultimately, however, the Commission left the relevant product market definition open.

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636 A similar line of arguments has been discussed and validated at the European Court of Justice in judgement of 12 June 2014, *Intel / Commission*, T-286/09, EU:T:2014:547, paragraph 244, confirmed in judgement of 6 September 2017, *Intel / Commission*, C-413/14 P, EU:C:2017:632, paragraphs 44-65.

637 [Internal documents].

638 See paragraph 461 of the Article 6(1)(c) Decision.

639 The investigation has shown that innovation in non-GM traits relies on similar technologies, expertise and capabilities typical of GM trait innovation. Therefore, innovation in traits concerns both GM and non-GM ones. See recital (1077).

640 Commission Decision in case M.6454 – Limagrain/KWS/Genective (2013).

1.4.2. Notifying Party views

(862) The Notifying Party suggests defining the relevant product market according to customer groups.[641] In particular, it distinguishes between: customer groups that are a) breeding companies that are also trait developers (for example Bayer, Monsanto, Syngenta, DowDuPont), thus they receive a license and the required know-how for producing the licensed traits[642]; b) breeding companies that do not develop traits, and in-license donor parental lines[643] embodying a relevant characteristic or set of characteristics (trait)[644]; c) non-breeding seed companies, which simply produce final seeds and in-license finished hybrids or varieties embodying a certain trait or stack of traits[645].

(863) The Notifying Party also suggests that the definition of the relevant product market should be left open because there can be no affected market regardless of the market definition.

1.4.3. Commission assessment

(864) The market investigation confirms that seed breeding and commercialisation are separate product markets from those of traits[646].

(865) With respect to the distinction suggested by the Notifying Party between different customer groups[647], the Commission acknowledges that there appears to be three different customer groups as proposed by the Notifying Party. However, from a supply-side substitutability point of view, a trait licensor appears to be able to switch relatively easily from supplying traits to one such customer group to supplying them to another, with minimal or no price increase and in the short-term.[648] For example, if the final customer is a seed company with also expertise and capabilities in traits (i.e. in the customer group indicated under a) above), this customer can receive an IP license and the required knowledge transfer for reproducing the trait, whereas a seed company with no trait expertise (i.e. in customer groups "b" and "c") would require that the trait is already introgressed into a variety that would be used for further breeding, for the customer group "b", or for multiplication and selling, for customer group "c". The additional step of introgressing the trait to a seed for delivering it to the customers does not appear to be a technical step requiring know-how beyond the normal course of business of trait developers.[649]

(866) The Commission also found that there appear to be three distinct technology market layers, which are upstream of seed breeding and constitute the main three layers of the trait value chain. With reference to Figure 94, these three market layers are: (1) trait discoveries licensing layer: the discovery and initial validation of the

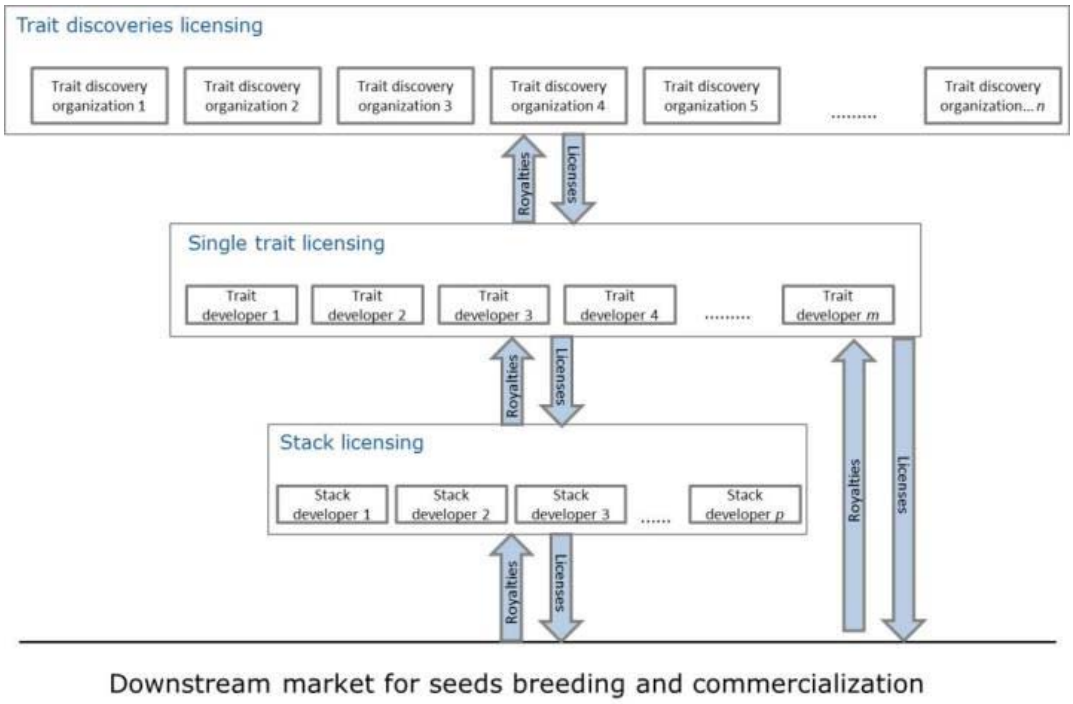
641 Form CO, part 14, paragraph 89.
642 Form CO, part 14, paragraph 90.
643 For the parental line definition, please refer to Section VI.2.1.1.
644 Form CO, part 14, paragraph 91.
645 Form CO, part 14, paragraph 92.
646 See for example: BI 03095 [internal document], ID1638-33; BI-EDISC-0031258, [internal document], ID5412-31258, slide 89-90; Agreed non-confidential minutes of a call with a market participant, 28 July 2017 (ID8941); Parties' response to the Commission's request for information RFI 15, question 2.
647 See recital (862).
648 Commission Notice on the definition of relevant market for the purposes of Community competition law, JO C 372, 9.12.1997, p. 5 ("Notice on the definition of relevant market"), paragraph 20.
649 A fully validated and regulatorily approved trait went through extensive field testing in the targeted crop, thus introgression for a trait developer is part of its normal course of business.

underlying trait genes, which are out-licensed to trait developers; (2) single trait licensing layer: the development of commercial traits and their licensing to trait stack developers or seed breeders; and (3) stack licensing layer: the development of stacks and their out-licensing to seed breeders[650].

(867) As indicated in recital (875), the Commission considers that the trait discoveries licensing layer does not constitute a product market but it is rather an innovation space, whereas, as indicated in recitals (884) to (894), it considers that there are separate product markets for stacks on the one hand, and traits on the other hand. Traits products markets and stack product markets will be analysed accordingly.

(868) Although some market players, including the Parties, are active in all three layers,[651] it appears that very distinct and specific know-how, expertise and infrastructures are needed for each of the market layers. It also appears that some business organisations are in some cases active in more than one layer, and in other cases only in one layer.[652] Finally, it is appears that some organisations are active only in one of the layers.[653]

Figure 94 – Market layers in trait development and licensing



Source: Commission's assessment.

(869) From the market investigation it appears that seed companies are rarely allowed to source traits from different trait developers and introgress them as a stack in their

650 See for example: agreed non-confidential minutes of a call with Stine, 25 July 2017 (ID4566); agreed non-confidential minutes of a call with DuPont, 14 September 2017 (ID7405); agreed non-confidential minutes of a call with Dow, 30 August 2017 (ID5864).

651 Parties' response to the Commission's request for information RFI 36, question 1.

652 For example, see the Parties' response to the Commission's request for information RFI 86, question 1, paragraph 3, quote: [quote from Parties' submission].

653 See, for example, the role of Biogen as discovery organization for Liberty Link (BI-EDISC-0486017, ID5424-15508, page 6), or the role of the University of Nebraska for the Monsanto's Dicamba tolerant trait development.

germplasm.[654] Even in the rare cases where stacking rights are not denied, the development of multi-trait stacks is becoming increasingly complex, thus only a limited number of breeding companies would be capable to properly stack single traits.[655] Therefore, breeding companies cannot substitute a stack license with licenses of multiple single traits and the trait development market layer and the stack development market layer appear to be distinct from a demand and supply point of view.

(870) Similarly, a seed company requiring traits would in-license them only if fully developed, i.e. if the trait fulfils some requirements of technical performance, regulatory approvals, and reliability (see Table 118 and Table 119), which are not typically provided by trait discovery organizations. Therefore, the trait discovery layer also appears to be a distinct market layer.

(871) From a supply side substitutability point of view, it appears from the market investigation that the activities and the related competencies of trait or stack developers are, to a large extent, not substitutable with those of trait discovery organizations. Trait discovery organizations focus primarily on gene discoveries and initial validation, while trait developers and stack developers are more focused on the final deployment of the traits, thus they are more focused on field tests, risk management[656] and commercial performance (e.g. the business cases for seed companies and growers), as well as the regulatory approval processes and related experimental tests. Therefore, a trait discovery organization could not switch to providing fully developed traits in the short term, without incurring significant costs and risks[657].

(872) There is also very limited supply-side substitutability between trait developers and stack developers, for two main reasons:

(a) From a technical point of view stacking multiple genes into a single event, or breeding multiple events into a single variety brings increased complexity, compared to developing a single trait. This is particularly true if a stack comprises more than two traits.

(b) From an IP point of view, single traits are often licensed out with no stacking rights. Stacking rights are typically negotiated separately, and, due to reasons that include seed stewardship, these rights are limited to a restricted number of players (see Section X.1.8). Therefore, unless a trait developer has developed in-house all the traits required for developing a stack, obtaining additional stacking rights would require additional costs.

(873) In the following Sections, the Commission discusses in more detail each of the three market layers, namely (i) trait discoveries licensing, (ii) single traits licensing, and (iii) stacks licensing.

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654 When a trait is out-licensed to a seed company, stacking restrictions are usually part of the licensing agreement, meaning that seed companies cannot introgress any additional trait (see Section X.1.8).

655 Parties' response to the Commission's request for information RFI 35, question 1, paragraph 8.

656 See, for example, the pipeline stages of both Bayer (Table 119) and Monsanto (Table 118), [pipeline phases].

657 Notice on the definition of relevant market, paragraph 20. On evidence, see for example DOC ID05864 (Final non-confidential minutes of a conference call with Dow), paragraph 13, or agreed non-confidential minutes of a call with MS Technology, 19 September 2017 (ID9153), paragraph 9.

1.4.4. Trait discoveries licensing layer

(874) This market layer is characterised by research activities aimed at identifying genetic sources conferring a desired trait, and at validating the corresponding technologies.[658] Expertise and know-how required in this market layer are highly scientific, thus research centres, university departments, or highly specialised SMEs can be part of it. For example, the Dicamba tolerance trait that Monsanto has commercialised under the brand Xtend was discovered by the University of Nebraska and in-licensed by Monsanto.

(875) From a market definition point of view, the discovery organisation activities are related to research or to early development, thus a relevant product market definition is not provided in the present Section. Innovation spaces related to trait research and early development are defined in Section X.1.7.1.

1.4.5. Single traits licensing layer

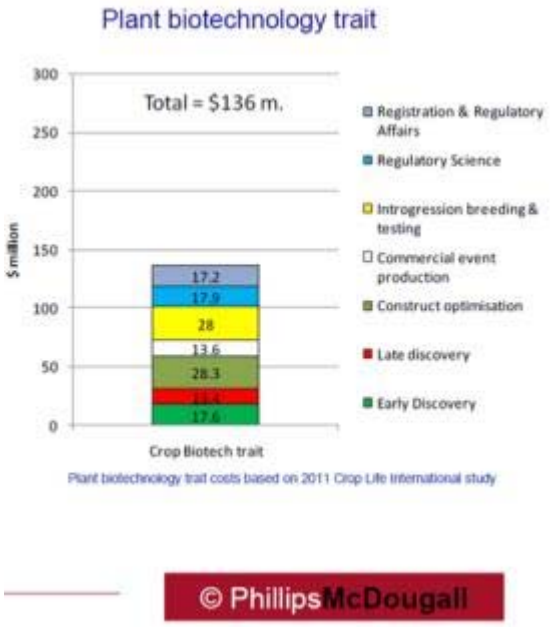
(876) The trait development initiated by discovery organisations[659] is completed by trait developers, which perform all the trait characterisation, field performance evaluation, and the required tests and reports for the regulatory approval. A trait is considered fully developed if it has proven to provide the farmers with reliable and cost-effective performance and to meet regulatory requirements. A trait approved for cultivation is licensed out either to breeding companies for introgression into their varieties, or to stack developers. In most cases, a trait developer is also a germplasm owner, thus the introgression would also happen in their own germplasm.

658 Parties' response to the Commission's request for information RFI 36, [Annex 36.1].

659 The level of development performed during the discovery phase might vary, depending on a number of factors, including the organization capabilities or contractual arrangements.

(877) As illustrated in Figure 95, a large part of the costs are incurred after (late) discovery (including the categories "Construct optimisation", "Commercial event production", "Introgression breeding & testing", "Regulatory Science" and "Registration & Regulatory Affairs"). A number of testing activities require expensive facilities and can represent a relevant barrier to entry to small and medium sized enterprises. Such a situation is also confirmed by a recent survey conducted on GM trait pipelines, which shows that the presence of the "main GM developers" increases substantially as the development moves from "Advanced R&D" to "Pre-commercial" and "Commercial" cultivation.[660]

Figure 95 – Typical trait development costs



Source: Phillips McDougall, Presentation at APVMA Future Forum, Canberra, Australia, 5th November 2014, BI-EDISC-0578735, ID5609-74451, slide 8.

1.4.6. Stacks licensing layer

(878) Stacks of traits are developed in the form of: a) "breeding" stacks, that is to say by breeding two or more single gene events[661] (for example, Roundup-Ready + dicamba tolerance + Liberty-Link); b) "vector stacks"[662], i.e. stacks of multiple genes forming a single event and introgressed into seed varieties as a single event (for example, Balance GT[663]); c) breeding a multiple gene vector with other single gene events or multiple gene vectors (for example, Balance GT+Liberty-Link, SmartStax).

(879) Independently from the technical processes for obtaining a stack, the final stack also needs to obtain regulatory approval. It also requires the approval of the single trait

660 Parisi, C., Tillie P., Rodriguez-Cerezo, E. (2016). "The global pipeline of GM crops out to 2020". Nature Biotechnology 34 (1) 31-36.

661 An "event" is the insertion of a gene or group of genes into a specific location of a plant genome. It follows that, for example, the same gene inserted in a different location of a plant genome would lead to a different event. Although the same gene may be used in different crops, each crop will use a distinct event subject to distinct regulatory processes.

662 Vector stacks are also referred to as molecular stacks.

663 The vector stack for soybean branded as Balance GT is an event called FG72, which includes two genes, each providing tolerance to a different herbicide, namely Glyphosate and Isoxaflutole.

developers, which typically restrict the possibility to stack single traits without a specific stacking agreement.

1.4.7. Distinction by crop and functionality

(880) Traits are generally developed in relation to a specific functionality (e.g. resistance to insects or tolerance to a non-selective herbicide) and, ultimately, for a specific crop (e.g. soy or canola).[664]

(881) The results of the investigation suggest that from a breeders' client perspective there is limited substitutability between different functionalities, as different functionalities target different and specific agricultural requirements (e.g. resistance to certain insects, or tolerance to a certain herbicide). Demand substitution is also absent between traits targeting the same functionality but for different crops.

(882) In addition, from a supply side perspective, the lack of substitutability is due to the trait regulatory approval, which is typically crop-specific. Also, from a technical point of view, it appears that certain genes can manifest limited performance in a certain crop, compared to another[665].

(883) In the case of stacks, traits of different functionalities can be part of a stack for a specific crop (for example, a stack for soybean with one HT trait and one IR trait). Therefore, segmentation by functionality is not appropriate for stacks, whereas segmentation by crops still applies.

(884) In summary, the product market definition is to be defined for single trait licensing as no wider than a combination of crop and functionality (e.g. insect resistant traits for soy, or traits resistant to non-selective herbicides for canola).[666] This approach is in-line with the market segmentation that is widely used in the trait business.[667]

(885) For stacks, the relevant product market definition is to be defined as no wider than per crop (e.g. stacks for soybean or stacks for cotton).

(886) The main functionalities are insect resistance ("IR"), herbicide tolerance ("HT"), disease resistance, crop efficiency and yield and stress.[668]

1.4.8. Further sub-segments

(887) For IR traits, further sub-segments can be defined based on the family of insects the trait provides resistance to. A distinction between Lepidoptera IR ("IR Lep") and [extract from internal document].[669] From a demand-substitutability point of view, a seed company targeting the needs of growers with pressure from some specific insects cannot source IR traits providing resistance to other insect species. Therefore,

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664 Although, at early stages of the process, R&D is not necessarily already focussed on a specific crop.

665 See for example the Parties' response to the Commission's request for information RFI 46, question 9, […].

666 But note, regarding insect resistant traits, that they must be subdivided further between Lepidoptera and Coleoptera, see below.

667 See for example BI 01412 [internal document], ID451-20; MI 08290, ID2330-93; BI-EDISC.0578735, ID5609-74451; or the GM trait database publicly available at http://www.isaaa.org/gmapprovaldatabase/default.asp.

668 The word "stress" is referred to particular contingent situations that might arise and reduce the plant's yield or, in some case, cause its death. An example of stress is a temporary draught.

669 See for example BI 01412 [internal document], ID451-20; BI-EDISC.0578735, ID005609-074451; BI-EDISC-0163423 "Pest Management Portfolio Review - RPC December 2015", ID5608-25809.

it appears that the classification into species groups (e.g. Lepidoptera, Coleoptera, etc.) would be required in order to identify the relevant product market.

(888) Regarding HT traits, although it is common practice in the industry to further describe the functionality of a stack according to the specific herbicide or mode of action[670] to which the trait provides tolerance (for instance a glyphosate tolerance trait), internal documents of the Parties and statements by respondents to the market investigation appear to confirm that there is a certain degree of demand side substitutability and competition between different HT traits conferring tolerance to different herbicides.

(889) For these reasons, the Commission considers that the relevant product market for HT traits should not be defined more narrowly according to the different herbicides or modes of action involved. These sub-segments are however discussed, when appropriate, in Section X.1.6 when assessing the closeness between the Parties' HT traits.

1.4.9. Conclusion

(890) Based on the information provided by the Parties, previous Commission decisions and the Commission's investigation, the Commission considers that upstream of seed breeding and commercialisation, there are three different market layers[671] for traits. These are: (i) trait discoveries licensing layer, (ii) single traits licensing layer, and (iii) stacks licensing layer.

(891) For each layer, except the trait discovery licensing layer, the Commission identifies separate relevant product markets.

(892) In the single traits licensing layer, the relevant product markets are identified by a specific functionality such as tolerance to a specific herbicide as well as a specific crop. In the case of IR functionalities, a further sub-segmentation of IR traits is defined, defined based on the family of insects the trait provides resistance to.

(893) For the stacks licensing layer, the relevant product markets are distinguishable by crops.

(894) For the trait discoveries licensing layer, a relevant product market is not defined because the activities of this layer are more pertinent to research and early development activities, thus they are discussed in Section X.1.7.1.

1.5. Geographic market definition

1.5.1. Commission precedents

(895) In a previous decision,[672] in the case of traits for corn, the Commission concluded that there is evidence suggesting that the licensing market is wider than national in scope, but did not make a final decision on the geographic market definition because no serious doubts arose even under the narrowest plausible market definition.

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670 E.g. Glyphosate, Gluphosinate, Dicamba, 2,4-D, HPPD, PPO, etc.

671 Layers refers to the industry structure, it is not to me understood as markets in the meaning of the Notice on the definition of relevant market.

672 Commission Decision in case M.6454 – Limagrain/KWS/Genective (2013).

1.5.2. Notifying Party views

(896) The Notifying Party submits that the delineation of the relevant geographic market should be based on the scope of intellectual property right licences, which are typically made on a specific geographic basis which varies from case to case.

(897) On that basis, the Notifying Party submits that the geographic market definition would be no broader than EEA-wide. Accordingly, trait licensing outside the EEA would not be relevant to the Commission's assessment.[673]

1.5.3. Commission assessment

(898) The Commission does not agree that the trait licensing scope defines the relevant geographic market for the reasons stated in Section X.1.3.2, recitals (842) and (843). In any event, even if that argument applies, the geographic market definition would not be "no broader than EEA-wide", as submitted by the Notifying Party. Rather, according to a third party compiling information on traits licenses, a very large number of traits licenses have a global scope or include more than the EU countries.[674]

1.5.4. Conclusion

(899) The Commission therefore concludes that the relevant geographic market for trait discovery, trait development and stack development is global.

1.6. Competitive assessment: horizontal effects on product price competition between existing and forthcoming products

1.6.1. Introduction: definition of forthcoming products and scope of the assessment

(900) As already explained in Section V.2.1, the Commission assesses competition between existing products, but also considers potential competition from forthcoming products. With respect to traits, for the purpose of the present assessment, a project in the pipeline stage 3 and higher is considered as a forthcoming product. As illustrated in Table 118 and Table 119, for both Bayer and Monsanto, projects in phase 3 or higher have demonstrated proof of concept, have undergone a number of validation steps, and have a likelihood of reaching the market above […]%.

(901) Following the relevant product market definition (Section X.1.4), for each of the broad-acre crops where the Parties are active, horizontal overlaps are analysed for both single traits and stacks. Market shares for traits reported in each Section have been provided by the Parties in response to RFI 36, Annex 36.1 (MAST database). Annex 2 describes the methodology and the main assumptions used by the Commission for extracting market shares from the MAST database. This approach is consistent with the one used by the Commission in the Article 6(1)(c) Decision, and the Statement of Objections.

(902) Closeness is assessed for each crop and, in the case of single traits, for each functionality.

673 Form CO, part 14, paragraph 93.

674 BI-EDISC-0330047 [internal document], ID5882-2400.

1.6.2. Competition between Liberty-Link and Roundup-Ready across corn, OSR/canola, cotton, and soybean

(903) Competition between Liberty-Link and Roundup-Ready, the two most important HT traits of Bayer and Monsanto, is discussed more generally in this Section, where the considerations made are broadly applicable to all crops for which these two products compete, namely corn, OSR/canola, cotton, and soybean. To the extent that crop-specific features of the competition between Liberty-Link and Roundup-Ready are relevant, these are discussed in the appropriate crop-specific Sections.

(904) First, close competition between LibertyLink and RoundupReady is evident because for most crops these products are the only traits providing tolerance against non-selective herbicides.[675] […].[676]

Table 124 – 2016 Market shares of Roundup Ready and Liberty Link for different crops

	Roundup Ready		**Liberty Link**		**Total global HT market**
	Trait value (kEUR)	Market share in value	Trait value (kEUR)	Market share in value	Trait value (kEUR)
Corn	[…]	[60-70]%	[…]	[5-10]%	[…]
Soybean	[…]	[80-90]%	[…]	[5-10]%	[…]
Cotton	[…]	[40-50]%	[…]	[10-20]%	[…]
OSR	[…]	[40-50]%	[…]	[50-60]%	[…]

Source: Parties' response to the Commission's request for information RFI 31, MAST database [Annex 31.6].

(905) Second, both glyphosate and glufosinate are positioned in the market in a similar way, as both can be used for addressing broad leaves and grasses post germination. This is evident from Figure 96 which illustrates the areas of applications of the main non-selective herbicides and the related HT traits for weed management (broad leaves and grasses).

(906) Figure 96 also shows that glufosinate tolerant traits and glyphosate tolerant traits compete to some extent with other existing HT traits conferring tolerance to other herbicides such as Dicamba and 2,4-D for broad leaves post-germination and FOPs for grasses post-germination.

Figure 96 – Areas of applications for main herbicides and related traits

[…]

Source: MI 02374, ID5536-4, slide 3.

(907) […][677], […].[678]

(908) […].[679] […].[680]

675 BASF's Clearfield trait has minor presence in some markets, for example in Canola (see BI-EDISC-0058873, ID005413-012873, page 11).

676 See for example MI 08220, ID2330-23 and BI-EDISC-0058873, ID005413-012873.

677 BI-EDISC-0327308, ID5896-012350, pages 6-7.

678 A similar comparison is reported in BI-EDISC-0914215, ID5943-034351, page 12, second bullet point.

679 BI 03897, ID5074-9, page 3.

680 In MI 291635.00001, ID6438-46062, page 3, […].

(909) […],[681] […].[682]

(910) […].[683]

(911) Finally, market investigation respondents also indicated that Bayer Liberty-Link and Monsanto Roundup-Ready compete on the market in corn, soybean, cotton and OSR.[684]

1.6.3. Horizontal overlap in single traits: there are a number of overlaps of close competing products in different crops and functionalities, with often limited alternatives from competitors

1.6.3.1. Soybean: overlap in HT traits, and in particular glyphosate HT and glufosinate HT, with no or limited additional competitive constraints

(A) Closeness

(912) […].[685] Historically, soybean is the trait where the first ever herbicide tolerant trait was deployed by Monsanto in 1996, under the brand name of Roundup-Ready.

(913) […] (Table 126).

(914) […].

(915) […][686] […].[687]

(916) According to data provided by the Notifying Party[688], while DowDuPont is the owner of an HT trait (an STS tolerant HT), this did not generate any revenue in the years 2013 to 2016, neither as a single trait, nor as a part of stacks (Table 126).

Table 125 – Market shares in soybean trait value to originators (all functionalities)

Market segment	2016 Trait value (kEUR)	Market share in originator value
HT total market	**[…]**	**100%**
Monsanto HT	[…]	[90-100]%
Bayer HT	[…]	[5-10]%
IR total market		**100%**
Monsanto IR	[…]	[90-100]%
Other	**[…]**	
TOTAL	**[…]**	**100%**
Bayer total	[…]	[5-10]%
Monsanto total	[…]	[90-100]%

Source: Parties' response to the Commission's request for information RFI 31, MAST database [Annex 31.6].

681 […].
682 For example, BI-EDISC-0058873, ID5413-012873, page 23.
683 See for example BI 03763, ID5075-7, pages 10 and 11.
684 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), question 29; Questionnaire to Row Crop Competitors (Q5), question 33.
685 BI-EDISC-0188265, [internal document], ID5893-17307, page 7.
686 BI 00433 [internal document], ID451-543, page 9.
687 For example, in BI 03763, ID5075-7, page 2.
688 Parties' response to the Commission request for information RFI 31, [Annex 31.6].

(917) […].

(918) […]

Table 126 – HT Market shares in trait value to originators for soybean in 2014-2016

	Year 2014		Year 2015		Year 2016	
	Trait value (kEUR)	**Market share in originator value**	**Trait value (kEUR)**	**Market share in originator value**	**Trait value (kEUR)**	**Market share in originator value**
Monsanto RR (GTS 40-3-2)	[…]	[0-5]%	[…]	[0-5]%	[…]	[0-5]%
Monsanto RR2Y	[…]	[90-100]%	[…]	[90-100]%	[…]	[80-90]%
Monsanto DCB	[…]	[0-5]	[…]	[0-5]	[…]	[0-5]%
Total HT Monsanto	**[…]**	**[90-100]%**	**[…]**	**[90-100]%**	**[…]**	**[90-100]%**
Bayer LL	[…]	[5-10]%	[…]	[5-10]%	[…]	[5-10]%
Total HT Bayer	**[…]**	**[5-10]%**	**[…]**	**[5-10]%**	**[…]**	**[5-10]%**
DowDuPont STS	[…]	[0-5]%	[…]	[0-5]%	[…]	[0-5]%
Total HT DowDuPont	**[…]**	**[0-5]%**	**[…]**	**[0-5]%**	**[…]**	**[0-5]%**
Total value originator for HT soybean	**[…]**	**100%**	**[…]**	**100%**	**[…]**	**100%**

Source: Parties' response to the Commission's request for information RFI 31, MAST database [Annex 31.6].

(919) […].

(920) In terms of closeness, the market investigation indicated close competition between Monsanto RR2Y and Bayer LL (Section X.1.6.2), whereas Monsanto's trait providing tolerance to Dicamba (namely event MON87708) appears to be a more distant competitor[689] to LL. Several documents in the file[690] indicate that, due to the increased resistance of weed to glyphosate, […].

(921) Looking forward, [commercial plans][691].

(922) Similarly, Monsanto is developing [pipeline products].[692]

689 See for example, Figure 96.

690 For example: Parties' response to the Commission's request for information RFI 15, question 1, paragraph 4; MI 28677.00001, ID5441-8554.

691 It appears that the applicant of the patent covering the main gene (WO2014072250 A) is Bayer. The existence of a license from Bayer to MS Technology was also confirmed in the agreed non-confidential minutes of a call with MS Technology, 19 September 2017 (ID9153).

692 More details on Monsanto's stacks pipeline and closeness to Bayer's are described in Section X.1.6.4.1.

(923) Closeness of HPPD, Dicamba and 2,4-D tolerant traits is discussed in several Sections of this Decision (e.g. Section X.1.6.4.1 on soybean stacks, Section X.1.6.4.2 on cotton stacks, Section X.1.6.3.2 on cotton single traits). In addition, Figure 97 shows that [quote from internal document].[693]

Figure 97 – Results of Monsanto's [internal document]

[…]

Source: MI 000227784.00001, ID006152-010770, slide 26.

(B) Competitive constrains

(924) The market investigation indicated that both DowDuPont and ChemChina-Syngenta are developing HT traits conferring tolerance to glyphosate[694]. In principle, these forthcoming HT traits might be able to apply competitive constraints to both LL and RR2Y in the future. However, the documents in the file seem to indicate that, at least in the short-term, both DowDuPont and ChemChina-Syngenta will use these traits only as parts of stacks, while the single traits will neither be out-licensed to stack developers, nor offered as single traits to seed companies.[695] As a consequence, these traits would apply only limited competitive constraints onto the Parties.

(C) Conclusions on soybean HT traits

(925) In conclusion, the market investigation has shown close competition between Monsanto's HT trait Roundup-Ready2Yield and Bayer's HT trait Liberty-Link. Both traits are currently licensed to seed companies as single traits. Moreover, any forthcoming HT traits from DowDuPont and ChemChina-Syngenta only give rise to limited competitive restraints on the Parties, firstly because they are not yet on the market and it is not sure when then will be, and secondly because it is more likely than not that they will be neither out-licensed to stack developers, nor to seed companies.

(926) For the reasons set out above and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to soybean HT single traits because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on product and price competition. Given the very high market shares, this would also lead to a strengthening of Monsanto's dominant position in both HT soybean market.

693 More details on the Monsanto […] can be found in recital (1034).

694 BI 01412 [internal document], ID451-20.

695 Competitors' responses to the Commission's request for information to competitors on Traits and Licencing RFI Q18.

1.6.3.2. Cotton: the Parties overlap in HT and IR Lepidoptera traits, and competitors provide for limited alternatives

(A) Closeness

(927) Monsanto has a leading position in cotton, with a market share of [60-70]% in 2016 (Table 127). Bayer is the most important competitor of Monsanto with a market share of [10-20]%. The 2016 combined market share of Bayer and Monsanto is [80-90]%, leaving Dow/DuPont as a distant competitor with only [10-20]% market share.

Table 127 – Market shares in cotton trait value to originators [696]

Trait developer	Value trait 2016 (kEUR)	Market share in originator value
COTTON		
MONSANTO	**[…]**	**[60-70]%**
BAYER	**[…]**	**[10-20]%**
DowDuPont	[…]	[10-20]%
OTHER	[…]	[0-5]%
CHEMCHINA-SYNGENTA	[…]	[0-5]%
Total value originator	**[…]**	**100%**
Combined Bayer and Monsanto	**[…]**	**[80-90]%**

Source: Parties' response to the Commission's request for information RFI 31, MAST database [Annex 31.6].

(928) […][697] (Table 128).

Table 128 – 2016 Cotton market shares in trait value to originators and per trait functionality[698]

	MONSANTO	BAYER	DOW& DUPONT	CHEMCHINASYNGENTA	BASF	other
HT	[60-70]%	[20-30]%	[10-20]%	-	-	-
IR. Lep	[70-80]%	[10-20]%	[10-20]%	[0-5]%		[0-5]%

Source: Parties' response to the Commission's request for information RFI 31, MAST database [Annex 31.6].

(929) For cotton, IR represents an important market because cotton is often cultivated in countries with high insect pressure. In US and Brazil, for example, a large part of the traited cotton seeds have at least one IR trait, usually stacked with HT traits,[699] while single HT traits in seeds are often used for so-called "refuged" seeds.[700]

696 […].
697 […].
698 […].
699 BI 03245 [internal document], ID2312-233, slides 5 and 8.
700 In BI-EDISC-0134423, ID005420-042423, page 3, Bayer explains that [quote from internal document].

(930) Table 129 provides an overview of the main areas of overlaps between Bayer and Monsanto. [Pipeline products].

Table 129 – Bayer and Monsanto overlap for cotton single traits

[…][701,702]

Source: Parties' response to the Commission's request for information RFI 41 and RFI 90, Annex 41.1, 41.2 and 41.3.

(931) Regarding HT traits, both Bayer and Monsanto commercialise proprietary glyphosate resistance traits. Bayer commercializes the proprietary event GHB614, under the name of Glytol, while Monsanto commercialises the event MON01445 under the name of RoundupReady Cotton[703] and the event MON88913 under the name of RoundupReady Flex Cotton. The same events are also parts of different commercial stacks (see Section X.1.6.4.2 on stacks).

(932) On the basis that both the Bayer and the Monsanto glyphosate resistance traits are associated to the same herbicide active ingredient, the Commission considers these two traits to be in close competition. This is because from a customer prospective, the two traits provide identical technical characteristic to a cotton seed, namely resistance to glyphosate.

(933) In addition, Bayer also commercialises a glufosinate tolerant trait, under the brand name of Fibermax LibertyLink (event name LLCotton25). As already stated in Section X.1.6.3.1 for soybean, due to the increased tolerance to glyphosate, LibertyLink is expected to increase its penetration in the years to come. In particular, in some regions, […] (Figure 98).

Figure 98 – Traited Acres by Herbicide Tolerance

[…]

Source: BI-EDISC-0245001 [internal document], ID5894-26043, slide 4.

(934) It should be noted that, strictly speaking, LibertyLink and, more specifically, the event LL25 is not out-licensed. This is because in cotton, Bayer out-licenses the bar/pat gene to Monsanto and to DowDuPont, which, in turn, developed their own glufosinate tolerant events.[704]

(935) Other evidence of closeness between LibertyLink and RoundupReady for cotton is found in […].[705]

(B) Competitive assessment

(936) From the market investigation, it appears that in cotton DowDuPont offers to seed companies only trait stacks, which often include single traits or genes in-licensed

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701 In the Parties' response to the Commission's request for information RFI 41 and request for information RFI 90, the Parties did not indicate any Bayer single traits. […] it is here assumed that some IR single traits are available in Bayer's portfolio.

702 Dicamba-tolerant traits are not indicated in the Parties' responses to the Commission's requests for information RFI 41 and RFI 90, [Annex 41.1], [Annex 41.2] and [Annex 41.3]. However, Figure 98, as well as Table 132 and Table 133 in Section X.1.6.4.2 show that Monsanto's cotton stacks include dicamba-tolerant traits.

703 Parties' response to the Commission's request for information RFI 31, [Annex 31.6].

704 Parties' response to the Commission's request for information RFI 46, question 10.

705 MI 09446, ID5075-85, tab [internal document].

from third parties (e.g. the RoundupReady trait is in-licensed from Monsanto). The Commission could not find evidence of a proprietary HT single trait belonging to DowDuPont, neither in its case file, nor in publicly available databases.[706] However, it appears that some genes providing resistance to insects (e.g. the cry1F gene) are often stacked with the pat gene proving tolerance to glufosinate, and that this gene is in-licensed from Bayer.[707] Therefore, the [10-20]% market share for HT traits attributed to DowDuPont, according to the data provided by the Notifying Party to the Commission in response to RFI 31 (Annex 31.6), should be treated with care because a) there is no single trait providing tolerance to glufosinate in DowDuPont commercial portfolio, but it is commercialised only as a stack; and b) the gene providing tolerance to glufosinate used by DowDuPont is in-licensed from Bayer, thus potentially reducing competitive constraint to Bayer LibertyLink.

(937) In the Parties' response to the Commission's request for information 41 and request for information 90, the Parties indicated the HT traits reported in Table 129. [Pipeline products].

(938) Figure 98 also shows that cotton single traits providing tolerance to 2,4-D and Dicamba are being deployed, although not explicitly in Table 129 (see footnote 701 for the reason why they are not indicated in Table 129). It also shows a certain level of closeness between these two traits, because they are targeting acreage penetration of a similar magnitude, compared to LibertyLink and RoundupReady.

(939) Notably for IR traits, […]. This indicates strong competition between Bayer and Monsanto, which could be potentially at risk as a result of the Transaction, and due to the weak competitive pressure of other players. [Pipeline product][708].

Figure 99 – Monsanto position in cotton versus its main competitors

[…]

Source: MI 08290, ID2330-93, slide 5.

(940) Beyond Bayer and Monsanto, seed companies and stack developers have very limited offers in terms of single traits. The other two trait developers active in cotton are ChemChina-Syngenta and DowDuPont.

(941) ChemChina-Syngenta is the owner of an IR Lep trait called COT102, which is out-licensed to Bayer, Monsanto and DowDuPont.[709] However, its market share is limited to less than [0-5]%, (as indicated in Table 128), and the documents in the file do not suggest expected major changes in the near future. Therefore, it represented a limited competitive constraint to Bayer's and Monsanto's IR Lep traits, which have market shares of [70-80]% and [5-10]%, respectively (Table 128).

(C) Conclusions

(942) In conclusion, for HT traits, it appears that Bayer's FiberMax LibertyLink and Glytol traits, providing tolerance to glufosinate and glyphosate, respectively, compete closely to Monsanto RoundupReady Cotton and RoundupReady Flex Cotton, both proving tolerance to glyphosate (for competition between Liberty Link and Roundup Ready, please refer to Section X.1.6.2). Following the market definition provided in

706 For example, the ISAAA database, available online at www.isaaa.org.
707 Parties' response to the Commission's request for information RFI 46, question 10.
708 See for example MI 08290, ID2330-93, slides 4 and 7.
709 Agreed non-confidential minutes of a call with Syngenta, 28 August 2017 (ID8941).

Section X.1.4, there is limited competitive constraint from third parties, because DowDuPont does not appear to offer single HT traits neither to seed companies nor to stack developers. [Pipeline product].

(943) For IR Lep single traits, it appears that Monsanto is owner of the Bollgard and Bollgard II technologies providing cotton seeds with Lepidopteran Insect Resistance. Although limited information was provided by the Parties response to the Commission's request for information 41 and request for information 90, it appears that Bayer's cotton stacks include some cotton Lepidopteran Insect Resistance single traits, which are in close competition to Monsanto's IR Lep traits for cotton.

(944) For the reasons set out above and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to cotton HT and IR Lep single traits because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on product and price competition. Given the already very high market shares, this would also lead to a strengthening of Monsanto's dominant position in both HT and IR Lep cotton markets.

1.6.3.3. Oil Seed Rape (OSR) / Canola: overlap in HT traits with limited constraints from competitors

(A) Closeness

(945) […].

(946) [Pipeline product].

(947) [Pipeline products][710].

[710] See for example see MI 08993, ID3807-25, slide 6, or BI 07580, ID5257-2530.

(B) Competitive constrains

(948) With respect to currently commercialised HT traits, BASF's Clearfield has the remaining [0-5]% of the market share, and the Commission did not find any evidence in the internal documents of both Bayer and Monsanto that BASF's market position is expected to change in the near future.

Table 130 – Market shares in OSR trait value to originators

Trait developer	Value trait 2016 (kEUR)	Market share in originator value in crop
OILSEED-RAPE/CANOLA		
BAYER	**[…]**	**[50-60]%**
Bayer HT (LL)[711]	[…]	[50-60]%
MONSANTO	**[…]**	**[40-50]%**
Monsanto HT (RR)	[…]	[40-50]%
BASF	[…]	[0-5]%
BASF HT (Clearfield)	[…]	[0-5]
Total value originator	**[…]**	**100%**
Combined Bayer and Monsanto	**[…]**	**[90-100]%**

Source: Parties' response to the Commission's request for information RFI 31, MAST database [Annex 31.6].

(949) Looking at potential competition to Bayer and Monsanto for HT traits in canola, [third party pipeline product][712].

(950) […],[713] ([…] see Figure 100).

Figure 100 – Bayer's competitive assessment in OSR

[…]

Source: BI 01600, ID451-219, slide 13.

(951) […].[714]

Figure 101 – TruFlex position versus LibertyLink

[…]

Source: MI 000013177.00001, ID5442-409, slide 11.

711 Technically, all the LibertyLink traits for Canola, are molecular stacks. For example, the event registered as MS8 appears to be a molecular stack of gene bar proving tolerance to glufosinate and the barnase gene, proving sterility. Nevertheless, since the main functionality conferred to the seed is glufosinate tolerance, and since the brand Liberty Link emphases this function, the Liberty Link trait is treated as a single trait. It should be noted that treating LibertyLink Canola as a stack would not change the main conclusions of the Commission.

712 MI 13177.00001, ID5442-409, slide 6 and MI 08993, ID3807-25, slide 6.

713 BI 01600, ID451-219, slide 13.

714 See for example MI 13177.00001, ID5442-409.

(C) Conclusions

(952) In conclusion, Bayer and Monsanto overlap in HT traits with their two close competing products, namely LibertyLink and Roundup Ready. Their combined market share in 2016 was [90-100]%, while BASF's Clearfield represents only [0-5]% market share. Potential competition from DowDuPont's OptiGly might arise after 2019.

(953) For the reasons set out above and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to OSR HT single traits because it is likely that it would lead to the creation of a dominant position in this market, due to the very high combined market shares and limited competitive constraints.

1.6.3.4. Corn: overlap in HT traits would strengthen Monsanto's dominant position in corn HT trait market

(954) Bayer has one HT trait for corn in its portfolio. This trait provides tolerance to Glufosinate ammonium and is commercialised under the name Liberty-Link. Monsanto commercialises an HT trait providing tolerance to Glyphosate, which is commercialised under the name of Roundup-Ready Corn 2, and the related event is NK603.

(955) The closeness of Bayer Liberty Link and Monsanto Roundup Ready is discussed in Section X.1.6.2.

(956) In 2016, Monsanto's corn HT market share was [60-70]%, Bayer's [5-10]%, while DowDuPont's and ChemChina-Syngenta's [20-30]% and [5-10]%, respectively.

(957) Despite the relatively low market share of Liberty Link, corn is considered as a key crop for Bayer's HT[715], and the merged entity would have a market share of [60-70]%, thus strengthening the dominant position of Monsanto.

(958) For the reasons set out above and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to corn HT single traits because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on product and price competition. Given the very high market shares, this would also lead to a strengthening of Monsanto's dominant position in this market.

1.6.4. Horizontal overlap in stacks: there are a number of overlaps of close competing products in soybean, cotton, and OSR, with often limited alternatives from competitors

(959) Barriers to enter and stacking rights restrictions are discussed in Section X.1.8. In addition, it is important to note that there is no pure stack developer in the market, i.e. all the stack developers also develop single traits, which are sometimes complemented by in-licensed traits for the purposes of creating stacks. In the case of cotton, for example, Figure 107 shows that […].

(960) This situation has two main consequences: a) trait developers need to have a number of single traits in their portfolio;[716] b) the market for stacks presents a concentration

[715] BI 00103, [internal document], ID248-33, slide 9.

that, depending on the crop, might even lead to only one single player offering stacks (see for example, soybean, where Monsanto is the only stack developer offering soybean stacks).

1.6.4.1. Soybean: Monsanto is the only company commercialising soybean stacks. Bayer and DowDuPont to closely compete with their forthcoming products. The merger would reduce Bayer's incentive to cooperate with other stack developers.

(961) As already illustrated in Section X.1.6.3.1, soybean is the 3rd largest crop in terms of revenues for seeds and traits, after corn and vegetable seeds. In addition, about [90-100]% of soybean seeds are currently traited,[717] with a clear trend toward stacked traits,[718] thus the high economic importance of soybean stacks.

(962) From the market investigation, it appears that Monsanto is […] company commercialising stacks to seed companies.[719] In principle, Dow/ DuPont also offers a stack of Roundup Ready and STS[720], but it appears that DowDuPont […] of these stacks in the period 2013-2016.[721] Therefore, Monsanto's market share in the soybean stack market is [90-100]%.

(963) The stacks currently commercialised by Monsanto are: a) RoundupReady 2 Extend, which is a stack of glyphosate tolerant trait and a Dicamba tolerant trait; b) Intacta RoundupReady 2 PRO, which is a stack of RoundupReady and IR traits; and c) RoundupReady 2 Yield/STS, mentioned in recital (962). The trait value for each of these stacks for the period 2013-2016 is reported in Table 131.

Table 131 – Monsanto soy stack originator value for period 2013-2016

	Originator value (k EUR)			
	2013	2014	2015	2016
RoundupReady 2 Extend	[…]	[…]	[…]	[…]
Intacta RoundupReady 2 PRO	[…]	[…]	[…]	[…]
RoundupReady 2 Yield/STS	[…]	[…]	[…]	[…]
Total	**[…]**	**[…]**	**[…]**	**[…]**

Source: Parties' response to the Commission's request for information RFI 31, MAST database [Annex 31.6].

(964) Table 131 also underlines the growing importance of soybean stacks in the last 4 years, with a growth in value of more than [500-1000]% from 2013 to 2016.

716 Agreed non-confidential minutes of a call with KWS, 28 July 2017 (ID8918), paragraph 15.
717 Form CO, part 14, figure 2.
718 See total market value of stacks in Table 131.
719 Parties' response to the Commission's request for information RFI 31, MAST database [Annex 31.6].
720 Sulfonyl-Urea Tolerant Soybean (STS) is a trait developed by Dow/DuPont.
721 Parties' response to the Commission's request for information RFI 31, MAST database [Annex 31.6].

(965) In 2015, soybean was considered by Bayer as [quote from internal document].[722] In a more recent assessment, [details of Bayer's strategy] (Figure 102).

Figure 102 – Bayer's view of soybean trait market

[…]

Source: BI-EDISC-0188265, [internal document], ID5893-17307, slide 15.

(966) Due to the importance of traits in this crop, [pipeline information][723]. Of relevant importance, [pipeline information]. More details of these two cooperations and the related expected products are described in the following.

(A) [Pipeline information]

(967) [Pipeline information].

(968) [Pipeline information].[724,725,726]

(969) [Pipeline information][727]:

(a) [Pipeline information];[728]

(b) [Pipeline information][729];

(c) [Pipeline information].

(d) [Pipeline information].[730]

(970) [Pipeline information]:

(a) [Details of Bayer's strategy; quote from internal document].[731,732,733]

722 BI-EDISC-0182685, ID5893-11727, slide 4.

723 BI-EDISC-0182685, ID5893-11727, slide 4.

724 Parties' response to the Commission's request for information RFI 41, [Annex 41.3].

725 See for example, BI-EDISC-0204873, ID5893-33915, slide 5 and slide 7 to slide 26.

726 Parties' response to the Commission's request for information RFI 41, Annex 41.3.

727 Parties' response to Statement of Objections, ID9941, paragraph 212, and Parties' response to Article 6(1)(c) Decision, ID5016-3, paragraph 43.

728 See for example, BI 03764, ID5075-8; BI 03765, ID5075-9; BI 03767, ID5075-11.

729 It appears that Bayer has a patent application on the gene hppdPF W336. Also, the market investigation revealed that MS Technology has a royalty-bearing license with Bayer for the gene providing tolerance to Isoxaflutole (See agreed non-confidential minutes of a call with MS Technology, 19 September 2017 (ID9153), paragraph 2).

730 Agreed non-confidential minutes of a call with MS Technology, 19 September 2017 (ID9153), paragraph 9.

731 BI-EDISC-0204873, ID5893-33915, slide 6.

732 Parties' response to Statement of Objections, ID9941, paragraph 218.

733 In the Questionnaire to Trait Technology suppliers/ trait discovery organizations and research institutes (Q14), question 14 (ID3019), Stine states that "*[e]ffective remedies in the trait development space need to enable that parties are fully enabled to divested assets and have full FTO to divested access. This may include access to regulatory data packages, commitments or access to quantities of labelled and registered herbicides*". In addition, in the Parties' response to the Commission's request for information RFI 86, question 13, it is stated that "*[a]ll jurisdictions require a "data package" to be submitted in order to support the request for registration. […] In certain jurisdictions (Canada, US) it is possible to access the data generated by the first registrant of a particular OTT use (data compensation clauses) by an agreement with the data owner. This simplifies the burden on the developer of a new OTT use, but also necessitates a certain level of interaction between the data owner and the new developer.*"

Figure 103 – Market share of top 7 non-selective leaf active ingredients by crops in 2013 (text is not highlighted in the original document)

[…]

Source: BI 00433 [internal document] ID451-543, slide 16 (yellow highlight added).

(b) [Details of Bayer's strategy][734] […];[735]

(c) [Pipeline information];[736]

(d) [Pipeline information].

(B) [Pipeline information]

(971) [Pipeline information].[737] ChemChina-Syngenta cited this cooperation as a one of the rare successful ones in the trait business.[738] [Details of Bayer's strategy].

(972) […].[739]

(973) [Quote from internal document; details of Bayer's strategy][740].

(974) As indicated in Table 131, Monsanto successfully commercialises an HT stack called Roundup Ready 2 Xtend, which provides tolerance to glyphosate and dicamba. [Pipeline information].[741] [Pipeline information].[742]

(975) DowDuPont is also developing a stack, called Enlist, which provides tolerance to glyphosate, glufosinate and 2,4-D. More in particular, in the stack branded as Enlist glyphosate tolerance is provide by the in-licensed trait Roundup Ready, while the Enlist E3 will contain a glyphosate tolerant trait co-developed with MS Technology.

(976) Evidence of close competition between the existing Monsanto Roundup Ready 2 Xtend, [pipeline information], as well as DowDuPont's Enlist can be found in several internal documents from the Parties. [Quote from internal document] (Figure 104).

Figure 104 – Balance GT key marketing challenges according to Bayer. Competitive arena for traits has DowDuPont's Enlist and Monsanto's RR2Xtend

[…]

Source: BI 03764, ID5075-8, slide 5.

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734 The word "value proposition" is often used by the Parties, and, more generally, in the industry, to indicate a statement summarizing the value of a product.

735 See for example: BI 03767, ID5075-11, slide 5; BI-EDISC-1033847, ID5957-10283; BI 03765, ID5075-9, slide 3.

736 BI 03767, ID5075-11, slide 4 and slide 5.

737 BI 03742, ID4592-71, slide 4.

738 Agreed non-confidential minutes of a call with Syngenta, 28 August 2017 (ID8941), paragraphs 32-33.

739 BI 03742, ID4592-71, slide 5.

740 BI 03735, ID4592-64, slide 29.

741 Parties' response to the Commission's request for information RFI 41, Annex 41.3.

742 See, for example, MI 302330.00001 [internal document], ID6438-66282.

(977) [Details of Bayer's pricing strategy].[743]

Figure 105 – Bayer Balance GT system pricing

[…]

Source: BI 03765, ID5075-9, slide 5.

(978) An internal document of Monsanto [internal assessment of competitive relationships][744].

Figure 106 – Monsanto's soybean HT stack pipeline versus its competitors

[…]

Source: MI 09422, [internal document], ID5261-66, slide 5.

(979) Market investigation respondents also indicated competition between existing products and forthcoming products of the Parties, including between Balance GT and RoundupReady 2 Xtend, MGI and RoundupReady 2 Xtend.[745]

(980) In conclusion, for soybean stacks, Monsanto is currently the only company offering soybean stacks. [Pipeline information], while DowDuPont is developing Enlist. The market investigation has shown close competition between these forthcoming products and Monsanto's Roundup Ready Xtend [pipeline information]. The Transaction therefore appears likely to reduce the number of competitors from three to two (the only competitor to the merged entity being DowDuPont, which is moreover only a potential competitor), since it is unclear that MS and ChemChina-Syngenta would become competitors in their own right. (The Transaction is likely to reduce Bayer's incentive to co-develop with […] and with […] HT stacks alternative to Monsanto's).

(981) For the reasons set out above and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to soybean trait stacks because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on product and price competition. […]

1.6.4.2. Cotton: several HT+IR-based stacks from Bayer and Monsanto in close competition, with DowDuPont as the only competitor

(982) Cotton is primarily grown in regions with relevant insect pressure, thus IR traits are almost always present in cotton stacks. As illustrated in Figure 107, [details of Bayer's strategic assessment extracted from internal document].[746]

Figure 107 – Bayer view regarding cotton stacks market needs

[…]

Source: BI 03243, [internal document], ID2312-225, slide 30.

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743 For example, see BI 03765, ID5075-9 or BI-EDISC-1033847, ID5957-10283, [pricing information].

744 For example, MI 08928, ID4269-156, pages 6-11; MI 09442, ID5261-67 (entire document); MI 07525, ID4034-130 (entire document).

745 See for example, Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), question 29; Questionnaire to Row Crop Competitors (Q5), question 33.

746 In BI-EDISC-0134423, ID005420-042423, page 3, Bayer explains that [quote from internal document].

(983) Figure 108 illustrates that the forecast for the future market is an evolution of the current status. In fact, the market is already dominated by IR single traits and HT+IR stacks, while HT-only stacks are a segment of a reduced size.

Figure 108 – Global cotton seeds and traits market size and expected Bayer market share (left) and global cotton trait market size by trait segment (right)

[…]

Source: BI 03245, [internal document], ID2312-233, slide 14.

(984) Both Bayer and Monsanto have a number of stacks commercially available or forthcoming to the market. Bayer is the owner of a glyphosate tolerant trait, called Glytol, which is offered in combination with a number of other single traits. Similarly, Monsanto owns the Round-up Ready trait for cotton, which is also stacked in combination with a number of other single traits.

(985) Bayer in-licenses single traits from Monsanto for some of its stacks. For example, Glytol LibertyLink Genuity Bollgard II includes Monsanto's IR trait Bollgard II. When calculating stack market shares, the royalties paid by the owner of the stack to single trait's licensors are not considered, thus the stack value is not at the net of payments to licensors. This approach is justified by the fact that the payments from licensors to licensees are taken into account in the single trait market analyses (Section X.1.6.3).

(986) Table 132 provides the market value and market shares for the existing cotton stacks, segmented by functionalities.

Table 132 – Cotton stacks originator values and market shares

[…][747]

Source: Parties' response to the Commission's request for information RFI 31, MAST database [Annex 31.6].

(987) Table 133 provides an overview of the main overlaps between Bayer and Monsanto for both existing and forthcoming stacks.

Table 133 – Main Bayer and Monsanto cotton stacks currently commercialised or forthcoming

[…]

Source: Parties' response to the Commission's request for information RFI 41, Annex 41.3.

(988) Table 133 indicates that both Bayer and Monsanto have in their portfolio stacks where an HT glyphosate tolerant trait is the main foundation, and which are often stacked with IR Lep and other HT traits[748].

[747] It is assumed that the Liberty-Link Bollgard II stack, reported in the Parties' response to the Commission's request for information RFI 31, MAST database [Annex 31.6] belongs to Bayer.

[748] One exception is Bayer's Liberty Link™ Bollgard II™, which does not include any glyphosate tolerant trait.

(989) In addition to Glyphosate and Glufosinate tolerant traits, Monsanto also stacks a Dicamba tolerant trait, [pipeline information] (see Figure 109).

Figure 109 – Cotton stack roadmaps of Bayer, Monsanto and DowDuPont

[…]

Source: BI 00360a, ID451-475, slide 22.

(990) Figure 109 also shows [internal assessment of competitive relationships] (Figure 110). Bayer complements its glyphosate tolerant trait (Glytol) with an HPPD (IFT) HT and DowDuPont with a 2,4-D tolerant trait. The DowDuPont stack that includes the 2,4-D tolerant trait is called Enlist, and [internal assessment of competitive relationships].[749]

Figure 110 – Monsanto cotton trait roadmap

[…]

Source: ID5442-13162 [internal document], slide 44.

Figure 111 – Monsanto cost comparison of Bollgard II Roundup Ready Flex and Bollgard II Xtend Flex with Bayer Glytol LibertyLink and DowDuPont Wildestrike and Enlist

[…]

Source: MI 09892, ID5261-261, slide 3.

(991) Additional evidence of close competition between Bayer and Monsanto cotton trait stacks can be found in a [internal document] of Monsanto, [internal assessment of competitive relationships].[750] [Quote from internal document] (Figure 112).

Figure 112 – Monsanto analysis of cotton GP contribution

[…]

Source: ID5442-13162 [internal document], slide 27 [emphasis on box to the bottom-right hand side added].

(992) In conclusion, Bayer and Monsanto have several products on the market or in their late pipeline, which compete or are expected to compete closely. DowDuPont is [internal assessment of competitive relationships] additional stack developer that competes closely to Bayer and Monsanto cotton stacks.

(993) For the reasons set out above and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to cotton trait stacks because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on product and price competition. Given the very high market shares, this would also lead to a strengthening of Monsanto's dominant position in this market.

1.6.4.3. Canola: Bayer and Monsanto are developing HT stacks [pipeline information]. DowDuPont is a late-comer aiming at competing with similar stacks.

(994) Currently, neither Bayer nor Monsanto commercialise stacks for canola. [Pipeline information].

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749 See for example MI 09897, ID5261-266, [internal assessment of competitive relationships].

750 MI 09902, ID5261-271, slide 17, [quote from internal document].

(995) Monsanto is developing TrueFlex Roundup Ready with [pipeline information] and is planned to be commercialised by 2019.[751] [Pipeline information].

(996) [Pipeline information].

(997) [Pipeline information].

(998) In addition to Bayer and Monsanto, DowDuPont is [...] developing a stack of glyphosate and glufosinate HT traits, namely OptiGly with LibertyLink. [Internal assessment of competitive relationships].

Figure 113 – Competitive landscape in canola traits, according to Monsanto

[…]

Source: ID6152-28343, [internal document], slide 7.

(999) In conclusion, Bayer and Monsanto are developing stacks [pipeline information]. DowDuPont is a later-comer in the canola trait business, but is developing a stack that competes closely with those of the Parties.

(1000) For the reasons set out above and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to canola trait stacks because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on product and price competition. Given the very high combined market shares, this would also lead to the creation of a dominant position in this market.

1.6.5. Conclusions on horizontal effects on product price competition between existing and forthcoming products

(1001) For the reasons laid down in Sections X.1.6.3 and X.1.6.4, the Commission concludes that the Transaction would significantly impede effective price and product competition (actual and potential) in each of the following markets: 1) soybean HT; 2) cotton HT; 3) Cotton IR Lep; 4) Corn HT; 5) OSR/canola HT; 6) soybean stacks; 7) cotton stacks; 8) OSR/canola stacks.

(1002) In particular given the already very high market share of Monsanto, as well as the considerable increment by Bayer or the elimination of Bayer as a competitive constraint, the Transaction would also lead to a strengthening of Monsanto's dominant position in the markets reported in Table 134.

[751] Parties' response to the Commission's request for information RFI 41, [Annex 41.3].

Table 134 – Markets where the Transaction would lead to a strengthening of Monsanto's dominant position

Market	Monsanto market share	Bayer market share	Combined market share	Comment
Soybean HT	[90-100]%	[5-10]%	[90-100]%	
Cotton HT	[60-70]%	[20-30]%	[80-90]%	
Cotton IR Lep	[70-80]%	[10-20]%	[80-90]%	
Corn HT	[60-70]%	[5-10]%	[60-70]%	
Soybean stacks	[90-100]%	[0-5]%	[90-100]%	[…]
Cotton stacks	[70-80]%	[10-20]%	[90-100]%	

Source: Parties' response to the Commission's request for information RFI 31, MAST database [Annex 31.6].

(1003) Given the very high combined market shares, the Transaction would also lead to the creation of a dominant position in the OSR HT market.

Table 135 – Markets where the Transaction would lead to the creation of a dominant position

Market	Monsanto market share	Bayer market share	Combined market share
OSR HT	[40-50]%	[50-60]%	[90-100]%

Source: Parties' response to the Commission's request for information RFI 31, MAST database [Annex 31.6].

1.7. Competitive assessment: horizontal effects on innovation competition

(1004) The Commission's framework of analysis to assess the likely impact of the Transaction on innovation competition – which is applied in the present Decision taking into account the specific facts of the case and characteristics of the relevant markets – is described below as well as in Section V.3.

1.7.1. Innovation process and spaces in trait R&D

(1005) Industry players engage in innovation efforts to discover and develop new traits.

(1006) In the US, the antitrust agencies have used the concept of innovation markets. The recent proposal for "Antitrust Guidelines for the Licensing of Intellectual Property" issued by the Department of Justice ("DoJ") and Federal Trade Commission ("FTC")), distinguishes between goods markets, technology markets and research and development markets.[752]

(1007) Under the proposed US guidelines:

(a) Goods markets correspond to the markets where the final product is sold. In the current case it corresponds to commercialised traits;

[752] DoJ and FTC, "Antitrust Guidelines for the Licensing of Intellectual Property", 12 August 2016.

(b) Technology markets "*consist of the intellectual property that is licensed (the "licensed technology") and its close substitutes—that is, the technologies or goods that are close enough substitutes to constrain significantly the exercise of market power with respect to the intellectual property that is licensed*";[753] and

(c) Research and development markets "*consist of the assets comprising research and development related to the identification of a commercializable product, or directed to particular new or improved goods or processes, and the close substitutes for that research and development*".[754]

(1008) When considering both the downstream product markets and the upstream technology markets, innovation should not be understood as a market in its own right, but as an input activity for both the upstream technology markets and the downstream technology markets. This however does not prevent the Commission from assessing the impact of the Transaction at the level of innovation efforts by the Parties and its competitors. The assessment of innovation competition can be conducted on the basis of the two approaches described below.

(1009) First, the assessment of innovation competition requires the identification of those companies which, at an industry level, do have the assets and capabilities to discover and develop new products which, as a result of the R&D effort, can be brought to the market.

(1010) Secondly, it is also relevant to identify and analyse those spaces in which innovation competition occurs in the trait industry. The R&D players do not innovate for all the product markets composing the trait industry at the same time. They also do not innovate randomly without targeting specific spaces within that industry. When setting up their innovation capabilities and conducting their research, R&D players have specific discovery targets (the strong focus at early stages on specific functionalities (e.g. tolerance of a specific crop to a specific herbicide) is testified by a number of internal documents detailing the Parties' innovation targets in very specific terms, see also Section X.1.7.5 for a more detailed explanation and examples).

(1011) The process of developing a trait proceeds in multiple steps. The first step is to identify a need, such as herbicide tolerance or killing specific pests. Once the need is identified, the developer will attempt to identify a gene of interest in another organism that encodes a protein that achieves a desired result. Once the gene is identified in an organism, it must be isolated and optimized for use in plants. The gene is subsequently inserted into plant tissue to create an event, which constitutes the trait.[755]

(1012) Multiple technologies, labelled "new breeding techniques" have been developed with the aim of modifying plant genome in a non-GM way. For example, gene editing creates targeted genomic changes through the use of DNA modifying enzymes. Until recently, available tools were restricted and suffered from complicated assembly/synthesis and low flexibility. The invention of RNA-guided nucleases based on the CRISPR/Cas9 system (Clustered Regularly Interspaced Short

753 DoJ and FTC, "Antitrust Guidelines for the Licensing of Intellectual Property", 12 August 2016.
754 DoJ and FTC, "Antitrust Guidelines for the Licensing of Intellectual Property", 12 August 2016.
755 Form CO, part 14, paragraphs 37-42.

Palindromic Repeats/Cas9) ("CRISPR") provided an additional step change in the speed of genome modifications that can lead to traits development.[756]

(1013) In considering whether to pursue a development program in traits, a firm will assess its likely return on investment by considering development costs and likelihood of success versus the likely value of the trait to growers and likely demand. In order to estimate the second element of this assessment (i.e. the likely value of the trait), the value of the trait per acre is multiplied by the number of addressable acres and forecast rate of penetration, while adjusting for regions where seed with GM traits cannot be sold or where it is difficult to capture value because of weak IP protection or other issues.[757]

(1014) Research for an event that will develop into a trait generally starts as not specific to a crop at the discovery (phase 0) stage. As of phase 1, discovery tends to develop into a crop specific line of research. Therefore, while innovations at phase 0 are in principle transposable from crop to crop, innovations as of phase 1 tend to be not transposable from crop to crop because the discovered genes can manifest limited performance in crops different than the crop initially targeted.[758] Accordingly, the spaces where innovation competition takes place can be in some instances broader than individual downstream trait markets.

(1015) The Commission will assess innovation competition taking place in spaces consisting of groupings of crop/functionality combinations (as will be defined specifically for the areas where the Parties overlap in Section X.1.7.5).As described in Section X.1.2 and illustrated in Table 118 and Table 119, both Monsanto and Bayer segment their pipeline [details of the Parties' business strategy for pipeline projects]. The probabilities of launch internally assigned to each research phase are not identical for Monsanto and Bayer. They are however broadly aligned and for the same development phase, the advancement of the research project is broadly comparable [details of the Parties' business strategy for pipeline projects]. Both Bayer and Monsanto define and review R&D targets, which are the basis for defining lines of research and development. [Details of Bayer's business strategy for pipeline projects].

(1016) Figure 114 illustrates the R&D phases of Bayer and the process milestones. [Details of the Parties' business strategy for pipeline projects].

Figure 114 – Bayer R&D phases and milestones

[…]

Source: [Internal document].

(1017) In this Section, the Commission will assess innovation competition taking place in innovation spaces consisting of groupings of crop/functionality combinations[759] (as will be defined specifically for the areas where the Parties overlap in Section X.1.7.5). In each innovation space, the Commission will assess overlaps

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756 Form CO, part 14, paragraphs 14-27.

757 Form CO, part 14, paragraph 47.

758 See for example the Parties' response to the Commission's request for information RFI 46, question 9, [pipeline information].

759 In the early research discovery phase, innovation space are often non-crop specific, at that stage the relevant innovation space tend to be determined in terms of functionality e.g. HT or IR Lep without a definitive attribution to a specific crop.

between the Parties' lines of research and early and late pipeline products, as well as between lines of research, early and late pipeline products and existing products.

(1018) The Commission considers a *line of research* to be the set of scientists, patents, assets and equipment which are dedicated to a given discovery target.

(1019) Lines of research tend to be specific and narrow. For instance a soy PPO HT project cannot be transformed into an HPPD HT project, as the chemistry is specific to the trait and the effectiveness of the discovered gene is crop specific. Therefore, once research is committed to a specific line of research, it is difficult to adapt this research to other purposes.

(1020) The Commission will also refer to *early pipeline products* which correspond to products which are intermediate results of lines of research. These are products which have already been selected among leads, but are still in the discovery or pre-development stage, where most of the innovation costs have still not been incurred, and with a lower likelihood of success than development products. This is in contrast with pipeline products in the development stage whose likelihood of being successfully launched is above 60%.

(1021) At the industry level the analysis by Phillips McDougall in Figure 115 illustrated the drivers of innovation efforts. In HT traits the focus of the industry is on developing a next generation traits to address the increasing resistance to platform traits in particular glyphosate. Trait stacking is listed as another key factor in the trait market going forward. Further IR traits are listed, as well, as key input traits determinant of the GM market developments going forward.

Figure 115 – Analysis of expected drivers of the GM trait market by Phillips McGDougall

[…]

Source: BI-EDISC.0578735, ID005609-074451, slide 20.

(1022) In HT traits, the focus of innovation is on upgrades of stacks. This is because plants develop resistance to most commonly used herbicides and the desired stack would offer a multitude of resistance to different mode of action. Monsanto's [details of the Parties' business strategy for pipeline projects].

Figure 116 – Monsanto's views about upcoming innovation projects in HT traits

[…]

Source: MI 000024269.00001, ID005442-014342, slide 4.

(1023) The Commission considered that innovation should not be understood as a market in its own right, but as an input activity for downstream product markets. While innovation eventually results in products competing on these markets, the assessment of innovation competition cannot be directly conflated with the relevant downstream product markets.

(1024) The Commission further takes the view that innovation spaces for traits are global, because innovation efforts are rolled-out in all possible geographies across the globe.

1.7.2. Rivalry and cannibalisation determine decisions regarding innovation in traits; a merger between leading innovators can be expected to result in decreased innovation competition which could lead to decreased future competition

(1025) Innovation spaces in the trait industry are contestable market environments, in particular in the case of product innovations.

(1026) This Section presents internal documents from the Parties with evidence about monitoring and benchmarking against rivals' early pipeline products and demonstrates that rivalry is driving innovation in the industry. This Section also puts forward evidence that cannibalisation effects are also important elements in innovation decisions.

1.7.2.1. Innovation spaces are contestable and rivalry drives innovation in traits

(1027) A key driver of the incentive for biotech companies to innovate is the possibility that one of their rivals may bring an innovative trait to the market and, by doing so, be able to attract market shares. Therefore, rivalry is a crucial driver of innovation incentives. This is shown by the elements below.

(1028) Innovation targets of competitors are closely monitored by the Parties, as they inform the prioritisation of the R&D efforts and the timing of product launches. Figure 117 [internal assessment of competitive relationships].

Figure 117 – Bayer's overview of competitors' pipeline in traits

[…]

Source: BI-EDISC-0170078, ID005608-032464, slide 13.

(1029) The importance of competition between Bayer and Monsanto for driving innovation emerges from an internal document of Bayer (see Figure 118 below) where it is shown that [details of Bayer's business strategy for pipeline projects]. These investments by Monsanto to capture market share from Bayer and the corresponding investments by Bayer to defend its market share would be lost after the merger as these investments would simply lead to cannibalization for the merged entity (which would then control all the current products and R&D projects of Bayer and Monsanto).

(1030) The R&D companies "invest to defend" their current position against the competitive threat brought by expected product launches by competitors. Figure 118 shows that in the calculation of the NPV of research projects, which are determinant for investment decisions, the launch of products by competitors is factored in. In fact, [quote from internal document].

Figure 118 – [Details of Bayer's business strategy for pipeline projects]

[…]

Source: BCS-MON-05290690, [internal document], ID008431-000132, slide 27.
Note: […].

(1031) Figure 119 [details of Monsanto's business strategy for pipeline projects; quote from internal document].

Figure 119 – Monsanto's internal view on Bayer's innovation efforts in HPPD HT trait

[…]

Source: BI-EDISC-1011553, ID005426-015287, slide 26.

(1032) In an extreme situation in which only one firm with R&D capabilities would be active in trait development, without the fear of competition from entrants capable of performing R&D, its investment behaviour would likely be minimalistic focused only on the renewal of products insofar as necessary to overcome their loss of effectiveness or regulatory obstacles. Any new product would otherwise cannibalise the hypothetical monopolist's revenues generated by its existing portfolio (cannibalisation between products of the same firm is analysed in Section X.1.7.2.2).

(1033) Under the proposed transaction, the elimination of Bayer and Monsanto as direct threats to their respective businesses would reduce the incentive of each to engage in innovation competition against the other. Notably, after the Transaction Monsanto would face reduced pressure on its herbicide tolerance traits and Round Up business and hence less incentive to engage in innovation competition to defend its position.

(1034) The focus on rivalry in the trait industry is further illustrated through the background material [internal assessment of competitive relationships][760].

Figure 120 – [Internal assessment of competitive relationships]

[…]

Source: BI-EDISC-1011553, ID005426-015287, slide 47.

(1035) Figure 121 illustrates the competitive pressure exercised by rivals at an overall industry level. In its presentation of 20 May 2015 on the future growth of Bayer, the CEO of the company outlined in a simplified manner the two strategic options for the business, presented as [quote from internal document]. The statement confirms that a reduction in the number of competitors alleviates the imperative to innovate.

Figure 121 – Presentation Our Growth Story – the Big Picture by Bayer's CEO Liam Condon

[…]

Source: BI-EDISC-0119833, ID005420-027833, slide 8.

(1036) In summary, the Commission considers that the Parties' incentives to engage in innovation competition are reduced by the Transaction via a reduction in rivalry generated by the elimination of an independent innovator.

1.7.2.2. Cannibalisation effects are determinant in innovation decisions

(1037) Cannibalisation between products is a key consideration by companies active in trait development. When developing a new product, companies assess the impact that this product will have on the sales of the other products the company currently commercialises. The larger the extent to which the new product cannibalises sales from existing products, the lower the incentive to invest to develop the new product.

(1038) [Details of Bayer's business strategy for pipeline projects].[761]

760 [Internal assessment of competitive relationships].

761 [Details of Bayer's business strategy for pipeline projects].

(1039) [Quote from internal document][762,763].

Figure 122 – [Details of Bayer's business strategy for pipeline projects]

[…]

Source: BI-EDISC-0203039, ID005893-032081, slide 15.

(1040) [Details of Bayer's business strategy for pipeline projects].

Figure 123 – [Details of Bayer's business strategy for pipeline projects]

[…]

Source: BI-EDISC-0203039, ID5893-032081, slide 11.
Note: [...].

(1041) A merger between two innovators is likely to increase the cannibalisation effects. In fact, pre-merger if an innovator is successful in introducing a new product, even though this might cannibalise one or more of its existing products, nevertheless it will capture sales from its rivals and the possible related gross margin and profits. A merger between two potential innovators internalises this negative externality effect – from the perspective of each innovator, the lost expected profits on the products of the other merging firm becomes an additional cannibalisation effect. Following a merger, the additional cannibalisation effect leads to lower incentives to engage in aggressive innovation competition for each of the two merging firms.

(1042) Consumers may also ultimately be harmed in this case by both the loss of product variety and the reduced intensity of future product market competition in the markets where the discontinued/deferred/redirected early pipeline product would potentially have been introduced but for the merger. This effect applies both in the short-term, notably in relation to existing early pipeline products and current lines of research, and over time, in relation to any future R&D efforts.

1.7.2.3. Appropriability

(1043) The principles laid out in the economic literature indicate that a merger between two out of a limited number of significant innovators is likely to reduce product innovation in a situation where, already pre-merger, the firms competing on innovation can already appropriate to a great extent the gains of an innovation (that is, appropriability is high).[764] This is the case for traits for the following reasons.

(1044) **First,** patent protection is strong in the trait industry. Innovation in traits largely takes place through product innovation that is protected by effective IPRs and other strategies to sustain high profit margins over time.

(1045) Although the Parties argue that patents are not essential for the development of transgenic traits, and that the most valuable patents are available for license,[765] in the Commission's assessment, patents are a key determinant in the commercial and development strategies of the Parties. As noted in recital (1013), the strength of available IP protection is a one factor in investment in R&D for traits.

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762 BI-EDISC-0203039, ID5893-32081, slide 14.

763 BI-EDISC-0203039, ID5893-32081, slide 13.

764 See for example: Commission Decision in Case M.7932 – Dow/DuPont (2017), Annex 4; Shapiro, Carl (2012), "Competition and innovation. Did Arrow hit the bull's eye?", chapter 7 of Josh Lerner and Scott Stern (eds.), The Rate and Direction of Inventive Activity Revisited, pages 361-404.

765 Form CO, part 14, paragraph 52.

(1046) A key consideration in the industry in respect of patent protection is "freedom to operate".[766] Bayer has put forward to the Commission that ensuring freedom to operate for future developments and commercialization is key for Bayer. [Details of Bayer's business strategy].[767] This example illustrated that IP rights of competitors restrict commercial and research strategies of competing companies.

Figure 124 – Bayer's flowchart on the importance of IP protection

[…]

Source: BI 03069, ID1638-8, slide 11.

(1047) Appropriability of IPRs in the trait industry is reflected in the profitability of the business. Gross margin defined as the difference between the sales proceeds and the cost of goods sold (COGS) capture the pricing policy of firms. In simplified terms, a gross margin is the mark-up charged to customers on top of costs paid by the firm to suppliers (internal or external). As traits are sold to customers in seeds, gross margins are calculated in the trait industry for seeds and traits in an aggregate manner rather than traits as stand alone. The COGS of a traited seed reflect principally the cost of the seed component, as traits are associated with significant R&D expenses but do not in principle increase the cost of the supply of seeds to be traited. Conversely however traits drive to a large extent the sales price of the traited seeds.

(1048) [Quote from internal document]. Therefore the gross margin on the seeds and traits segment reflects to a large extent indirectly the profitability of the traits business.

(1049) [Details of Bayer's business strategy; quote from internal document][768].

Figure 125 – Stand Alone Case Monsanto (SAC)

[…]

Source: BI-EDISC-0142683, ID005608-005069, slide 7.

(1050) **Second,** the Parties make abundant use of the legal protection conferred to their intangible assets.

(1051) Stine, a large US seed company, licensing traits from Monsanto indicated that "*Monsanto has a history of strategically enforcing Intellectual Property Rights (IPR) and foreclosing its licensee*"[769]. Moreover, Monsanto, [details of Monsanto's business strategy], as illustrated in Figure 126, [details of Monsnato's business strategy; quote from internal document].

Figure 126 – Monsanto's presentation on Intellectual Property of 2014

[…]

Source: MI 01715, ID1455-13036, slide 12.

(1052) **Third**, appropriability is already high in the trait industry due to different types of IP rights.

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766 Freedom to operate (FTO) refers to ensuring that the commercial production, marketing and use of their new product, process or service does not infringe the intellectual property rights of others, see for example World Intellectual Property Organization (WIPO), "New Product Launch: Evaluating Your Freedom to Operate", Esteban Burrone, Consultant, SMEs Division, WIPO.

767 BI-EDISC-0971887, ID5610-15449, slide 3.

768 […].

769 Agreed non-confidential minutes of a call with Stine, 25 July 2017 (ID4566), paragraph 8.

(1053) Even after the expiry of the period over which patents grant exclusionary rights to the patent owner, companies benefit from the supplementary protection due to the rights over the data (dossier) submitted within the registration package (such as tests, study reports).

(1054) Furthermore, R&D players have at their disposal a number of other tools to prolong the legal or *de facto* exclusivity of their product. In particular, R&D players often pursue commercial strategies for example investments in brand recognition.

(1055) Stine indicated in respect of Monsanto's IP strategy that "*Monsanto is relying on trademarks to reinforce its position. Monsanto appears to restrict in its trademark agreements with seed companies the use of the branded appellation trademark RoundUp-Ready to the duration of the patent protection on the underlying trait. For example, in reference to soy Stine indicated that when "Roundup Ready One" ("RR1") patent expired […] licensees also lost the right of using the Roundup Ready brand.*"[770]

(1056) Finally, income from traits can be protected from competition indirectly through Plant Variety Patents (PVP). PVP are intellectual property rights specifically created to protect new plant varieties. Once registered, the applicant has an IP protection for the new variety in the relevant jurisdiction, entitling the applicant, *inter alia*, to exclusively market the variety in the EU Member States.[771] Although PVP protection is not aimed at traits, R&D players can use the protection conferred through PVP to the seeds in which traits are introgressed as an exclusionary strategy protecting the underlying trait. [Quote from internal document].

Figure 127 – [Internal document]

[…]

Source: BI-EDISC-0673234, ID5917-33370, slide 7.

(1057) All these factors lead to conclude that it appears possible for an R&D player introducing an innovation to appropriate the benefits of its innovation for a long period without the risk of other companies free-riding by copying the innovation and competing away the profits.

1.7.2.4. Conclusion on the role of rivalry, cannibalisation and appropriability for innovation in traits

(1058) The Commission therefore considers that a merger between two of the large and integrated firms competing in innovation in traits is likely to reduce incentives for the merging firms to engage in innovation competition.

(1059) First, the investigation shows that rivalry is a crucial factor driving innovation because: (i) innovation is mostly based on product innovation, (ii) individual trait product markets are contestable on the basis of the innovation and (iii) the benefits of innovation competition targeting such a market can be appropriated by the innovator. Thus, a merger between competing innovators, by lowering the rivalry in the industry, likely results in a decrease in the incentives to engage in innovation competition.

770 Agreed non-confidential minutes of a call with Stine, 25 July 2017 (ID4566), paragraph 9.

771 Parties' response to the Commission's request for information RFI 16, paragraphs 6 and 7.

(1060) Second, the fear of cannibalisation of own existing products is a disincentive to engage in innovation competition. Since a merger between competing innovators brings together their existing products and the profits derived from the products are going forward financially consolidated at the level of one company, the chances that an innovation cannibalises one or more existing products of the merged entity are likely to become higher, which likely results in a decrease in the incentives to engage in innovation competition by the merged entity.

1.7.3. Trait R&D is characterised by high barriers to entry and expansion and for HT and IR traits the R&D is highly concentrated with just four integrated players

1.7.3.1. Only four integrated players can compete in trait innovation for the trait development layer and the stack development layer.

(1061) Trait innovation requires substantial investments at different stages of development of a trait product as well as dedicated capabilities and expertise. Two key capabilities that a company must avail itself of in order to bring trait innovation to the market are sufficient scale and a seed business.

(A) High barriers to entry and expansion in the industry

(1062) **First**, the absolute magnitude of the investment required to develop a trait requires considerable sums of funds. Companies of a certain scale will often be in a position to generate such sums by cash flow. Innovation projects can be financed by loan for smaller actors that do not generate the free cash flow required. However given the asymmetries of information related to the probability of future success of a trait development project which are intrinsic in technical R&D activity[772] and to the very low probability of success of individual trait discovery projects, smaller companies are in a unfavourable position to obtain external financing at competitive conditions compared to the average cost of funds of a large company able to generate the cash flow from its business.

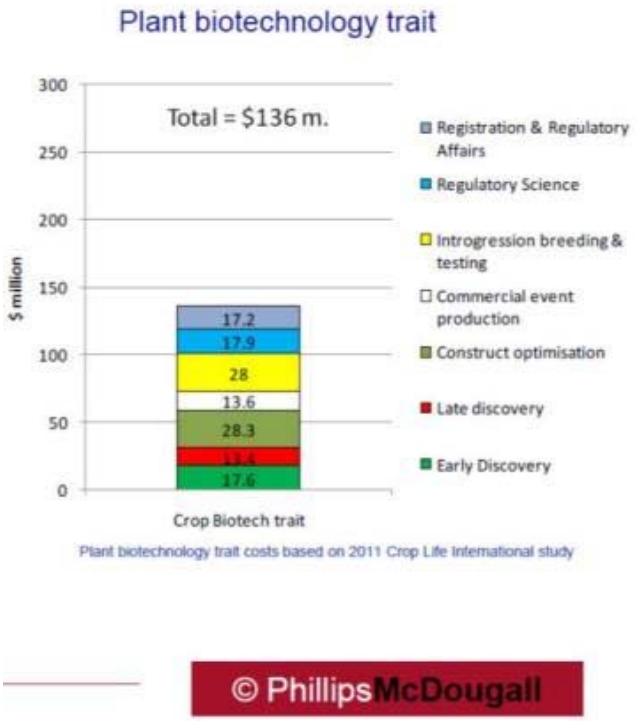
(1063) According to the Parties due to the delay, cost, and regulatory uncertainty of transgenic product development, this is likely to be pursued only where the value is large and the need is likely to be persistent[773].

[772] See for example: Hall (2009), "The financing of innovative firms", EIB Papers 14(2), page 13, stating that "*[i]n the R&D setting, the asymmetric-information problem refers to the fact that an inventor or entrepreneur frequently has better information about the nature of the contemplated innovation project and the likelihood of its success than potential investors*".

[773] Form CO, part 14, paragraph 44.

(1064) An industry wide study has been produced by Phillips McDougall in 2011 on the costs and time required to develop a new trait. The study continues to be used as a reference by the main companies in the sector. The chart below presents the findings of the report based on information provided by companies active in trait development. The costs and the different development stages are compared to the development cost and stages of a CP product. Whereas a new CP product remains more expensive to bring to the market, the cost of bringing a new trait to the market amounted to an estimated 136 million dollars, of which 23% of the cost related to discovery, as illustrated in Figure 128.

Figure 128 – Cost of bringing a new product to the market



Source: Phillips McDougall, Presentation at APVMA Future Forum, Canberra, Australia, 5th November 2014, BI-EDISC-0578735, ID5609-74451, slide 8.

(1065) The barriers to entry in the trait innovation are related, among other factors, to the high costs and risks of the development projects. As regards delays, the time required to develop traits in broad acre crops requires the capability to commit resources in the long term and therefore presents a barrier for players that would not be able to engage in an investment the potential returns of which could only be reaped more than a decade later. As illustrated in the Table 136, the mean times for the development of traits based on the responses to a survey conducted by the consultant Phillips McDougall is 11.7 years for canola traits, 12 years for corn traits, 12.7 years for cotton traits and 16.3 years for soy traits.

Table 136 – Study of the number of years required to develop a trait, by Phillips McDougall, September 2011

Number of Years Required to Discover, Develop and Authorisation a new Plant Biotech Trait (Mean Values)

	Canola	Corn	Cotton	Soybean	All crops
Number of years from discovery of trait to first commercial sale	11.7	12.0	12.7	16.3	13.1

Source: BI-EDISC-0982148, ID6032-8530, page 10.

(1066) **Second**, the low probability of success of individual trait projects favours competitors that can diversify the financial risk of trait discovery projects. Figure 129 presents the number of units typically being assessed in each stage of the R&D process in order to obtain one commercial event for subsequent commercialisation based on a survey by PhillipsMcDougall of trait developers based on the responses of 5 companies. According to Phillips McDougall, the data in Figure 129 allows to derive the number of units in the discovery stage for each event commercialise[774], in this reading the Figure 129 shows that only a small per mille of trait discovery projects reach commercialisation stage.

(1067) This represents a very high financial risk for any company active at the discovery stage. Only companies running thousands of discovery projects in parallel have on average a likelihood of bringing a product to the market, the sales proceeds of which can finance the R&D costs associated with substantive expenses at the discovery stage. A large scale discovery activity allows companies to diversify the risk of the product development.

Figure 129 – The cost and time involved in the discovery development and authorisations of a new plant biotechnology derived trait, study by Phillips McDougall, September 2011

[…]

Source: BI-EDISC-0982148, ID6032-8530, slide 8.

774 BI-EDISC-0982148, ID6032-8530, page 8.

(1068) **Third**, integrated companies with a business that encompasses germplasm are better placed to compete in trait innovation. That germplasm is key in trait innovation is evidenced in Figure 130 below on the prioritisation of trait innovation targets by Bayer. [Details of Bayer's business strategy; quote from internal document].

Figure 130 – Bayer's role of germplasm in trait innovation

[…]

Source: BI-EDISC-0538247, [internal document], ID005609-033963, slide 12.
Note: […].

(B) Competitors without critical scale are limited in their expansion prospects

(1069) In its review of major seed companies in 2014, [internal assessment of competitive relationships] (see Figure 131 and Figure 132 below). This is despite KWS and Limagrain being among the largest European seed companies with their own trait development joint venture Genective.

(1070) [Internal assessment of competitive relationships; quote from internal document].

Figure 131 – [Internal assessment of competitive relationships]

[…]

Source: BI-EDISC-0069211, ID5413-23211, slide 13.

Figure 132 – [Internal assessment of competitive relationships]

[…]

Source: BI-EDISC-0069211, ID5413-23211, slide 19.

(C) Competitors without an integrated business are limited in their monetisation strategies

(1071) As described in recital (1068), having a seed business is key in the incentives to innovate in the trait industry. BASF in this respect is not a sufficiently integrated player to compete on the same level as competitors in trait innovation, even if BASF has developed its own traits. Monsanto in an internal review of BASF[775] [internal assessment of competitive relationships].

Figure 133 – Monsanto's internal assessment on BASF

[…]

Source: BI-EDISC-1011553, ID5426-15287, slide 38.

(1072) Similar considerations are reflected in [internal assessment of competitive relationships] (see Figure 134 below). [Internal assessment of competitive relationships; quote from internal document].

Figure 134 – [Internal assessment of competitive relationships]

[…]

Source: BI 02476, [internal document], ID1193-694, slide 28.

(1073) BASF, who does not have a seed business, has previously failed to successfully introduce traits to the market. The past experience of BASF, as summarised in the

[775] [Internal assessment of competitive relationships].

following quote, illustrates the limitations of collaboration strategies, as well as the importance of having access to a large seed footprint. "*BASF previously had an HT GM soybean trait for the Brazilian market called Cultivance that was jointly developed with Empresa Brasileira de Pesquisa Agropecuária (Embrapa). However, the Cultivance production system has not progressed beyond the pre-launch phase and commercialization in the Brazilian market has been abandoned. Principal reasons include the limited market access achieved due to (i) reduced market access due to Embrapa's market share decline, and (ii) the failure to incorporate state-of-the-art insect-resistance traits early enough to encourage Cultivance adoption with our third party licensees*."[776] Market access refers to the market share of Embrapa (the Brazilian seed company partner of BASF) and Embrapa's reduction in market share was cited by BASF as one of the reasons for BASF's failure to commercialise its HT GM soybean trait.

(1074) This past experience of BASF further illustrated the need for access to germplasm in order to undertake successful trait innovation.

(1075) Further and more broadly for companies offering HT traits and herbicides, arbitrage can be made between the price at which HT traits are licensed/sold and the revenue that can be generated with sales of the corresponding herbicide(s).

(D) Non-GM trait research benefits from experience in GM traits research and from access to enabling technology associated with high licencing costs favouring established trait developers with financial resources

(1076) As described in (1012), access to gene editing technology is presented by the Parties as determinant in the innovation efforts to develop non-GM traits. Figure 135 from a Monsanto presentation [details of Monsanto's business strategy].

Figure 135 – Monsanto's presentation on cost comparison for licence fees for enabling technologies

[…]

Source: *MI 05885, [internal document], ID007071-000010, slide 19.*
Note: *[…].*

(1077) A further key advantage in non-GM trait innovation is prior experience with GM traits. This is for example evidenced in the internal document on planning, see Figure 136.

Figure 136 – Actions_and_decision_Log_RPC spread sheet

[…]

Source: *BI 33445, ID8205.*

(E) Monsanto's benefits from its dominant position to consolidate the barriers to entry facing competitors and potential competitors

(1078) As described in Section X.1.8, Monsanto benefits from a dominant position in traits. This put Monsanto in a position to vertically integrate into the seed business and to

[776] BASF's response to the Commission's request for information to BASF RFI Q31, (ID11093), question 3.

use such vertical integration as a strategy to exclude competitors from the trait development market.

(1079) Monsanto has already used its financial resources to acquire seed companies in the US. The strategy of Monsanto in this respect is described in the following terms by DuPont: "*Monsanto established its [CONFIDENTIAL] position in the seed industry by purchasing seed companies such as Holden's, Asgrow and Dekalb. Thereby, they acquired large germplasm pools and market access.*"[777]

(1080) Monsanto [details of Monsanto's business strategy]. As illustrated in Figure 137 Monsanto [quote from internal document]. To the extent that an integrated trait and seed business provides a competitive advantage to firms that are in a position to deploy their traits innovation in their own seeds (as presented in recitals (1071) and (1072)), the fact that Monsanto acquires seed companies does not allow their potential trait competitors to acquire seed companies and develop such an integrated business. [Details of Monsanto's business strategy; quote from internal document].[778]

Figure 137 – Monsanto's internal presentation on strategy vis-à-vis trait competitors

[…]

Source: MI 000272752, ID6438-6860, slide 5 (red circle annotation added).

(1081) In sum, integrated and large R&D players benefit from an advantage over new entrants.

(F) Stacking restrictions are key in keeping smaller seed companies and independent trait developers from exercising competitive pressure

(1082) [Internal assessment of competitive relationships][779].

(1083) In the Notifying Party's response to the Statement of Objections, paragraphs 221, the Notifying Party argues that concerns over stack restrictions are unfounded because market participants, including Bayer and Monsanto, routinely cross-license traits for stacking purposes and RoundupReady is only one of the several options for growers.

(1084) The Commission acknowledges that RoundupReady and other traits are cross-licensed for stacking purposes, however, this is done at the discretion of the trait owner. As described in recital (1287), actors in the industry and in particular Monsanto who controls access to the RR trait and trademark, restrict stacking rights by licensees. This strategy of Monsanto is stated by Monsanto in Figure 138 [quote from internal document].

Figure 138 – Monsanto's trait licensing strategy

[…]

Source: MI13133.00001, ID005442-000396, slide 9 (yellow highlight added).

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777 Agreed non-confidential minutes of a call with DuPont, 14 September 2017 (ID7405).

778 See for example: Yannopoulos Peter (2011), "Defensive and Offensive Strategies for Market Success" in *International Journal of Business and Social Science*. A defensive business strategy is described in the following terms: "*[b]ecause of ongoing rivalry, established firms need to engage in defensive strategies to fend off the various challengers. The primary purpose of defensive strategy is to make a possible attack unattractive and discourage potential challengers […]*".

779 BI-EDISC-0170078, ID5608-32464, slides 158-209.

(1085) Figure 139 [details of Monsanto's business strategy].

Figure 139 – Monsanto's stacking licensing strategy

[…]

Source: MI 000272752, ID6438-6860, slide 17.

(1086) DuPont further referred to the importance of the ownership of regulatory data related to the traits which may be stacked. According to DuPont, "*[w]hen it comes to deregulating new trait stacks, access to regulatory data packages are needed to gain regulatory approvals.*"[780]

(1087) In conclusion, the Commission's investigation shows that, competitive constraints exercised by non-integrated trait developers which do not own platform stacks is limited and does not pose a threat to the integrated trait developers. The integrated trait developers who can bring trait innovations to the market are the following: Monsanto, Bayer, DowDuPont and ChemChina-Syngenta.

1.7.3.2. Innovation spaces are narrower than the industry and the Transaction brings together two key competing innovators with little alternatives

(1088) The assessment of innovation competition has to take place bearing in mind the spaces in which such competition takes place. R&D companies compete in these spaces through their lines of research, which generate early pipeline products.

(1089) When considering both the downstream product markets and the upstream technology markets, innovation should not be understood as a market in its own right, but as an input activity for both the upstream technology markets and the downstream technology markets. While innovation eventually results in products which compete on these markets, the assessment of innovation competition cannot be limited to the assessment of neither the relevant downstream product markets, nor of the relevant technology markets.

(1090) However, the R&D players do not innovate for all the product markets composing the entire industry at the same time. They also do not innovate randomly without targeting specific spaces within that industry. When setting up their innovation capabilities and conducting their research they target specific innovation spaces which are upstream of lucrative product markets and product markets which are of strategic interest for the R&D player in question. In order to assess innovation competition, it is thus important to consider the spaces in which this innovation competition occurs.[781]

(1091) The Commission has identified, in Section X.1.7.3.1, the companies which, at the level of innovation spaces, have the assets and capabilities to discover and develop new *traits* which, as a result of the R&D effort, can be brought to the market.

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780 Agreed non-confidential minutes of a call with DuPont, 14 September 2017 (ID7405).

781 The term "innovation spaces" refers to spaces in which innovation competition occurs (be it in the crop protection sector or in the traits sector). The R&D players do not innovate for all the product markets composing a sector at the same time. They also do not innovate randomly without targeting specific spaces within that sector. When setting up their innovation capabilities and conducting their research R&D players have specific research targets. At early research stages in crop protection, these targets consist of a specific target pest (or pest group) and crops. For traits, instead, these targets consists of a specific functionality (e.g. weed control) and, depending on how advanced is the research, a crop. See Section V.3.3.

(1092) For the reasons stated above, the Commission considers that the Transaction is likely to lower innovation in the trait market by bringing together two close competitors in a market with high barriers to entry.

1.7.4. The Parties are leading innovators

1.7.4.1. The Parties have been successful innovators in the past

(1093) The Parties' past innovations in HT and IR traits have led to product competition today. As discussed in Section X.1.6 on trait competition, the Parties are currently important and close competitors in several trait markets. This is the result of past innovation efforts by both Parties, focusing on similar function-crop targets for traits.

1.7.4.2. Monsanto traits are the industry standard and Monsanto is the contractual counterparty for the licensing of key stack products in the industry

(1094) As described in Section X.1.8, Monsanto has a dominant position in key broad acre crop traits. Monsanto's importance in the industry is also reflected in its role of shaping the industry standards as a whole and thereby also the incentives to innovate that correspond to Monsanto's choices and preferences for the industry. The role of Monsanto in shaping the industry as a whole is illustrated in the Figure 140, reproducing Monsanto's internal considerations on the trait industry in Latin America. Monsanto indicated that [details of Monsanto's business strategy; quote from internal document].

Figure 140 – Monsanto's presentation on company's trait strategy in Latin America

[…]

Source: MI 000272752, ID6438-6860, slide 20.

(1095) The special position of Monsanto is acknowledged by other players. For example, according to DuPont, "*Monsanto's combination of traits and germplasm is de facto the industry standard.*"[782]

1.7.4.3. Importance of Bayer as a particularly active, successful and independent innovator

(1096) In the Article 6(1)(c) Decision and in the Statement of Objections, the Commission has observed that Bayer has been leading R&D efforts in the seed and trait industry putting in a different position than other competitors in the innovation space.

(1097) The R&D information available to market participants on the R&D efforts of their competitors does not allow a granularity at trait level. Trait R&D is publicly reported in aggregation with R&D expenses in seeds. Although Bayer is currently deriving most of its revenues from crop protection products, the company has consistently invested above average industry levels into the seed business, including trait development. [Details of Bayer's expenditure], which is significantly more than Monsanto, DuPont, ChemChina-Syngenta and BASF, as illustrated by Figure 141.

Figure 141 – [Internal assessment of competitive relationships]

[…]

Source: BI 02467, [internal document], ID1402-863, slide 7.

(1098) In an internal presentation of fall 2015 Monsanto indicated as the heading of a slide: [quote from internal document].[783]

[782] Agreed non-confidential minutes of a call with DuPont, 14 September 2017 (ID7405), point 36.

(1099) The Parties argue that Bayer would not be uniquely positioned. The Parties indicated that in their view […][784]. This seems incorrect, as Bayer holds a large market share in soy traits. The Commission has further presented that Bayer has obtained significant commercial and strategic results and paved the way for better positioning itself in the market for the years to come. The Parties seem to confirm that Bayer has achieved significant success with its R&D efforts. They indicated in Parties' response to the Article 6(1)(c) Decision that such results were achieved as a consequence of careful strategic planning and investment rather than a unique position versus competitors.[785] The Parties confirm Bayer's successful past commercial and innovation strategies that led to its current relatively favourable position in terms of successful innovation.

(1100) The Commission considers that in view of the successful past innovation efforts of Bayer which resulted in its position today as a leading innovator in traits, the Transaction is likely to result in a loss of innovation by eliminating an important competitor.

1.7.4.4. Cross-crop capabilities represent a large portion of the overall innovation effort of the Parties and contribute value to the trait business

(1101) Cross crop trait development is contributing to the success of crop specific trait development projects.

(1102) [Details of Bayer's budgeting strategy; quote from internal document].

Figure 142 – Cross crop trait projects of Bayer at Gent, as listed for 2012 budget

[…]

Source: BI-EDISC-0534060, ID5609-29776.

Figure 143 – Cross crop trait projects of Bayer at Gent in the framework of external collaborations, as listed for 2012 budget

[…]

Source: BI-EDISC-0534060, ID5609-29776.

(1103) [Details of Bayer's budgeting strategy][786,787].

(1104) As indicated in recital (1016) many projects at the discovery stage are not crop specific. Further research targets can be set for more than one crop. [Pipeline projects]. The possibility of deploying the outcomes of research projects in different crops shows the benefits that the Parties derive from the importance and scale of their innovation activities.

Figure 144 – Bayer's analysis of the Lepidoptera research target

[…]

Source: BI-EDISC-1011553, ID5426-15287, slide 9 (red circle annotation added).

(1105) From a trait research process point of view, in the case of Bayer, [details of Bayer's business strategy for pipeline projects].[788,789]

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783 MI 08985 [internal document], ID3807-17, slide 4.

784 Parties' response to the Article 6(1)(c) Decision, paragraph 48.

785 Parties' response to the Article 6(1)(c) Decision, paragraph 49.

786 Parties' response to the Commission's request for information RFI 36, [Annex 36.1].

787 Parties' response to the Commission's request for information RFI 36, [Annex 36.2].

(1106) [Details of Bayer's business strategy] (see Section X.1.7.4.4).

(1107) [Details of Bayer's business strategy][790].

(1108) Evidence in recitals (1101) to (1107) demonstrates that the cross-crop capabilities represent a large portion of the overall innovation effort.

1.7.4.5. The Commission's patent data shows that the Parties are important innovators for several innovation spaces and for cross-crop inventions in weed control and insect control

(1109) The purpose of the patent analysis is to measure the technological strengths of the firms involved in R&D for traits. Based on the quality of past innovations, this analysis allows to identify the innovation activities and capabilities of the Parties and their competitors.

(1110) It is well established in the economic literature that citation-based indexes are informative on the technological importance (or quality) of patents. Such indexes are based on counting the number of times each patent has been cited by subsequent patents (so called forward-citations) to compute a citation-based index as a measure of innovative output. The Commission reports in this Decision patent shares based on the methodology that it considers to be the most reliable forward-citation analysis in this case. Annex 1 to this Decision provides a detailed analysis of the relevant patent data.

(1111) The patent data includes all patents relevant for traits in broad acre crops, for the Big5 companies, namely Bayer (BAY), Monsanto (MNS), ChemChina-Syngenta (CCSYN), DowDuPont (DDP), and BASF. This data is used internally by Bayer in normal course of business.[791,792] The Commission has further extended this patent dataset by including all trait-related patents belonging to other companies different from the Big5 companies (see Annex 1). The time period covered by the analysis concerns 2007-2016, with a few patents for 2005 and 2006.

(1112) The data submitted by Bayer classifies each patent according to two dimensions: (i) the crop dimension (cross-crop, corn, wheat, cotton, soy, rice, etc), and (ii) the technology dimension (weed control, insect control, crop efficiency, enabling technologies, etc).

(1113) The analysis of patent data is conducted at the level of the crop and technology combination (i.e. cotton-weed control), which is closely related to the innovation spaces as defined in Section X.1.7.5.3-1.7.5.7. The crop/technology combination is also closely related to the research targets defined by the Parties internally (see Section X.1.7.5.1), where research targets for traits include for example soybean-HT

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788 BI 08677, ID5996-17, page 5.

789 See for example, BI 08670, [internal document], ID5996-10, tab [internal document], or BCS-MON-04381311 [details of Bayer's business strategy for pipeline projects].

790 ID8432, Tab [internal document].

791 See for example BI 01773, [internal document], ID451-395, BI 02896 (ID1836) to BI 02910 (ID1850) on [internal document]. [Details of Monsanto's business strategy].

792 As regards BASF, the Commission considers that it is not a sufficiently integrated player to compete on the same level as other integrated players in trait innovation, notably because of the lack of germplasm and the absence of its own seed business (see Section X.1.7.3.1(C)).

system GM, cotton-HT system GM.[793,794] This methodology allows in particular to assess the innovative strengths of Bayer and Monsanto at the level of the crop and technology combination.

(1114) The Parties made two economic submissions on patents for traits:

(a) "Patent analysis in broad acre seeds and traits", dated 22 November 2017.[795]

(b) "Response to the SO's patent analysis", dated 9 January 2018.[796]

(1115) Section X.1.7.4.5(A) provides a summary of the Commission's assessment of the main topics raised by the Parties in their economic submissions on patents for traits.[797] The Commission notes that in the response to the Statement of Objections, the Parties did not comment on several parts of the Commission's methodology to analyse patents data (see Annex 1 for further details). Section X.1.7.4.5(B) reports the results of the Commission's patent analysis.

(A) Assessment of the Parties' comments made in their economic submission on patents for traits

(A.i) Patent classification per crop and technology

(1116) In the response to the Statement of Objections, the Parties argue that doing the analysis at the crop and technology level is inconsistent with the Parties' internal documents. The Commission understands that the Parties consider that the crop and technology combinations would lead to too broad innovation spaces, with the risk of resulting in "artificial" overlaps while the Parties may be researching for very different traits or very different crops.

(1117) As regards HT traits in broad acres crops (i.e. HT traits in soy, cotton, corn, canola for example), the Parties argue that the internal document cited in footnote 793 relates to innovation in HT systems, and therefore is irrelevant for innovation in traits. However, the Commission notes that the same internal document mentions in particular research targets for traits (as well as for herbicides), for example HT traits in cotton and HT traits in Soybean. Therefore, the Commission considers that the internal document cited above in footnote 793 is consistent with carrying the patent analysis at the level of crops and technology for HT traits in broad acre crops (e.g. cotton-weed control, soy-weed control). Moreover, as discussed in Section XI.1.5, Bayer's innovations in HT traits and HT systems are closely related to each other, [details of Bayer's business strategy].

(1118) The Parties also argue that HT traits developed for a similar crop but with different modes of actions should be considered as belonging to separate innovation spaces. According to the Parties, the analysis of patent data for HT traits should have been carried out at the sub-technology level (for example, traits for the HPPD class,

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793 BI 00783 [internal document], ID451-876.

794 Weed management GM systems consists in the combination of a (non-selective) herbicide and crops tolerant to this herbicide by way of a herbicide-tolerant trait that is created through genetic modification ("GM Systems").

795 Parties' submission entitled "Patent analysis in broad acre seeds and traits", dated 22 November 2017 (ID8696-4).

796 Parties' response to the Statement of Objections, [Annex SO.2: "Response to the SO's patent analysis" dated 9 January 2018 (prepared by Compass Lexecon)], ID9955-83.

797 See Annex 1 to the Decision for a detailed assessment of the Parties' economic submissions on patents for traits.

Dicamba class, Glyphosate class, PPO class) instead of the technology level (HT trait overall). Given that Bayer has been mainly active in research related to [pipeline information] while the patent data indicates that Monsanto has been mainly active on research related to [pipeline information], the Parties consider that there is essentially no overlap for research in HT traits.

(1119) As discussed in the Statement of Objections and in Sections X.1.7.5.3-X.1.7.5.6 and XI.1.5.5.6 of the Decision, the Commission disagrees with the Parties since the qualitative evidence shows that, [pipeline information] (see also Annex 1 for further details).

(1120) Therefore, the Commission considers that in their economic submission on patents, the Parties define overlaps for research in HT traits on a too narrow level and their approach is therefore inconsistent with the qualitative evidence.

(1121) As regards IR traits for broad acre crops, the Parties argue that research targets should be defined at the level of the type of insect rather than IR traits overall, for example traits for Lepidoptera in Soy, Coleoptera in Soy, and Aphids in Soy.

(1122) The Commission first notes that a patent classification per type of insect (e.g. Lepidoptera, Aphids, etc) was not available in the initial patent classification provided by the Parties, nor in the revised classification provided in the response to the Statement of Objections.

(1123) Moreover, even if the innovation spaces may be narrower than insect control, the Commission nevertheless considers that a high patent share in IR traits is a reliable evidence to assess the technological strength of firms involved in research for IR traits.

(1124) Finally, the Commission did assess whether the Parties are close innovation competitors in IR traits (e.g. whether both parties are doing research in IR traits against "Lepidoptera" for similar crops). The Commission notes that the Parties did not comment on the evidence presented in the Statement of Objections supporting closeness between the Parties for innovation in IR traits, for example for Lepidoptera in soy, cotton and for cross-crops, with a limited number of alternatives available (see Sections X.1.7.5.3-X.1.7.5.6). Therefore, doing a patent share analysis at a narrower level (e.g. Lepidoptera IR traits for soy) would have likely led to higher combined patent shares than the one presented below at the more aggregated level of IR traits. Given that the Parties are close innovation competitors for similar type of IR traits (for example Lepidoptera traits), the Commission considers that the patent shares presented at the level of IR traits are conservative and do not result in "artificial" overlaps.

(1125) As regards traits for crop efficiency in broad acre crops, the Parties argue that research targets should be defined at a narrower level than crop efficiency overall, e.g. at the level of "crop efficiency / yield traits" or "crop efficiency / abiotic stress tolerance".

(1126) While research targets may be narrower than crop efficiency overall, the Commission still considers that a high patent share in crop efficiency traits is reliable evidence to assess the technological strength of firms involved in research for crop efficiency traits. Moroever, the Commission did not raise innovation concern for research in any crop efficiency traits. As a result, the Parties' comment on the appropriate granularity of the innovation spaces for crop efficiency traits is

immaterial for the Commission's conclusion that no innovation concerns are raised by the proposed Transaction in crop efficiency traits.

(A.ii) Active and inactive patents

(1127) The Commission's analysis carried out in the Statement of Objections includes both active and inactive patents. According to the Parties, inactive patents should be excluded from the analysis for two reasons: (i) inactive patents have no longer R&D activities associated with them, which suggests that the line of research is no longer actively pursued, and (ii) while the patents owned by the Big5 companies (namely, Bayer, BASF, DowDuPont, Monsanto, and ChemChina-Syngenta) include both active and inactive patents, inactive patents belonging to organisations other than the Big5 companies are excluded from the Commission's analysis.

(1128) In this respect, the Commission considers the following.

(1129) First, contrary to the claim of the Parties, the scope of the Commission's request for information RFI 70 to collect patent data for the non-Big5 companies was never restricted to only the active patents. Neither the Commission's request for information RFI 70 nor the subsequent written exchanges with the Parties mention that the request for information is limited to active patents only (see Annex 1 for further details). To the extent that the Parties did not provide a classification for some inactive patents of the non-Big5 companies, the Commission considers that it cannot be held accountable for this data limitation.

(1130) In addition, if it was the Parties' understanding that the Commission did not ask for the classification of inactive patents for the non-Big5 companies in the request for information RFI 70 (something that is contested by the Commission in recital (1129)), the Parties had the opportunity to raise this issue in their response, since the Commission asked explicitly the Parties to comment on the Commission's methodology.[798] However, in their response, the Parties' agreed with the Commission's methodology.

(1131) Second, while the Commission notes that there is a degree of uncertainty on whether all inactive patents are included for the non-Big5 companies, this issue does not apply for the Big5 companies. Therefore, the Commission considers that there is no reason why including inactive patents would lead to overestimate the patent share of Bayer compared to other Big5 companies.

(1132) Third, as regards inactive patents, the Commission considers that if an inactive patent corresponds to an innovation space where a company has still research activities, then the quality of this inactive patent can still be informative on the innovation strength of that company for that specific innovation space.

(1133) Fourth, the Commission also notes that in their economic submissions, the Parties consider nine patents of Bayer as inactive, while these patents are formally active in the data collected from PatentSight by the Commission and the Parties.[799] According to the Parties, the data collected from PatentSight are not correct for these nine patents. The Commission notes that while this specific issue can also apply to other firms, a similar data treatment was not possible based on the information collected

[798] Commission's request for information RFI 70, question 1.

[799] The Commission was granted access to the PatentSight web-interface to collect patent data (see Annex 1 for further details). https://www.patentsight.com/.

from PatentSight. Therefore, the Parties' approach for these nine patents creates a difference in the treatment of active patents between Bayer and the other companies, which can only result in underestimating the patent shares of Bayer when active patents are considered.

(1134) Last, the Commission notes that excluding inactive patents may be justified if they are related to some specific innovation spaces where a company has reduced its traits patent portfolio due to a restructuring plan of its research activities. While its inactive patents could be good quality patents, these patents would be less relevant for the assessment of the current innovation strength of that company in those specific innovation spaces. However, the Commission is not aware of any restructuring plans of Bayer's or Monsanto's research activities that would have led to a decision to let certain patent families lapse. Moreover, patent shares when inactive patents are excluded are also reported.

(1135) In its analysis, the Commission will report patent shares when all patents are included (i.e. active and inactive patents) and patent shares when inactive patents are excluded (i.e. including only active patents). The Commission notes that patent shares when all patents are included (i.e. active and inactive patents) are generally similar to patent shares when inactive patents are excluded (i.e. including only active patents). The only difference is for canola-weed control, where the patent share of Bayer is decreasing when inactive patents are excluded. However, given that the patent share of Monsanto is increasing, the combined patent share of the merged entity is actually even higher than when inactive patents are included.

(A.iii) Changes to the patent classification made by the Parties during the investigation

(1136) According to the Parties, the Commission's analysis carried out in the Statement of Objections relies on an incorrect classification of patents by crop and technology. The Commission notes that the patent classification has been modified by the Parties during the merger investigation.

(1137) The Statement of Objections relied on classifications of patents provided: (i) in the Parties' response to the Commission's Request for Information RFI 19 for the Big5 companies, and (ii) in the Parties' response to the Commission's Request for Information RFI 70 for companies other than the Big5 companies.

(1138) In the Article 6(1)(c) Decision, the Commission carried out a patent analysis using the patent classification provided by the Parties in response to the Commission's request for information RFI 19. The Commission notes that in the response to the Article 6(1)(c) Decision the Parties did not make any comment on the incorrectness of the patent classification.

(1139) The Parties modified the patent classification a first time in their economic submission dated 22 November 2017, and a second time in the response to the Statement of Objections (see Annex 1 for further details). The patent classification used by the Parties in the response to the Statement of Objections was also provided to the Commission in response to the request for information RFI 113. In addition, for each patent, the Commission has also asked to the Parties to indicate if the patent

was considered active or inactive. This analysis was included in the second Letter of Facts sent on 31 January 2018.[800]

(1140) As discussed in the second Letter of Facts, the Commission disagrees in particular with the re-classification of a specific patent owned by Monsanto.[801] While the Parties initially categorised this patent as related to weed control in Canola[802], in the response to the Statement of Objections the Parties reclassified this patent as related to weed control in Brassica and claiming, consequently, that this innovation of Monsanto would not generate any overlap with Bayer's innovations for weed control in Canola. However, the evidence presented by the Commission in the second Letter of Facts shows that this patent is related to a specific event of Monsanto for weed control in Canola (see Annex 1 for further details). Moreover, the Commission notes that this patent was initially classified for weed control in canola in the economic submission of the Parties made on 22 November 2017.

(1141) In the second Letter of Facts, the Commission reports its analysis of patent shares based on the classification of patents provided by the Parties in response to the Commission's request for information RFI 113 (except for the abovementioned specific patent of Monsanto related to weed control in Canola, which the Commission considers as being relevant for both Brassica and Canola).

(1142) In the response to the second Letter of facts, the Parties mention that since this patent corresponds to an invention that can be applied not only to Canola (which is referred as brassica napus) but also to other species of brassica (like brassica juncea, brassica rapa), this patent should be classified under the category "Brassica" and not "Canola". However, the Commission considers that this argument does not justify re-classifying this specific patent only in "Brassica", since this patent is also relevant for "Canola" (as recognised by the Parties in the response to the second Letter of Facts, see also recital (1140)).

(1143) In order to take into account the Parties' comments that the Commission used in the Statement of Objections an incomplete and incorrect dataset for patent classification, the Commission reports also patent shares based on the patent classification used by the Parties in the response to the Statement of Objections (and also provided in the Parties' response to the Commission's Request for Information RFI 113). This corresponds to the scenarios "RSO+all patents" and "RSO+active patents". The only exception is one specific patent of Monsanto (with the PatentSight ID "44462099"), which the Parties does not consider as being relevant for Canola in its patent re-classification done in the Response to the Statement of Objections, while the Commission found specific evidence showing that this patent is related to an event for weed control in Canola and Brassica (see recital (1140)).

(A.iv) Control for age

(1144) In the analysis carried out in the Statement of Objections, the Commission has also taken into account the fact that older patents are likely to receive a bigger number of citations than patents that were published more recently. Therefore, if a firm has been

800 The data and codes used by the Commission were also provided to the Parties as part of the access to file procedure (ID10533).

801 This patent is referenced under the PatentSight identifier "44462099", corresponding to the patent family "EP2575431.A1".

802 See the Parties' response to the Commission's request for information RFI 19 and the economic submission "Patent analysis in broad acre seeds and traits" dated 22 November 2017 (ID8696-4).

active in research for many years, its patents are likely to receive a higher number of citations than the patents of a firm that has recently increased its research activity.

(1145) In order to take into account this effect, the Commission reported patent shares only for patents published after 2011. This approach was proposed by the Parties in their economic submission.[803] The Commission notes that this methodology may not encompass innovation spaces where: (i) no patents have been published after 2011, while these innovation spaces may still be research targets for the Parties, or (ii) the Parties' activities do not overlap in some innovation spaces because one of the two companies has not published patents after 2011, while this innovation space is still a research target for both Parties.

(1146) In the Statement of Objections, the Commission's analysis focused on patents published after 2007, with a sensitivity analysis for patents published after 2011 to control for the effect of age.[804] In the response to the Statement of Objections, the Parties argue that only the patents published after 2011 are relevant for the assessment of the proposed Transaction, since patents published before 2011 results in overlaps in areas where the Parties are no longer actively researching.

(1147) The Commission disagrees with the Parties for the following reasons.

(1148) First, as regards the areas that are still active research targets for the Parties, the Commission considers that the quality of the innovations discovered by all companies before 2011 provides reliable information to assess the innovation strength of all companies involved in research for these innovation spaces.

(1149) Second, focusing only on patents published after 2011 would remove some innovation spaces where the Parties overlap with current innovation activities. For example, according to the Parties' methodology, not including patents published before 2011 would lead to the absence of overlaps between the merging parties in cotton-insect control. However, this innovation space is still an active research target for the Parties, and the Parties are close innovation competitors with their current lines of research, with a lack of alternatives in that specific innovation space (see Section X.1.7.5.4).

(1150) Third, it is standard practice in the economic literature to consider a long enough time horizon in order to have a robust analysis (the higher is the time horizon, the higher is the number of citations considered), and to control for the age effect in a second stage.[805]

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803 Parties' submission entitled "Patent analysis in broad acre seeds and traits", dated 22 November 2017, ID8696-4, page 13.

804 This means that older patents automatically received more citations than more recent patents. In order to check the sensitivity if its analysis, the Commission also reports patent shares for patents published after 2011. This year-threshold was actually suggested by the Notifying Party in its economic submission dated 22 November 2017, ID8696-4.

805 For example, in the economic literature that is cited in Annex 1, a long time horizon is used in the patent analyses: Tratjenberg (1990), "A penny for your quotes: patent citations and the value of innovations", The Rand Journal of Economics, considers patents published from 1971 to 1986. Hall, Jaffe, and Tratjenberg (2005), "Market value and patent citations", RAND Journal of Economics, consider patents published from 1963 to 1995. Aghion, Bloom, Blundell, Griffith, Howitt (2005), "Competition and innovation: an inverted U-relationship", The quarterly Journal of Economics, consider patents published from 1973 to 1994. Bloom, Schankerman, Van Reenen (2013), "Identifying technology spillovers and product market rivalry", Econometrica, consider a sample of firms who

(1151) Fourth, while the Commission agrees with the Parties that patents published before 2011 can lead to overlaps in areas where the Parties are no longer active, this methodological issue is already taken into account in the Commission's assessment. For example, even if merged entity represents a significant patent share in cotton-enabling technology or canola-quality traits on the basis of their past innovations, the Commission does not raise innovation concerns in cotton-enabling technology or canola-quality traits because these two innovation spaces have not been recently research targets for both Bayer and Monsanto.

(1152) On the basis of the above, the Commission disagrees with the Parties' views that only patents published after 2011 should be considered for the assessment of the proposed Transaction. Instead, the Commission considers its approach to take patents from 2007 onward more reliable to assess the innovation strength of companies involved in research for traits. The Commission considers patent shares for patents published after 2011 only as a sensitivity analysis to control for the effect of age.

(B) Patent shares reported by the Commission

(1153) In order to take into account the Comments made by the Parties in the response to the Statement of Objections, the Commission reports patent shares based on three different classifications:

(a) Patent shares based on the patent classification used by the Commission in the Statement of Objections. This scenario is called "***SO-analysis***" hereafter;

(b) Patent shares based on the patent classification used by the Parties in the response to the Statement of Objections (and also provided in response to the Commission' Request for Information 113), with the exception of one patent for Monsanto that the Commission considers relevant for weed control in Canola, and considering all patents (i.e. active and inactive patents).[806] This scenario is called "***RSO+all patents***" hereafter;

(c) Patent shares based on the patent classification used by the Parties in the response to the Statement of Objections (and also provided by the Parties in response to the Commission' Request for Information 113), with the exception of one patent for Monsanto that the Commission considers relevant for weed control in Canola, and considering only active patents (i.e. excluding inactive patents).[807] This scenario is called "***RSO+act. patents***" hereafter.

(1154) First, the analysis of patent data indicates that the Parties are important innovators for several innovation spaces, where either Bayer or Monsanto have a significant patent share (close to [40-50]%). These innovation spaces are:

(a) For Bayer: considering the patent classification used in the Statement of Objections, canola-crop efficiency ([40-50]% patent share), cotton-crop efficiency ([40-50]%), cotton-enabling technologies ([90-100]%), cotton-insect control ([70-80]%), cotton-weed control ([40-50]%), rice-crop efficiency ([60-70]%), rice-insect control ([90-100]%), sugarbeet-weed

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patented at least once between 1980 and 2001. A long time horizon was also used in the Case M.7932 – Dow/DuPont (2017), and the age effect was separately controlled for.

806 See recitals (1139)-(1143) for a description of this specific patent of Monsanto.

807 See recitals (1139)-(1143) for a description of this specific patent of Monsanto.

control ([90-100]%);[808] considering the sample of active patents and the patent classification used by the Parties in the response to the Statement of Objections, canola-crop efficiency ([50-60]% patent share), cotton-crop efficiency ([40-50]%), cotton-enabling technologies ([90-100]%), cotton-insect control ([70-80]%), cotton-quality traits ([30-40]%), cotton-weed control ([40-50]%), rice-insect control ([90-100]%), sugarbeet-weed control ([90-100]%);[809]

(b) For Monsanto: considering the patent classification used in the Statement of Objections, corn-breeding ([90-100]% patent share), corn-crop efficiency ([40-50]%), corn-germplasm ([90-100]%), corn-disease control ([70-80]%), corn-other traits ([90-100]%), cross crops-germplasm ([40-50]%), cross crops-weed control ([40-50]%), rice-weed control ([90-100]%), soybean-breeding ([90-100]%), soybean-crop efficiency ([90-100]%), soybean-breeding ([90-100]%), soybean-crop efficiency ([90-100]%); soybean-disease control ([40-50]%), soybean-germplasm ([90-100]%), soybean-other traits ([90-100]%), soybean-insect control ([50-60]%), soybean-quality traits ([60-70]%), soybean-weed control ([60-70]%);[810] considering the sample of active patents and the patent classification used by the Parties in the response to the Statement of Objections, canola-weed control ([90-100]%), corn-crop efficiency ([40-50]%), corn-breeding/germplasm ([90-100]%), corn-crop efficiency ([40-50]%), corn-disease control ([60-70]%), corn-insect control ([30-40]%), corn-other traits ([90-100]%), cross crops-weed control ([40-50]%), rice-weed control ([90-100]%), soybean-breeding/germplasm ([90-100]%), soybean-crop efficiency ([90-100]%), soybean-disease control ([60-70]%), soybean-other traits ([90-100]%), soybean-insect control ([70-80]%), soybean-quality traits ([60-70]%), soybean-weed control ([60-70]%).[811]

(1155) Some of these innovation spaces are not further discussed because the Parties' patent portfolios do not overlap in term of research activities. Nevertheless, the Commission considers that the high patent shares of either Bayer or Monsanto in those spaces show the overall importance of the Parties as innovators in traits.

(1156) Second, the Commission notes that Bayer, in its own internal classification, considers that a significant number of patents are "not crop specific": [70-80]% of the patents (i.e. including Bayer's patents and patents of the competitors) are

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808 For patents published after 2011, Bayer has patent shares above [40-50]% in the following innovation spaces: canola-crop efficiency ([70-80]% patent share), canola-quality traits ([40-50]%), cotton-crop efficiency ([40-50]%), cotton-enabling technologies ([80-90]%), cotton-quality traits ([90-100]%), cotton-weed control ([40-50]%), rice-insect control ([90-100]%), sugarbeet-weed control ([90-100]%).

809 For patents published after 2011, the corresponding patent shares of Bayer are: canola-crop efficiency ([60-70]% patent share), cotton-crop efficiency ([40-50]%), cotton-enabling technologies ([80-90]%), cotton-quality traits ([90-100]%), cotton-weed control ([40-50]%), rice-insect control ([90-100]%), sugarbeet-weed control ([90-100]%).

810 For patents published after 2011, Monsanto has patent shares above [40-50]% in the following innovation spaces: canola-weed control ([60-70]%), corn-breeding ([90-100]%), corn-germplasm ([90-100]%), cotton-weed control ([40-50]%), soybean-crop efficiency ([90-100]%), soybean-weed control ([70-80]%).

811 For patents published after 2011, the corresponding patent shares of Monsanto are: canola-weed control ([80-90]%), corn-crop efficiency ([30-40]%), corn-insect control ([40-50]%), soybean-crop efficiency ([90-100]%), soybean-weed control ([70-80]%).

classified as "not crop specific". When the Commission asked Bayer to define this category, Bayer explained that "not crop specific" refers to those inventions that could be applied to a multitude of crops or plant species (e.g. an invention disclosing a new herbicide tolerance gene and its use could be applied to most if not all agriculturally important plant species).[812]

(1157) In its analysis, the Commission found that Bayer and Monsanto are both important innovators in the cross-crop category, in particular for weed control (HT traits) and pest control (IR traits). Table 137 reports the results of this analysis.

(1158) As regard IR inventions which are cross-crops, the Commission notes that the Big5 companies represent a [90-100]% patent share, depending on the exact patent classification used. In other words, it appears that no firms other than the Big5 have made a significant innovation in this innovation space since the last 10 years. The Commission notes that Bayer and Monsanto are respectively the number 2 and 3 innovators for insect control, leading to a significant combined share at [40-50]% (Bayer: [20-30]%, Monsanto: [20-30]%), in a concentrated space (HHI ranging [3000-3500]), and with a significant further increase in concentration due to the proposed transaction (Delta HHI ranging [1000-1200]).

(1159) As regard HT inventions which are cross-crops, the Commission notes that the Big5 companies represent a [90-100]% patent share, depending on the exact patent classification used. In other words, again it appears that no firms other than the Big5 have made a significant innovation in this innovation space since the last 10 years. The Commission notes that Monsanto is the number 1 innovator for weed control, Bayer is the number 3 innovator, leading to a significant combined share at [50-60]% (Bayer: [10-20]%, Monsanto: [40-50]%), in a concentrated space (HHI ranging [4000-4500]), and with a significant increase in concentration due to the proposed transaction (Delta HHI ranging [1100-1300]).

(1160) In order to take into account the age effect, the Commission has calculated patent shares only for patents published after 2011. This approach was proposed by the Parties in their economic submission dated 22 November 2017.[813] The Commission notes that:

(a) In weed control, the Parties are still important innovators (Bayer is the number 1 with a patent share of [30-40]%; Monsanto is the number 2 at the same level as DowDuPont, with a patent share of [20-30]%), and represent a significant combined patent share of [50-60]%, in a concentrated space with high HHI (ranging [3000-3500]), with a significant increase in concentration due to the proposed transaction (Delta HHI ranging [1200-1300]).

(b) In insect control, while the combined patent share of the Parties decreases for patents published after 2011 ([20-30]%, while it was [40-50]% for the full period), the Commission considers that this patent share is still significant in light of the following facts: the concentration in this innovation space is high with an HHI ranging [4000-4500], with a significant increase in concentration due to the proposed Transaction (with a Delta HHI ranging [400-500]), Bayer is the number 2 innovator and Monsanto is the number 3 innovator. Moreover,

812 Parties' response to the Commission's request for information RFI 19, question 8.c.

813 Parties' submission entitled "Patent analysis in broad acre seeds and traits", page 13, dated 22 November 2017 (ID8696-4).

no other significant innovator appears outside the Big5 companies (which represent an overall patent share of [90-100]%).

(1161) On the basis of the above, the Commission's analysis of patent data shows that the Parties are both important innovators for cross-crop inventions related to weed control (HT traits) and insect control (IR traits), leading to high combined patent shares, in concentrated innovation spaces, with a significant increase in concentration due to the proposed Transaction.

Table 137 – Patent shares for the innovation spaces cross-crop/weed control and cross-crop/insect control

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHHI
Full period												
Cross-crops	Insect Control	SO	[20-30]%	[20-30]%	[40-50]%	[5-10]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3000-3500]	[1000-1100]
		RSO+all patents	[20-30]%	[20-30]%	[40-50]%	[5-10]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3000-3500]	[1000-1100]
		RSO+act. patents	[20-30]%	[20-30]%	[40-50]%	[0-5]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3000-3500]	[1100-1200]
Cross-crops	Weed Control	SO	[10-20]%	[40-50]%	[50-60]%	[5-10]%	[5-10]%	[20-30]%	[90-100]%	[5-10]%	[4000-4500]	[1200-1300]
		RSO+all patents	[10-20]%	[40-50]%	[50-60]%	[5-10]%	[5-10]%	[20-30]%	[90-100]%	[5-10]%	[4000-4500]	[1200-1300]
		RSO+act. patents	[10-20]%	[40-50]%	[50-60]%	[5-10]%	[5-10]%	[20-30]%	[90-100]%	[0-5]%	[4000-4500]	[1100-1200]
Patents published after 2011												
Cross-crops	Insect Control	SO	[10-20]%	[10-20]%	[20-30]%	[0-5]%	[5-10]%	[50-60]%	[90-100]%	[0-5]%	[4000-4500]	[400-500]
		RSO+all patents	[10-20]%	[10-20]%	[20-30]%	[0-5]%	[5-10]%	[50-60]%	[90-100]%	[0-5]%	[4000-4500]	[400-500]
		RSO+act. patents	[10-20]%	[10-20]%	[30-40]%		[5-10]%	[50-60]%	[90-100]%	[0-5]%	[4000-4500]	[400-500]
Cross-crops	Weed Control	SO	[30-40]%	[20-30]%	[50-60]%	[10-20]%	[5-10]%	[20-30]%	[90-100%]	[5-10]%	[3000-3500]	[1200-1300]
		RSO+all patents	[30-40]%	[20-30]%	[50-60]%	[10-20]%	[5-10]%	[20-30]%	[90-100]%	[5-10]%	[3000-3500]	[1200-1300]
		RSO+act. patents	[30-40]%	[20-30]%	[50-60]%	[10-20]%	[5-10]%	[20-30]%	[90-100]%	[5-10]%	[3000-3500]	[1200-1300]

Source: Commission's calculation.

1.7.4.6. Conclusion

(1162) The Commission concludes that the Parties are leaders in innovation in traits since: (i) Monsanto has a dominant position in traits in key broad acre crops and shapes the industry standards; (ii) Bayer is a particularly active, successful and independent innovator in several innovation spaces; (iii) the Parties benefit from significant cross-crop capabilities; and (iv) the Parties are both important innovators in cross-crop research. This is also reflected in quantitative metrics to measure innovation capabilities at a cross-crop level, namely patent shares, where Bayer and Monsanto are important innovators in several innovators spaces, and both are important innovators for the innovation spaces on weed control and insect control for cross-crops.

(1163) Therefore, the Commission considers that the Transaction brings together two important innovation competitors. This is expected to be a factor which would contribute to significantly reduce innovation competition post-Transaction.

1.7.5. The Parties are close competitors and the Transaction will lead to a loss of important innovation competition in several important innovation spaces

(1164) In line with paragraph 28 of the Horizontal Merger Guidelines, the higher the substitutability between the Parties' products, the more likely it is that the Parties will reduce innovation post-Transaction.

(1165) The extent to which the Parties exert competitive pressure on each other on innovation competition can be captured by current product overlaps, overlaps in their lines of research and early pipeline products, as well as overlaps between the current products of one party and the lines of research and early pipeline products of the other party.

(1166) In this Section, concrete cases are discussed which show that the Parties have strongly innovated in the past to take away share from each other. Had the Parties been part of the same entity when the company had to decide on their advancement into development, they would have faced substantially weaker incentives to bring that innovation to market, leading to a loss in innovation.

(1167) Post-Transaction this type of innovation competition between the Parties would not be present anymore, which would likely result in harm for innovation. Therefore, the Commission also identifies in this Section the current lines of research and early pipeline products of the Parties which overlap and that could therefore risk being discontinued, delayed or redirected by the merged entity.

1.7.5.1. The Parties are important and close competitors in the discovery of traits with similar R&D targets and overlapping lines of research with few alternatives available especially for soybean and cotton, canola and wheat

(1168) In order of importance, Bayer classifies research priorities as "key priorities", "balanced", "opportunistic", and "don't".[814] Monsanto [detail of Monsanto's R&D prioritisation strategy].

(1169) Although Bayer and Monsanto use different means for prioritizing their early pipelines, it is possible to identify common priorities in certain areas. For example, in soybean, [detail of Parties' R&D prioritisation strategy][815,816].

(1170) Overall, by comparing research targets of Bayer and Monsanto, it appears that the Parties have significant overlaps in: (i) next generation HT trait to address the resistance to platform glyphosate and glufosinate traits; (ii) cotton herbicide and insect resistance; (iii) HT canola traits; (iv) cross-crop trait research projects and (v) non-GM HT traits in wheat.

1.7.5.2. The Commission's patent analysis shows that the Parties have a significant combined patent share for several important innovation spaces

(1171) As discussed in Section X.1.7.4.5 and in Annex 1 to this Decision, the Commission has analysed patent data related to traits in order to measure the technological

814 BI 00776, ID451-904, slide 8.
815 BI 00776, ID451-904, slide 4.
816 MI 02374, ID1455-7776, slide 10.

strengths of the firms involved in R&D for traits. The Commission reports in the Decision patent shares based on the methodology that it considers to be the most reliable in this case. Annex 1 to this Decision provides a detailed analysis of the relevant patent data.

(1172) The main comments of the Parties made in their economic submissions are addressed in Section X.1.7.4.5.[817] Annex 1 provides a detailed description of the Commission's analysis of patent data for traits.

(1173) As discussed in Section X.1.7.4.5 and in Annex 1, in order to take into account the Comments made by the Parties in the response to the Statement of Objections, the Commission reports patent shares based on three different classifications: "**SO-analysis**", "**RSO+all patents**", and "**RSO+act. patents**".

(1174) Table 138 reports the results of the forward-citation analysis that the Commission considers as being the most reliable (see Annex 1 for a detailed analysis). Table 138 reports only the innovation spaces related to broad acres crops where the Parties overlap in term of research activities, and where they represent a significant combined patent share in concentrated innovation spaces and with a significant increase in concentration due to the proposed Transaction. The Commission considers that a high level of the combined patent share, with a high level of HHI and Delta HHI, constitute important initial indicators of potential competition concerns.[818]

(1175) Based on the patent classification used by the Commission in the Statement of Objections, Table 138 shows that the Parties represent a significant combined patent share in several innovation spaces, which are concentrated post-Transaction (with relatively high post-Transaction HHIs) and with a significant increase in concentration due to the proposed Transaction (relatively high Delta HHIs):

(a) Canola-quality traits: with a significant patent share of [40-50]% (Bayer: [20-30]%, Monsanto: [20-30]%), a post-Transaction HHI of [3500-4000], and a Delta HHI of [1000-1100];

(b) Canola-weed control: with a significant patent share of [30-40]% (Bayer: [10-20]%, Monsanto: [20-30]%), a post-Transaction HHI of [5000-5500] and a Delta HHI of [600-700]; The Commission also notes that the only significant player in addition to the Parties is called Cibus;[819]

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817 See Annex 1 to the Decision for a detailed assessment of the Parties' economic submissions on patents for traits.

818 As mentioned in J. Baker and C. Shapiro, "*in the absence of entry and merger efficiencies, a merger that leads to a substantial increase in market concentration will tend to raise price, harm consumers, and reduce economic efficiency*", and "*the clear lesson from oligopoly theory is that market concentration matters*" (J. Baker and C. Shapiro (2008), "Reinvigorating Merger Enforcement that Has Declined as a result of Conservative Economic Analysis" in The Effect of Conservative Economic Analysis on U.S. Antitrust, page 252).

819 The Commission notes that for canola-weed control, the only competitor to the Parties with a significant patent share is Cibus, which according to the Parties own a patent for "Brassica". The Commission has taken a conservative approach by considering that Cibus was active on canola, but the Commission notes that in its own submission on patents ("Patent analysis in broad acre seeds and traits", submission by Compass Lexecon, received on 22 November 2017), the Parties consider "Brassica" as a different field than "Canola". Following the Parties' approach would lead to an even higher patent share for the Parties in canola/weed control.

(c) Cotton-enabling technologies: with a significant patent share of [90-100]% (Bayer: [90-100]%, Monsanto: [0-5]%), a post-Transaction HHI of [8500-9000], and a Delta HHI of [400-500];

(d) Cotton-insect control: with a significant patent share of [80-90]% (Bayer: [70-80]%, Monsanto: [10-20]%), a post-Transaction HHI of [70000-7500], and a Delta HHI of [1500-2000];

(e) Cotton-weed control: with a significant patent share of [70-80]% (Bayer: [40-50]%, Monsanto: [20-30]%), a post-Transaction of [6000-6500] and a Delta HHI of [2500-3000];

(f) Not crop specific-insect control: with a significant patent share of [40-50]% (Bayer: [20-30]%, Monsanto: [20-30]%), a post-Transaction HHI of [3000-3500], and a Delta HHI of [1000-1100]. As discussed in Annex 1, Monsanto owned jointly with Syngenta a patent on insect control. This patent is reallocated to Monsanto because to the extent that the proposed Transaction will affect the incentives of Monsanto to continue its own research (because of an overlap with a line of research of Bayer), it will also affect the incentives of Monsanto to continue its research in collaboration with other companies. In any event, allocating this patent both to Monsanto and Syngenta by splitting its value equally across the two companies would still lead to a significant patent share of [10-20]% for Monsanto, and therefore a significant combined patent share of [40-50]%.

(g) Not crop specific-weed control: with a significant patent share of [50-60]% (Bayer: [10-20]%, Monsanto: [40-50]%), a post-Transaction HHI of [4000-4500], and a Delta HHI of [1200-1300];

(h) Soybean-weed control: with a significant patent share of [70-80]% (Bayer: [0-5]%, Monsanto: [60-70]%), a post-Transaction HHI of [5000-5500], and a Delta HHI of [400-500].

(i) The Commission also notes that for these innovation spaces where the Parties represent a significant combined patent share, the Big5 companies also represent an overall patent share in the range of [80-100]%, indicating that there are no other important innovators outside the Big5 companies for those specific innovation spaces. The only exception is the innovation space "canola-weed control", but the Commission notes that there is only one additional innovator in the category "Other".[820]

(1176) The Commission notes that the patent classification used by the Parties in the response to the Statement of Objections leads to similar results (if not identical) for most of the innovation areas: cotton/enabling technologies, cotton/insect control, cotton/weed control, not crop-specific/insect control, not crop specific/weed control, and soybean/weed control.

[820] See footnote 819 for a description of the conservative approach used by the Commission.

(1177) There are two innovation areas where the classification used by the Parties in the response to the Statement of Objections leads to higher combined patent shares and higher concentration, "canola/quality traits" and "canola/weed control".

(a) As regards "canola/quality traits", the combined patent share is increasing from [40-50]% based on the classification used in the Statement of Objections to [50-60]% when active patents are considered and with the classification used by the Parties in the response to the Statement of Objections.

(b) As regards "canola/weed control", the combined patent share is increasing from [30-40]% in the Statement of Objections to [90-100]% based on the classification used by the Parties in the response to the Statement of Objections. The main change concerns the patent share of Bayer when active patents are considered, with a decrease from [10-20]% in the Statement of Objections to [5-10]% under the scenario "RSO+active patents". This is because one patent of Bayer that received a significant number of citations became inactive. On the other hand, the patent share of Monsanto is increasing from [20-30]% to [80-90]%, with DowDuPont being at the same level as Bayer. As discussed in recital (1174), the Commission considers that the high level of the combined patent share ([90-100]%), the high level of HHI ([8500-9000]) and Delta HHI ([1100-1200]), with DowDuPont being the only alternative to the Parties, constitute important initial indicators of potential competition concerns. Moreover, the Commission notes that the Parties did not contest in the response to the Statement of Objections evidence on closeness for the innovation efforts made by the Parties, with a lack of alternatives for that specific innovation space. Last, given that Bayer is still active in research for weed control in canola, the Commission considers that this inactive patent of Bayer is still relevant to assess the technological strength of Bayer in that specific innovation space (see Section X.1.7.4.5.A).

Table 138 – Patent shares (based on patents published from 2006 to 2016)

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHHI
Canola	Quality Traits	SO	[20-30]%	[20-30]%	[40-50]%	[0-5]%		[30-40]%	[80-90]%	[10-20]%	[3500-4000]	[1000-1100]
		RSO+all patents	[20-30]%	[30-40]%	[50-60]%			[40-50]%	[90-100]%	[0-5]%	[5000-5500]	[1400-1500]
		RSO+act. patents	[20-30]%	[30-40]%	[50-60]%			[40-50]%	[90-100]%	[0-5]%	[5000-5500]	[1500-2000]
Canola	Weed Control	SO	[10-20]%	[20-30]%	[30-40]%			[0-5]%	[30-40]%	[60-70]%	[5000-5500]	[600-700]
		RSO+all patents	[30-40]%	[60-70]%	[90-100]%			[5-10]%	[90-100]%		[9000-9500]	[4000-4500]
		RSO+act. patents	[5-10]%	[80-90]%	[90-100]%			[5-10]%	[90-100]%		[8500-9000]	[1100-1200]
Cotton	Enabling Tech.	SO	[90-100]%	[0-5]%	[90-100]%				[90-100]%	[5-10]%	[8500-9000]	[400-500]
		RSO+all patents	[90-100]%	[0-5]%	[90-100]%				[90-100]%	[5-10]%	[8500-9000]	[400-500]
		RSO+act. patents	[90-100]%	[0-5]%	[90-100]%				[90-100]%	[5-10]%	[8500-9000]	[400-500]
Cotton	Insect Control	SO	[70-80]%	[10-20]%	[80-90]%			[5-10]%	[80-90]%	[10-20]%	[7000-7500]	[1500-2000]
		RSO+all patents	[70-80]%	[10-20]%	[80-90]%			[5-10]%	[80-90]%	[10-20]%	[7000-7500]	[1500-2000]
		RSO+act. patents	[70-80]%	[10-20]%	[80-90]%			[5-10]%	[80-90]%	[10-20]%	[7000-7500]	[1500-2000]
Cotton	Weed Control	SO	[40-50]%	[20-30]%	[70-80]%			[0-5]%	[80-90]%	[10-20]%	[6000-6500]	[2500-3000]
		RSO+all patents	[40-50]%	[20-30]%	[70-80]%			[0-5]%	[80-90]%	[10-20]%	[6000-6500]	[2500-3000]
		RSO+act. patents	[40-50]%	[20-30]%	[70-80]%			[0-5]%	[80-90]%	[10-20]%	[6000-6500]	[2500-3000]
Not crop specific	Insect Control	SO	[20-30]%	[20-30]%	[40-50]%	[5-10]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3000-3500]	[1000-1100]
		RSO+all patents	[20-30]%	[20-30]%	[40-50]%	[5-10]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3000-3500]	[1000-1100]
		RSO+act. patents	[20-30]%	[20-30]%	[40-50]%	[0-5]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3000-3500]	[1100-1200]
Not crop specific	Weed Control	SO	[10-20]%	[40-50]%	[50-60]%	[5-10]%	[5-10]%	[20-30]%	[90-100]%	[5-10]%	[4000-4500]	[1200-1300]
		RSO+all patents	[10-20]%	[40-50]%	[50-60]%	[5-10]%	[5-10]%	[20-30]%	[90-100]%	[5-10]%	[4000-4500]	[1200-1300]
		RSO+act. patents	[10-20]%	[40-50]%	[50-60]%	[5-10]%	[5-10]%	[20-30]%	[90-100]	[0-5]%	[4000-4500]	[1100-1200]
Soybean	Weed Control	SO	[0-5]%	[60-70]%	[70-80]%		[0-5]%	[20-30]%	[90-100]	[0-5]%	[5000-5500]	[400-500]
		RSO+all patents	[0-5]%	[60-70]%	[70-80]%		[0-5]%	[20-30]%	[90-100]%	[0-5]%	[5000-5500]	[400-500]
		RSO+act. patents	[0-5]%	[60-70]%	[70-80]%		[0-5]%	[20-30]%	[90-100]%	[0-5]%	[5500-6000]	[500-600]

Source: Commission's calculation.

(1178) As discussed in X.1.7.4.5.A, in order to control for the age effect, the Commission also looked at patent shares for patents published after 2011. This year-threshold was actually suggested by the Parties in their economic submission on patents.[821] The Commission notes that this methodology may not encompass innovation spaces where (i) no patents have been published after 2011, while these innovation spaces may still be research targets for the Parties, or (ii) the Parties' activities do not overlap because one of the two companies has not published patents after 2011, even if the innovation space may still be a research target for both Parties.

(1179) Based on the patent classification used by the Commission in the Statement of Objections, Table 139 reports patent shares for the overlapping innovation spaces when only patents published after 2011 are considered.

(a) The combined patent shares of the Parties are significant in all innovation spaces discussed above in recital (1175) (and sometimes even higher than in Table 138, for example for cotton-weed control with a combined patent share of [90-100]%, canola-weed control with a combined patent share of [90-100]%).

(b) Not crop specific-weed control: while the combined patent share of the Parties is decreasing, it is still significant at [50-60]%.

(c) Not crop specific-pest control: where the Parties have a combined patent share of [20-30]%. However, the Commission considers this patent share as being significant since: the concentration in this innovation space is high with a HHI of [4000-4500] and with a Delta HHI of [400-500], Bayer is the number 2 innovator and Monsanto is the number 3 innovator (the main innovator being DDP for this more recent period). Moreover, it appears that there are no other significant innovators outside the Big5 companies, who represent an overall patent share of [90-100]%. Last, the Commission notes that the patent jointly owned by Monsanto and Syngenta does not matter anymore since it was published before 2011 (see recital (1175)(d)).

(1180) The Commission notes that there is only innovation space where the patent shares change when the classification used by the parties in the response to the Statement of Objections is used. This concerns the innovation "canola/weed control". The main change concerns the patent share of Bayer when active patents are considered, with a decrease from [30-40]% in the Statement of Objections to [5-10]% under the scenario "RSO+active patents". This is because one patent of Bayer that received a significant number of citations became inactive. On the other hand, the patent share of Monsanto is increasing from [60-70]% to [80-90]%, with DowDuPont being at the same level as Bayer. The Commission considers that the high level of the combined patent share ([90-100]%), the high level of HHI ([8500-9000]) and Delta HHI ([1100-1200]), with DowDuPont being the only alternative to the Parties, constitute important initial indicators of potential competition concerns. Moreover, the Commission notes that the Parties did not contest in its response to Statement of Objections evidence on closeness for the innovation efforts made by the Parties, with a lack of alternatives for that specific innovation space. Last, given that Bayer is still active in research for weed control in canola, the Commission considers that this

[821] Parties' submission entitled "Patent analysis in broad acre seeds and traits ", dated 22 November 2017, ID8696-4, page 13.

inactive patent of Bayer is still relevant to assess the technological strength of Bayer in that specific innovation space (see Section X.1.7.4.5(A)).

Table 139 – Patent shares (patents published after 2011)

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHHI
Canola	Weed Control	SO	[30-40]%	[60-70]%	[90-100]%			[5-10]%	[90-100]%		[9000-9500]	[4000-4500]
		RSO+all patents	[30-40]%	[60-70]%	[90-100]%			[5-10]%	[90-100]%		[9000-9500]	[4000-4500]
		RSO+act. patents	[5-10]%	[80-90]%	[90-100]%			[5-10]%	[90-100]%		[8500-9000]	[1100-1200]
Cotton	Weed Control	SO	[40-50]%	[40-50]%	[90-100]%			[5-10]%	[90-100]%		[8500-9000]	[4000-4500]
		RSO+all patents	[40-50]%	[40-50]%	[90-100]%			[5-10]%	[90-100]%		[8500-9000]	[4000-4500]
		RSO+act. patents	[40-50]%	[40-50]%	[90-100]%			[5-10]%	[90-100]%		[8500-9000]	[4000-4500]
Not crop specific	Insect Control	SO	[10-20]%	[10-20]%	[20-30]%	[0-5]%	[5-10]%	[50-60]%	[90-100]%	[0-5]%	[4000-4500]	[400-500]
		RSO+all patents	[10-20]%	[10-20]%	[20-30]%	[0-5]%	[5-10]%	[50-60]%	[90-100]%	[0-5]%	[4000-4500]	[400-500]
		RSO+act. patents	[10-20]%	[10-20]%	[30-40]%		[5-10]%	[50-60]%	[90-100]%	[0-5]%	[4000-4500]	[400-500]
Not crop specific	Weed Control	SO	[30-40]%	[20-30]%	[50-60]%	[10-20]%	[5-10]%	[20-30]%	[90-100]%	[5-10]%	[3000-3500]	[1200-1300]
		RSO+all patents	[30-40]%	[20-30]%	[50-60]%	[10-20]%	[5-10]%	[20-30]%	[90-100]%	[5-10]%	[3000-3500]	[1200-1300]
		RSO+act. patents	[30-40]%	[20-30]%	[50-60]%	[10-20]%	[5-10]%	[20-30]%	[90-100]%	[5-10]%	[3000-3500]	[1200-1300]
Soybean	Weed Control	SO	[0-5]%	[70-80]%	[70-80]%		[0-5]%	[10-20]%	[90-100]%	[5-10]%	[5500-6000]	[500-600]
		RSO+all patents	[0-5]%	[70-80]%	[70-80]%		[0-5]%	[10-20]%	[90-100]%	[5-10]%	[5500-6000]	[500-600]
		RSO+act. patents	[0-5]%	[70-80]%	[70-80]%		[0-5]%	[10-20]%	[90-100]%	[5-10]%	[6000-6500]	[600-700]

Source: Commission's calculation.

(1181) Therefore, for the reasons set out above, the Commission considers that:

(a) The Parties have overlapping research capabilities and research activities based on their past and recent innovations in several important innovation spaces, namely canola-quality traits, canola-weed control, cotton-enabling technologies, cotton-insect control, cotton-weed control, cross crops-insect control, cross crop- weed control, and soybean-weed control;

(b) For those innovation spaces, the Parties have a significant patent share;

(c) These innovation spaces are concentrated, with a significant increase in concentration due to the proposed Transaction.

(d) In the innovation spaces where the Parties overlap with significant combined patent shares, there are often few alternatives: (i) generally no other firms

outside the Big5 companies appear to be a significant innovator[822] (in other words, the Big5 companies have an overall patent share in the range of [70-100]%, depending on the innovation space and the patent classification considered), (iii) and among the Big5 companies, in addition to the merged entity, only one or two companies are generally active in these innovation spaces with good quality patents.

(1182) As it will be discussed in the next Section, for several of these innovation spaces, notably all innovation spaces related to HT traits and IR traits, the Parties are also closely competing with recent lines of research.

(1183) The Parties also submitted their own analysis of patent data on 22 November 2017.[823] In their submission, the Parties proceed in two steps:

(a) In a first step, the Parties allocate the patents of Bayer which would be part of a divestment package to an entity called "Bayer divestment";

(b) In a second step, the Parties make essentially two claims: (i) after a potential divestment of these patents, the share increment of the merger is negligible for the overlapping research targets, between [0-5]% and [0-5]%, and (ii) for the remaining overlapping research target areas (as defined by the Parties), which are related to "canola-quality traits" and "not crop specific-crop efficiency traits", the increment will generally be small post-divestment (below [5-10]%) and/or the combined post-merger share will not exceed [30-40]% (even on the basis of a very conservative analysis that does not include innovators other than the Big5).

(1184) A similar analysis of the remedy is carried out by the Parties in their economic submission in the response to the Statement of Objections.[824] Other comments made by the Parties in their economic submissions and in response to the second Letter of facts are addressed in details in Annex 1. A summary of the Commission's assessment of the main comments raised by the Parties is included in Section X.1.7.4.5(A).

(1185) First, the Commission notes that the Parties' submissions are essentially related to the assessment of a potential divestment of specific patents of Bayer. Therefore, these submissions are not directly related to the competitive assessment.

(1186) Second, in their economic submissions, the Parties consider the patents of Bayer that are divested in a separate entity, called "Bayer divestment". However, given that BASF is the purchaser of the proposed remedy, the Commission considers that a reliable approach should reallocate the divested patents of Bayer to BASF. Since this is not done in the Parties' analysis, the Commission considers that the analysis of the remedy proposed by the Parties is not reliable.

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822 The only exception is Cibus for canola-weed control, which is the main alternative to the merged entity. However, as discussed in footnote 819, this is based on a conservative approach. Moreover, Cibus disappears for patents published after 2011, where the Parties represent a significant patent share of [90-100]%. The Commission also notes that Cibus disappears from the innovation space "canola-weed control" when the patent classification used by the Parties in the response to the Statement of Objections is used.

823 Parties' submission entitled "Patent analysis in broad acre seeds and traits ", dated 22 November 2017 (ID8696-4).

824 Parties' response to the Statement of Objections, Annex SO.2: "Response to the SO's patent analysis" dated 9 January 2018 (prepared by Compass Lexecon), ID9955-83.

(1187) Third, the Commission was able to recover from the Parties' code the patent shares for each crop/technology combination, which is equivalent to the innovation spaces discussed above in the Commission's analysis.[825] The Commission notes that the Parties' analysis leads to high combined patent shares for the same innovation spaces as in the Commission's analysis (see recitals (1175) and (1179)), therefore confirming the robustness of the Commission's analysis (see section 4.3 of Annex 1 for further details). The Commission notes that the Parties did not contest this evidence in the response to the Statement of Objections.

(1188) Fourth, the Commission notes that the Parties' analysis based on the patent classification used in the response to the Statement of Objections (dated 9 January 2018), also leads to similar patent shares for the same innovation spaces as in the Commission's analysis, therefore confirming the robustness of the Commission's analysis (see section 4.3 of Annex 1 for further details). The only exception concerns "canola-wed control" where the Parties find do not find an overlap anymore. However, as discussed in Section X.1.7.4.5(A), this is because the Parties re-classify a patent of Monsanto from canola to brassica, which removes the overlap with the research activities of Bayer in canola-weed control. As discussed in Section X.1.7.4.5(A), the Commission disagrees with the re-classification of this specific patent of Monsanto done by the Parties in the response to the Statement of Objections.

1.7.5.3. The Parties currently have overlapping lines of research and early pipeline products in [pipeline information]

(A) Overlaps in pipeline project targets in [pipeline information]

(1189) A comparison on the pipelines of the Parties reveals systematic overlaps in [pipeline information] pipelines, as presented in Table 140. [Pipeline information].

Table 140 – Pipeline comparison and overlaps in [pipeline information]

[…]

Source: […].

(1190) The overlap in pipeline projects demonstrates the closeness of the Parties in the [pipeline information] trait innovation space.

(1191) The closeness is further evidenced by overlaps of the pipeline projects with existing commercial products. [Pipeline information][826]. [Pipeline information][827].

(1192) [Pipeline information; internal assessment of competitive relationships].

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825 The Commission notes that patent shares at the level of crop/technology were not reported in the Parties' submission for all possible crops and technologies combinations, but rather for a limited number of cases (the patent shares reported were only at the global level across all traits, for canola overall and crop efficiency overall, with a further breakdown for crop efficiency for stress tolerance and yield/biomass).

826 Parties' response to the Commission's request for information RFI 97, [Annex 41.2].

827 Parties' response to the Commission's request for information RFI 97, [Annex 41.1].

(B) Overlaps in focus on next generation HT

(1193) The Commission notes that Bayer's internal documents show [pipeline information].

Figure 145 – [Pipeline information]

[…]

Source: BI-EDISC-0548296, ID5609-44012, slides 16 and 17.

(1194) [Pipeline information; quote from internal document].[828]

(1195) When analysing its competitors, Monsanto indicated the following [pipeline information; quote from internal document].[829]

(1196) Monsanto [pipeline information; quote from internal document][830].

Figure 146 – Monsanto next-generation weed control

[…]

Source: [Internal document].

(1197) [Pipeline information].

Figure 147 – [Pipeline information]

[…]

Source: BI-EDISC-0182847, ID5893-11889, slide 11.

(1198) Monsanto [pipeline information; quote from internal document].[831]

Figure 148 – [Pipeline information]

[…]

Source: MI 000028742.00001, ID5441-8645, slide 1.

(1199) Finally, as presented in (1034) Monsanto [internal assessment of competitive relationships].

(C) Overlaps in focus on [pipeline information] traits

(1200) The Parties are close competitors in innovation in [pipeline information]. [Pipeline information; details of Parties' strategy for pipeline projects].

Figure 149 – [Pipeline information]

[…]

Source: MI 02375, ID001455-007777, slide 6.

Figure 150 – [Pipeline information]

[…]

Source: BI 00776, ID451-904, slide 5.

(1201) [Pipeline information], an internal document of Monsanto [pipeline information].[832]

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828 BI-EDISC-0092707, ID5420-707.

829 MI 000227784 [internal document], ID6152-10770, slide 26.

830 MI 02374, ID1455-7776, page 5, MI 00011, page 28.

831 MI 319136.00001 [internal document] ID7710-12490, slide 8.

(D) Overlaps in focus on [pipeline information] traits

(1202) Both parties are active [pipeline information] innovation. [Pipeline information].[833]

Figure 151 – [Pipeline information]

[…]

Source: MI 02380, [internal document], ID000930-006626, slide 5.

(1203) The parties are close competitors in innovation in [pipeline information] with few alternatives. The Commission has reviewed all trait pipeline projects of Syngenta, DowDuPont and BASF. Nothing in the review of the pipeline information provided by the competitors of the Parties contradicts this conclusion.

1.7.5.4. The Parties currently have overlapping lines of research and early pipeline products in [pipeline information]

(A) Overlaps in pipeline project targets in [pipeline information]

(1204) A comparison on the pipelines of the Parties reveals systematic overlaps in [pipeline information] pipelines, as presented in Table 141. Both Parties have research lines in [pipeline information] and aim at developing [pipeline information].

Table 141 – Pipeline comparison and overlaps in [pipeline information]

[…]

Source: Parties' response to the Commission's request for information RFI 97, Annex 41.1 and 41.2.

(B) Overlaps in pipeline project in [pipeline information]

(1205) [Pipeline information; internal assessment of competitive relationships].

Figure 152 – [Pipeline information; internal assessment of competitive relationships]

[…]

Source: BI 03245, [internal document], ID2312-233, slide 18 (red circle annotation added).

(C) Overlaps in focus on [pipeline information] traits

(1206) [Pipeline information; internal assessment of competitive relationships; quote from internal document].[834]

(1207) [Pipeline information; internal assessment of competitive relationships].[835]

(1208) [Pipeline information; internal assessment of competitive relationships; quote from internal document].[836]

(1209) The parties are close competitors in innovation in [pipeline information] with few alternatives. The Commission has reviewed all trait pipeline projects of Syngenta, DowDuPont and BASF. Nothing in the review of the pipeline information provided by the competitors of the Parties contradicts this conclusion.

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832 MI 04001, ID639-000309, slide 26.

833 Parties' response to the Commission's request for information RFI 97, [Annex 41.2].

834 BI 02995 [internal document], ID1562-292, slides 49 and 50.

835 MI 274268 [internal document], ID6438-11084, slides 40, 49 and 50.

836 BI-EDISC-0092707, ID5420-707, page 32.

1.7.5.5. The Parties currently have overlapping lines of research and early pipeline products in [pipeline information]

(1210) Bayer was historically the one competitor of Monsanto that successfully introduced to the market HT stack in canola. [Pipeline information].

Table 142 – Pipeline comparison and overlaps in [pipeline information]

[…]

Source: Parties' response to the Commission's request for information RFI 97, Annex 41.1 and 41.2.

(1211) The Parties are close competitors in innovation in [pipeline information] with few alternatives. The Commission has reviewed all trait pipeline projects of Syngenta, DowDuPont and BASF. Nothing in the review of the pipeline information provided by the competitors of the Parties contradicts this conclusion

1.7.5.6. The Parties currently have overlapping lines of research and early pipeline products in cross crop research

(1212) At early phases of research and development, in particular at the discovery phase (also designated as phase 0) projects are often pursued cross crop, as explained in recital (1014). Both parties have significant capabilities in cross crop research, as described in Section X.1.7.4.4. Table 143 lists pipeline projects of both parties which are not crop specific.

Table 143 – Pipeline comparison and overlaps in cross crop research

[…]

Source: Parties' response to the Commission's request for information RFI 97, [Annex 41.1] and [Annex 41.2].

(1213) Both Parties have [pipeline information]. The Parties are close competitors in innovation in cross crop trait research with few alternatives. The Commission has reviewed all trait pipeline projects of Syngenta, DowDuPont and BASF. Nothing in the review of the pipeline information provided by the competitors of the Parties contradicts this conclusion.

1.7.5.7. Non-GM wheat HT

(A) Introduction

(1214) Gene editing promises to be the new frontier of biotechnology for a number of reasons (see Figure 153 below). Precision genome editing is considered an important technology because it [quote from internal document].

Figure 153 – Importance of precision genome editing

[…]

Source: MI 05885, [internal document], ID007071-000010, slide 2.

(1215) The possibility that some applications of gene editing technologies may fall outside the current GM regulations has two major implications: 1) overcoming the lack of public acceptance towards GM crops; and 2) opening new seed markets, like for example the European countries, where today GM crops are generally not allowed.

Figure 154 – Precision genome editing may fall outside of current GMO regulations

[…]

Source: MI 05885, [internal document], ID007071-000010, slide 8.

(1216) In light of this, both the Parties are investing significant resources to acquire and develop the capabilities to develop certain HT traits which certainly or possibly do not qualify as GM.

(B) Activities of the Parties and their competitors

(B.i) Bayer

(1217) [Pipeline information]:

(a) [pipeline information];[837] [pipeline information]

(b) [pipeline information].

(1218) [Pipeline information; quote from internal document].[838]

Figure 155 – [Pipeline information]

[…]

Source: BI 06813, [internal document], ID006920-1, slide 2.

(1219) [Pipeline information].[839]

(1220) Bayer's non-GM research effort is motivated by the increasing reluctance of public opinion [pipeline information]. This is also what led Monsanto to suspend its research activities to develop Roundup Ready (GM) Wheat: [quote from internal document][840] and further develop its capabilities in gene editing technologies.

(1221) [Pipeline information].

Figure 156 – [Pipeline information]

[…]

Source: BI 06824, [internal document], ID005335, slide 24.

(1222) [Pipeline information].

Figure 157 – [Pipeline information]

[…]

Source: BI 21594, [internal document], ID007637-001915, slide 7.

(1223) [Pipeline information].

Figure 158 – [Pipeline information]

[…]

Source: BI 06824, [internal document], ID005335, slide 2.

(1224) [Pipeline information; details of Bayer's strategy for pipeline projects].[841]

Figure 159 – [Pipeline information; details of Bayer's strategy for pipeline projects]

[…]

Source: BI-EDISC-0538247, [internal document], ID5609-3396, slide 17.

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837 [Pipeline information].

838 BI 06830 161200 [internal document], ID6920-3, page 1.

839 Ibidem.

840 [Quote from internal document].

841 [Pipeline information; details of Bayer's strategy for pipeline projects].

Figure 160 – [Pipeline information]

[…]

Source: BI-EDISC-0538247, [internal document], ID5609-3396, slide 18.

Figure 161 – [Pipeline information; details of Bayer's strategy for pipeline projects]

[…]

Source: BI-EDISC-0538247, [internal document], ID5609-03396, slide 23.

(1225) [Pipeline information; details of Bayer's strategy for pipeline projects]:[842]

(a) […];

(b) […];

(c) […].

(B.ii) Monsanto

(1226) Monsanto has strong incentives to develop non-GM HT wheat, has secured the key technology needed to do so [pipeline information].

(1227) Monsanto's incentives to develop non-GM HT wheat can be grasped from the business case for buying the gene editing technology (CRISPR-Cas9), which is the key technology to develop non-GM HT traits. In a presentation [internal document], Monsanto values at USD […] the opportunities it can pursue once it has secured the gene editing technology. [Pipeline information; details of Monsanto's strategy for pipeline projects].

Figure 162 – [Details of Monsanto's strategy for pipeline projects]

[…]

Source: MI 05885, [internal document], ID007071-000010, slide 7.

(1228) Out of the USD […] opportunity from gene editing, the highest payoff is associated with [pipeline information] (NPV is USD […]). [Pipeline information].

Figure 163 – [Valuation]

[…]

Source: MI 05885, [internal document], ID007071-000010, slide 11.

(1229) The (NPV) valuations of the non-GM trait for wheat consider [pipeline information] as the estimated launch year for [pipeline information] (see Figure 164 and Figure 165).

Figure 164 – [Valuation]

[…]

Source: MI 05885, [internal document], ID007071-000010, slide 12.

Figure 165 – [Valuation]

[…]

Source: MI 000706, ID001490, slide 30.

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[842] Parties' response to the Commission's request for information RFI 36, [Annex 36.1].

(1230) The presentation [internal document] follows a similar presentation made to [internal document] where the opportunities of buying CRISPR-Cas9 were also discussed.

(1231) In the meantime, Monsanto has purchased the licences to use the gene editing technology. In particular, Monsanto has entered into two non-exclusive agreements with the Broad Institute, Inc for CRISPR-Cas9 technology and CRISPR-Cpf1 technology, respectively.[843]

(1232) In addition to making the case for buying the gene-editing technology, Monsanto has also [pipeline information]. As shown in the two following figures, [pipeline information; quote from internal document] means that Monsanto has clear ideas on what it wants to commercialize, in which markets, and the potential of [pipeline information] (in the slides this is proxyed by the number acres).

Figure 166 – [Pipeline information]

[…]

Source: MI 07746, [internal document], ID006982, slide 4.

Figure 167 – [Pipeline information]

[…]

Source: MI 07746, [internal document], ID006982, slide 6.

(1233) Monsanto's set of capabilities to develop non-HM HT wheat also benefits from the expertise gained through other projects. Two projects are particularly relevant in this regard: (i) the (past) project to develop GM traits for wheat, and (ii) the (current) project to develop [pipeline information].

(1234) In the past, Monsanto had [pipeline information] GM HT projects for wheat: [pipeline information]. Although these [pipeline information] projects have been put on hold, they nonetheless provide Monsanto with relevant technical expertise and knowledge, such as for example a better understanding of the wheat genome, which is useful for the development of non-GM versions of the same HT traits. [Pipeline information].

(1235) In this respect, the Commission refers to internal documents by Bayer provided by Bayer explaining that [quote from internal document].

Figure 168 – [Details of Bayer's strategy for pipeline projects]

[…]

Source: BI-EDISC-0050512, [internal document], ID005413-004512, page 44.

Figure 169 – [Details of Bayer's strategy for pipeline projects]

[…]

Source: BI-EDISC-0050512, [internal document], ID005413-004512, page 45.

(1236) Monsanto is currently working on the development of [pipeline information] in Monsanto's jargon) [pipeline information] traits [pipeline information] (Figure 170). [Crops] is the crop where Monsanto's research work is most advanced. [Pipeline information] is the largest crop market and therefore the business value of

[843] Parties' response to the Statement of Objections, ID9941, paragraph 258.

developing the trait is high as well. Therefore, [pipeline information] will be the first to reach the market and is currently set for launch in [pipeline information] (see Figure 171).

Figure 170 – [Pipeline information]

[…]

Source: MI 305616, [internal document], ID007071-000028, page 8.

Figure 171 – [Pipeline information]

[…]

Source: MI 305616, [internal document], ID007071-000028, page 11.

(B.iii) The Parties' competitors

(1237) The Parties, like many players in the industry, carefully monitor competitors, in particular pipelines, through expert intelligence. These activities allow them to identify competitor pipeline pressure, which is notably needed to correctly project future sales and the current value of their own pipeline projects. These competing existing and future products are thus taken into account in the Parties' predictions for the success of their own forthcoming products.

(1238) Monsanto assessed its competitors' strengths in gene editing in the context of making the case to buy the gene-editing technology. This analysis shows that [internal assessment of competitive relationships] are the best placed players to pursue genome editing opportunities. [Internal assessment of competitive relationships] is already strong on gene editing as well as on the other relevant capabilities for row crops.

(1239) [Internal assessment of competitive relationships] are seen as moderately strong players: [internal assessment of competitive relationships] is seen as strong only in gene function assessment, but moderate on all the other capabilities.

(1240) Players like [internal assessment of competitive relationships] are seen by Monsanto as strong on gene editing, but weak on all other capabilities needed to compete effectively with the agri-tech companies.

Figure 172 – Competitive landscape in relation to genome editing

[…]

Source: MI 000016147.00001, [internal document], ID5441-570, slide 10.

(1241) In addition, Monsanto sees [internal assessment of competitive relationships] as not particularly active in gene editing. Their internal efforts are seen as [quote from internal document] and their network of collaboration does not appear as strong as the leading players [internal assessment of competitive relationships].

Figure 173 – Monsanto's views of [internal assessment of competitive relationships] research efforts into non-GM HT

[…]

Source: MI 08347, [internal document], ID002330-150, slide 18.

(1242) The above findings are broadly in line with the results of the analysis of (cross crop) patent shares (see Section X.1.7.4.5, recital (1159)).

(1243) The Commission also reviewed the trait pipeline projects of Syngenta, DowDuPont and BASF[844] and asked a number of questions in relation to competitors' gene editing activities for wheat.[845] This body of evidence suggests that there are only very few alternatives to the Parties doing innovation in non-GM HT traits for wheat.

(1244) Finally, the Commission also analysed the R&D spending in biotech research for wheat for the Parties and their key wheat competitors.[846] [Pipeline information; details of Bayer's strategy for pipeline projects].

Figure 174 – [Pipeline information; details of Bayer's strategy for pipeline projects]

[…]

Source: Commission's analysis on data provided by the Parties and main competitors.[847]

(C) Parties' views

(1245) In their response to the Statement of the Objections, the Parties argue that the Commission (i) significantly overstates the Parties' innovation activities directed at non-GM HT traits for wheat; (ii) wrongly suggests that the Parties are close competitors in this regard; and (iii) wrongly holds that there is insufficient third-party competition regarding this type of innovation activity.[848]

(1246) The Parties submit that Bayer is not an important innovator in non-GM HT for wheat. Bayer has never successfully developed a non-GM HT trait in wheat, has only very limited activities in this area and it is highly uncertain whether such activities will lead to commercial traits. If they do, it will only be many years from now.

(1247) [Pipeline information].

(1248) [Pipeline information].

(1249) The Parties further argue that the Commission overstates Monsanto's significance as an innovator even more than Bayer. In this respect, the Parties submit that Monsanto [pipeline information; details of Monsanto's strategy for pipeline projects]

(1250) In this respect, [pipeline information; details of Monsanto's strategy for pipeline projects]

(1251) [Pipeline information; details of Monsanto's strategy for pipeline projects].

(1252) The Parties also disagree with the Commission's conclusion in the Statement of Objections that they are close competitors in innovation in non-GM HT traits in wheat. This is because Monsanto has [pipeline information] and Bayer's efforts in the space are in preliminary stages only [pipeline information]. Moreover, the Parties submit that the only proven scientific method of creating a non-GM commercially viable glyphosate tolerance trait is to edit the EPSPS gene. Therefore, it would not indicate relative closeness of competition if both Parties were to pursue that method, because all competitors would have to pursue the same method.

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844 Competitors' responses to the Commission's request for information to competitors on Traits and Licencing RFI Q18.

845 Competitors' responses to the Commission's request for information to competitors on non-GM HT Traits for Wheat RFI Q30.

846 In this context, biotech research includes both GM and non-GM HT and Y&S traits for wheat.

847 Competitors' responses to the Commission's request for information to competitors on Wheat Resources and Strategy RFI Q25.

848 Parties' response to the Statement of Objections, ID9941, paragraphs 224-318.

(1253) Finally, according to the Parties, the Statement of the Objections fails to consider that there are a number of other stronger competitors developing gene editing capabilities. The Parties argue that innovators in this area are numerous, and diverse, including publicly funded universities and research institutes, small biotechnology companies, mid-tier sized agriculture companies, and large multinationals. In this respect, the Parties further submit that at least the following companies are active in the area with a focus on wheat: DowDuPont, Calyxt France, RAGT, BASF, Syngenta, Limagrain, Arcadia Biosciences and others. The Parties consider that these sources of gene editing and other technologies for development of non-GM HT traits ensure that sufficient innovation competition exists after the Transaction. In addition, the industry has witnessed many examples of the companies active in non-GM traits development being open to potential collaboration.

(D) Commission's assessment

(1254) The Commission notes at the outset that the concerns in relation to non-GM HT traits for wheat relate to a reduction of innovation competition as a result of the Transaction. As explained in Section VI.3.3, the Commission considers that this reduction of innovation competition is likely to manifest itself in the form of: (1) immediate reorientation/delay of existing innovation efforts (either by discontinuing, redirecting or deferring early pipeline products or lines of research) in the case of overlapping lines of research and early pipeline products between the Parties; and (2) reduced incentives to develop in the longer term the same number of new products as the combined targets of the Parties before the Transaction.

(1255) On this basis, the Commission considers that the Parties' claims that it is highly uncertain whether and when their research activities will lead to commercial non-GM HT traits for wheat and if they do it will only be many years from now should be rejected. These claims would have to be carefully addressed if the Transaction determined the loss of potential competition in the product market, which is not the case for non-GM HT wheat.

(1256) The Commission takes instead the view that bringing the R&D efforts of Bayer and Monsanto in non-GM HT traits for wheat under common ownership will generate the three likely effects discussed in recital (1254) above. The Commission relies on the following elements supporting its conclusion.

(1257) First, as explained in Section X.1.7.5.7(B.iii), the Parties are two of an extremely limited number of innovators in non-GM HT traits for wheat, which is an innovation space with high barriers to entry as explained in Section X.1.7.3.1(D). Second, there is evidence that the innovation efforts of the Parties are close and likely to result in traits that will be in direct competition with each other.

(1258) In this respect, the Commission primarily refers to Bayer's focus and scale of research activities in non-GM HT wheat. The facts analysed in Sections X.1.7.5.7(B.i) and X.1.7.5.7(B.ii) above show unequivocally that (i) Bayer is at the forefront of the research targeting non-GM HT traits for wheat; and (ii) [pipeline information; details of Bayer's strategy for pipeline projects] (see Figure 174).

(1259) Although Monsanto's activities in this field are not as significant as Bayer's, the Commission considers that Monsanto has nonetheless strong incentives, the key technologies and relevant technical expertise to develop non-GM HT wheat. In this regard, the Commission refers to the fact that, Monsanto (i) considers [pipeline

information] as the biggest value opportunity from gene editing; (ii) has acquired the gene editing technology; and (iii) has acquired significant technical expertise through the development of the GM HT traits for wheat and the present activities [pipeline information].

(1260) The Commission further considers that the research targets of the Parties are to a large extent orientated towards the same concepts and that in all likelihood would result in traits that are in direct competition with each other. The Commission specifically refers to [pipeline information] even the Parties' approach to develop the trait is broadly the same. In both case, the idea is to [pipeline information]. In addition, the Commission also notes that even the drivers of such novel research efforts are common to both the Parties (growing unease towards GM wheat).

(1261) Finally, contrary to the Parties' claims that there are a number of other stronger competitors developing gene editing capabilities,[849] the Commission's investigation shows that that there only a very small number of competitors that have the capabilities to develop non-GM HT wheat and/or are in fact developing it. Also contrary to the Parties' claims that [quote from internal document],[850] the Commission notes that Monsanto itself considers [internal assessment of competitive relationships].

(1262) The Commission therefore concludes that the Parties are important competitors in innovation for non-GM HT traits for wheat and with only few alternatives.

(E) Conclusion

(1263) For the reasons set out above and on the basis of the data made available during the investigation, the Commission concludes that the Transaction would likely cause a significant impediment to effective competition in relation to non-GM HT Traits innovation because it is likely that it would eliminate an important and close competitive constraint leading to potential harm to innovation competition.

1.7.6. Effects of the loss of innovation rivalry between Bayer and Monsanto

(1264) [Pipeline information; details of Parties' strategy for pipeline projects].[851]

Figure 175 – [Details of Parties' strategy for pipeline projects]

[…]

Source: BI-EDISC-0548964, ID5609-44680.
Note: [Internal document].

(1265) [Details of Parties' strategy for pipeline projects; quote from internal document][852] (see Figure 176).

Figure 176 – [Details of Parties' strategy for pipeline projects]

[…]

Source: BI-EDISC-0148335, [internal document], ID005608-010721, slide 45.

849 Parties' response to the Statement of Objections, ID9941, paragraphs 291-311.
850 Parties' response to the Statement of Objections, ID9941, paragraph 291.
851 E.g. BCS-MON-07624169.xlsx, ID8431-146.
852 BI-EDISC-0148335 [internal document], ID5608-10721.

(1266) [Details of Parties' strategy for pipeline projects].[853]

Figure 177 – [Pipeline information]

[…]

Source: BI-EDISC-0099994, [internal document], ID5420-7994, slide 2.

Figure 178 – [Pipeline information]

[…]

Source: BI-EDISC-0099994, [internal document], ID005420-007994, slide 4.

(1267) [Details of Bayer's strategy for pipeline projects].

Figure 179 – [Details of Bayer's strategy for pipeline projects]

[…]

Source: BCS-MON-07175281, [internal document], ID008431-000142, slide 2.

(1268) [Details of Bayer's strategy for pipeline projects; quote from internal document][854].

Figure 180 – [Details of Bayer's strategy for pipeline projects]

[…]

Source: BI-EDISC-0690941, [internal document], ID005918-003077, slide 20.

(1269) [Pipeline information; details of Bayer's strategy for pipeline projects].

Figure 181 – [Details of Bayer's strategy for pipeline projects]

[…]

Source: BI-EDISC-0690941, [internal document], ID005918-003077, slide 21.

(1270) [Details of Bayer's strategy for pipeline projects]. To the extent that GM research activities confer an advantage for the development of equivalent non GM concepts, the potential discontinuation of the former (GM) would result into a reduction of the innovation efforts of the latter (non-GM).

(1271) The Commission concludes that after the proposed Transaction the Parties would likely have reduced incentives to continue ongoing innovation efforts. The Parties' integration plans include a systematic identification of pipeline overlaps with a first estimate of reduction in R&D investments in traits of […]. Reduction in innovation efforts referred to as a slowdown and flexibility is planned in key areas such as [details of Bayer's strategy for pipeline projects]. These cuts would result in a reduction or slowdown in products reaching consumers. The Commission also concludes that the Parties would likely have reduced incentives to initiate new product development efforts. The evidence in the file shows that beyond the discontinuation of individual ongoing overlapping pipeline projects, the Parties plan the discontinuation of [details of Bayer's strategy for pipeline projects] capabilities including the capabilities currently used for early [details of Bayer's strategy for pipeline projects]. In an industry where there are only four such R&D organisations and where Bayer was a particularly active innovator, the closure of Bayer's

853 BI-EDISC-0099994, ID5420-7994, slide 8.

854 BI-EDISC-0690941 [internal document], ID5918-003077, referring to [internal document].

capabilities is likely to constitute an additional significant loss of innovation competition.

(1272) The Commission further considers that it would be unlikely that there would be a sufficiently strong countervailing reaction of competitors to sufficiently defeat this reduction in innovation between and by the Parties.

1.7.7. Conclusion

(1273) In line with the above, the Commission considers that the Transaction is likely to significantly impede effective competition as regards innovation competition in both the innovation spaces where the Parties' current lines of research and early pipeline products overlap and in overall innovation in HT and IR traits across the crops in which both Parties are active as regards the development of future new products.

1.8. Competitive assessment: strengthening of a dominant position of Monsanto

1.8.1. Analysis of Monsanto's dominance in the relevant markets but also at industry level because of Monsanto's leverage of the RR platform across crops

(1274) The dominance of Monsanto in key broad acre crops HT and IR traits is described in Section X.1.6. This Section finds that Monsanto benefits from a position of market power beyond and across specific products and crops. This existing dominant position is confirmed by the in-depth investigation and would potentially both impede effective competition on the existing product markets, as well as potentially impede competition in innovation (the latter in particular, as Monsanto's practices seems to restrict the possibilities for competitors to successfully launch new products and to engage in new cooperation with major seed companies).

(1275) The Commission has expressed the concerns listed below in the Article 6(1)(c) Decision and in the Statement of Objections, as to whether the Transaction would leave the merged entity in a position of market power and in particular whether the Transaction would create a dominant position or strengthen Monsanto's existing dominant position across the broad acre crop traits industry.

(1276) Dominance is a position of economic strength enjoyed by an undertaking, which enables it to prevent effective competition being maintained on a relevant market, by affording it the power to behave to an appreciable extent independently of its competitors, its customers and ultimately of consumers[855].

(1277) The Commission has identified a number of indications which point to a dominant position of Monsanto in the single trait markets and in the traits industry as a whole.

(1278) First, the market shares of Monsanto in traits in individual crops are above [50-60]% (in soy, cotton and corn), except in OSR where the market has only three players and the share of Bayer is above [50-60]%, whereas Monsanto's market share is above [40-50]% at [40-50]% in 2016 by Monsanto and/or Bayer (regarding Bayer in particular in OSR).[856] This level of market shares in itself indicates a dominant position, as indicated in point 17 of the Horizontal Merger Guidelines.

(1279) Second, in 2013 major trait originators (Monsanto, DowDuPont, Bayer, Syngenta and – to a more limited extent – BASF) held [90-100]% of the market in value of

855 See Case 27/76 United Brands Company and United Brands Continentaal v Commission [1978] ECR 207, paragraph 65.

856 See Table 125, Table 127 and Table 130.

traits including the value generated by the sellers; the same players held [90-100]% of that market in 2016. In reference to point 15 of the Horizontal Merger Guidelines, the stability of the market shares and market players indicates that over recent years the competitive process has not witnessed any disruption and can therefore not be described as dynamic. The market share of Monsanto (and of Bayer) on this market has increased to the detriment of the other large competitors, further increasing the strength of Monsanto's position.

(1280) Third, Monsanto has a powerful intellectual property rights portfolio[857] in traits.

(a) Seed companies active in trait development expressed concerns about the ability of Monsanto to limit the capacity of seed companies and trait developers to cooperate with third parties through restrictions to the use of traits licenced to the companies by Monsanto but also through further restrictions only indirectly related to the traits licensed by Monsanto. According to a market participant "*Monsanto is relying on trademarks to reinforce its position. Monsanto restricts in its trademark agreements with seed companies the use of the branded appellation Roundup-Ready to the duration of the patent protection on the underlying trait. For example, when "Roundup Ready One" ('RR1') patent expired all the licensees also lost the right of using the Roundup-Ready brand, creating marketplace confusion as to the source and trait that conferred tolerance to glyphosate in the soybeans.*" According to the same market participant "*Monsanto has a history of strategically enforcing Intellectual Property Rights and foreclosing its licensee.*" The same market participant indicated that "*[l]icensees accept Monsanto licensing agreements because glyphosate tolerance in soybeans is virtually a must have HT trait.*"[858]

(b) Further, seed companies have indicated that Monsanto (and similarly Bayer) is in a privileged position with regard to the value of its trait brands. According to a major seed company, the "*only two brands that benefit from a strong brand recognition are Roundup-Ready and Liberty-Link*".[859]

(1281) Fourth, there is evidence that Monsanto may be able to deter expansion or entry by rivals due to its retaliation potential which raises the costs of such entry or expansion. Bayer internal documents provide evidence of the credibility of the threat of retaliations of Monsanto. [Pipeline information; details of Bayer's strategy for pipeline projects].

Figure 182 – [Pipeline information; details of Bayer's strategy for pipeline projects]

[…]

Source: BI-EDISC-1026825, [internal document], ID005957-003261, slide 13, and in and Parties' response to the Commission's request for information RFI 35, [Annex 35.12 - Balance GT Example Bayer's [internal document], Steering Committee Meeting June 12, 2015].

857 See paragraph 36 of the Horizontal Merger Guidelines.

858 Agreed non-confidential minutes of a call with a market participant, 25 July 2017 (ID4566).

859 Parties' response to the Commission's request for information RFI 12, Annex 12.2.

Figure 183 – [Pipeline information; details of Bayer's strategy for pipeline projects]

[…]

Source: BI-EDISC-1026825, [internal document], ID005957-003261, slide 7 and in Parties' response to the Commission's request for information RFI 35, [Annex 35.12 - Balance GT Example Bayer's [internal document], Steering Committee Meeting June 12, 2015].

(1282) The structure of the trait industry creates incentives to retaliate. The market structure is not disrupted by new entrants due to the important barriers to entry into trait development and into trait commercialisation because of stacking restrictions. Therefore incentives to retaliate exist because foregone profits will be recouped in the future by the same players. Historical data on the stable market structure in terms of market share attributed to the large trait originators supports the existence of incentives to retaliate.

(1283) Fifth, Monsanto appears to be the licensor of a must-have trait with its RR branded HT trait.

(1284) Sixth, Monsanto's strong market position may be reinforced by economies of scale. Those economies of scale in the licensing industry result from the absence of marginal costs resulting from an additional licencing contract on existing traits. Further there is no capacity constraint on the side of the licensor.

(1285) Seventh, there does not appear to be any countervailing buyer power as evidenced by the concerns of the customers of Monsanto in the trait market, which licence in traits. Furthermore, the analysis of Monsanto's contractual arrangements with licensees of traits equally indicates an absence of countervailing buyer power.

(1286) Both Parties provided at Commission's request three of their most significant licencing contracts in terms of licencing revenue. Bayer provided contracts with […]. Monsanto provided contracts with […].[860]

(1287) Contracts [details of Parties' licensing arrangement] by Bayer [details of Parties' licensing arrangement] prohibit stacking. [Details of Parties' licensing arrangement; quote from internal document].[861]

860 Parties' response to the Commission's request for information RFI 35.

861 BI-EDISC-1027617 [internal document], ID5957-4053, section 3.3.

(1288) A number of licensing contracts of Monsanto seem to contain by comparison to licensing contracts of Bayer broadly worded [details of Parties' licensing arrangement] clauses. The aim of all or at least some of these [details of Parties' licensing arrangement]. Such clauses are to be found in licensing contracts of Bayer as well as Monsanto. However as illustrated by Figure 184 below, [details of Parties' licensing arrangement] clauses contained in the contracts with Monsanto include [details of Parties' licensing arrangement]. In fact [details of Parties' licensing arrangement; quote from internal document]. This clause could negatively affects the ability of the licensee to develop an exclusive collaboration on glyphosate tolerance with a competitor of Monsanto, as Monsanto would have a [details of Parties' licensing arrangement].

Figure 184 – Extract from Licence agreement between Monsanto and [details of Parties' licensing arrangement]

[…]

Source: MI 07484, [internal document], ID004034-000089, section 7.06.

(1289) Although the [details of Parties' licensing arrangement], which would in principle allow the licensees to pursue cooperation with other partners, the [details of Parties' licensing arrangement] clauses could make such cooperation less financially attractive. This is the case because [details of Parties' licensing arrangement]. Therefore the licensee cannot engage into collaboration with another partner to develop a product, the profits of which could be exclusively shared between the licensee and its partner.[862]

(1290) For further illustration, a contract between Monsanto and [details of Parties' licensing arrangement] demonstrates that [details of Parties' licensing arrangement; quote from internal document].

Figure 185 – Extract from Corn Product Licence agreement between Monsanto and [details of Parties' licensing arrangement]

[…]

Source: MI 07400, [internal document], ID004034-000034, section 6.05.

(1291) [Details of Parties' licensing arrangement; quote from internal document][863].

(1292) Further the duration of the [details of Parties' licensing arrangement] in the contracts provided by Monsanto [details of Parties' licensing arrangement]. In contracts with [details of Parties' licensing arrangement] the clauses last for [details of Parties' licensing arrangement], see extract of contract in Figure 184. In the case of [details of Parties' licensing arrangement] clauses also often [details of Parties' licensing arrangement] in contracts provided by Bayer, the [details of Parties' licensing arrangement] clauses are limited to the duration of the licensing agreement.

1.8.2. Bayer as one of the few remaining competitors and at the same time particularly active and well-resourced

(1293) As demonstrated by the market shares in traits by crop, Bayer is the closest competitor in terms of market shares in traits to Monsanto in soy, cotton and OSR.

862 [Details of Parties' licensing agreement; quote from internal document].

863 [Internal document].

Further, at a product level Liberty-Link is perceived by customers as the closest substitute to RR, which itself is considered by the customers as a must have product.

(1294) The Parties indicated in their response to the Article 6(1)(c) Decision that other trait developers offer glyphosate resistance, in particular Bayer in cotton and Syngenta[864]. The existence of glyphosate tolerant traits does not in itself offer viable alternatives to seed companies, in so far as RR is recognised by the farmers and can be perceived of better quality. The Commission has noted that the RR is perceived as a must-have trait based on the view expressed by a market participant.

(1295) According to this market participant, "*Glyphosate traits are effectively an indispensable component in a stack. Due to weed resistance problems additional HT traits are necessary to stack with Glyphosate tolerance, one of the leading herbicide tolerance traits to address glyphosate tolerant weeds is Liberty-Link. Liberty-Link is going to become increasingly important to address glyphosate tolerant weeds given some of the problems in the US with dicamba drift.*"[865]

(1296) The expected evolution of the market is towards stacked traits rather than single traits being introgressed and commercialised by seed companies. This will reinforce the existing barriers to entry into the trait origination market. Given the current market structure, it seems unlikely that the competitive pressure exercised by Bayer on Monsanto would be reconstituted or replicated going forward.

(1297) As explained above, trait originators leverage on their presence in many crops, therefore the concern of eliminating a competitor is not limited to the markets in individual crops or trait functionality. Further, Bayer benefits in its trait business from its position in crop protection products, at least to the extent that this allows Bayer to develop pricing strategies that a company only active in traits would not be able to develop.

(1298) In fact, prices of trait products and crop protection products are in some instances determined on a "system" basis. This commercial strategy would not be available to a company only active in traits. Importantly this company could face a merged entity with a strengthened dominant position compared to the position of Monsanto today. Therefore a competitor that would not avail of all possible commercial strategies that could be deployed by the merged entity could be unlikely to exercise a competitive constraint on the merged entity.

(1299) This concern is directly linked to the practice in the industry of prohibiting stacking which galvanises the already existing barriers to entry into the origination market.

1.8.3. Risk of foreclosure of other trait competitors

(1300) Due to the raising importance for commercial success of trait stacks, and in particular of trait stacks with glyphosate tolerance traits, a decreased number of competitors on the trait origination market increases the risk of foreclosure of competitors.

(1301) Furthermore, the described contractual restrictions in the licensing relationships between Monsanto and trait companies could pre-empt and limit the scope of the collaborations of those companies with other trait developers. For example, under the terms of the contract with Monsanto as reproduced in Figure 184, [details of Parties' licensing arrangement] would have reduced incentives to develop a proprietary

[864] Parties' response to the Article 6(1)(c) Decision, paragraph 71.

[865] Agreed non-confidential minutes of a call with a market participant, 25 July 2017 (ID4566).

glyphosate tolerance trait in cooperation with another competitor than Monsanto, as any trait developed [details of Parties' licensing arrangement]. This could considerably diminish incentives for competitors to engage in such research in cooperation with [details of Parties' licensing arrangement] and any other party which would be directly or indirectly restricted by existing contractual arrangements with Monsanto.

(1302) In response to the Article 6(1)(c) Decision and to the Statement of Objections, the Parties presented the argument that no stacking restrictions are systematically contained in trait licensing contracts of Bayer[866]. However the Parties did not contest in their response the Commission's preliminary finding that [details of Parties' licensing arrangement].

(1303) The fact that Bayer does not systematically apply the same restriction does not alleviate the Commission's concerns, in particular as Monsanto is in a position to set industry standards for all major trait players, as explained in Section X.1.7.3.

(1304) The Commission's market investigation has confirmed a likely risk of foreclosure of other trait competitors.

(1305) Further evidence points to a past strategy by Monsanto aimed at foreclosing competitors. [Internal assessment of licensing practices; quote from internal document]. Post-Transaction by combining Monsanto's traits with Bayer's the merged entity will control a larger portion of the trait market and its capacity to foreclose competitors will be greater. This would be in particular the case through the combination of the RR traits with the LL traits which pre-Transaction offered one possible although not perfect alternative to the Monsanto's RR HT system platform.

Figure 186 – [Internal assessement of licensing practices]

[…]

Source: BCS-MON-00366345, ID008431-000016, slide 8.

(1306) Monsanto's strategies to exclude trait competitors are further illustrated by the defensive strategy of Monsanto of acquiring seed companies described in Section X.1.7.3.

(1307) Further evidence points to retaliation of Monsanto towards seed companies in response to their cooperation with other trait developers. In fact [details of Parties' licensing arrangement; quote from internal document][867].

Figure 187 – [Correspondence business regarding licensing arrangements]

[…]

Source: MI 000326497.00001, [internal document], ID006438-035346.

(1308) The Commission therefore concludes that the transaction would lead to the foreclosure of trait competitors through the strengthening of the dominant position of Monsanto.

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866 Parties' response to the Article 6(1)(c) Decision, paragraph 74.

867 Based on 2016 licence income of Monsanto, Parties' response to the Commission's request for information RFI 26, Annex 26.1.

1.8.4. Risk of foreclosure of other germplasm competitors

(1309) The Commission has also assessed whether there is a risk of foreclosure of other germplasm competitors. In this respect, a major seed company contacted in the market investigation considers that "*large GM players can leverage their position into non GM traits. In [this] relation […], [the major seed company] company indicated that this is the case primarily through germplasm. All strong GM players have a very strong position in germplasm.*"[868]

(1310) According to this major seed company "*they achieve to restrict the use of the germplasm which is combined by seed producers with their proprietary traits. The germplasm used with proprietary traits of the large players is used with their traits exclusively because of provisions in licensing agreements*."[869] The major seed company indicated that "*according to public knowledge Monsanto and DuPont* […] *restrict the use of* […] *germplasm to combinations with their proprietary traits*."[870]

(1311) This is confirmed by the analysis of the licensing contracts, see for example Figure 184 above, which contains a restriction on [details of Parties' licensing arrangement].

(1312) The major seed company further indicated that "*Monsanto and Dupont are very strong in germplasm. Dupont does not license its germplasm at all whereas Monsanto for now does out license its germplasm. The fact that Monsanto and Dupont are strong in germplasm in the US gives them a great advantage in the Southern European markets where they can in this way leverage this strength in the US traits because the US germplasm is very close to the germplasm in Southern Europe. This is less the case in Northern Europe where the climate is less comparable. Contrary to Southern Europe, in Northern Europe also Limagrain, KWS and Syngenta are competitive in germplasm*."[871]

(1313) Elaborating on the restrictive practices of trait developers vis-à-vis germplasm competitors, Stine, a large US seed company, indicated the following: "*termination and the consequences of termination are a difficult and critical issue to resolve in license negotiations. Trait providers have a history of threatening to terminate trait licenses following introgression of a trait into a company's germplasm. Termination and the threat of termination of a trait license can be highly disruptive to a germplasm developer. Many trait licenses require destruction of germplasm containing a licensed trait upon termination of the applicable trait license. Moreover, many trait licenses prohibit a germplasm developer from using traited germplasm to develop new germplasm that does not contain the trait, put simply, once a trait has been inserted into germplasm, the germplasm cannot be used for the subsequent development of non-traited germplasm. Termination of a trait license can prevent the owners of germplasm from using any germplasm containing the trait and if the trait is broadly incorporated into germplasm it has the potential to completely cease the operations of a germplasm developer if a trait license is terminated*."[872]

(1314) The concern regarding foreclosure of germplasm companies is reinforced by evidence of weakened competition in the germplasm market, due to the strong trait

868 Agreed non-confidential minutes of a call with a seed company, 28 July 2017 (ID8918).
869 Agreed non-confidential minutes of a call with a seed company, 28 July 2017 (ID8918).
870 Agreed non-confidential minutes of a call with a seed company, 28 July 2017 (ID8918).
871 Agreed non-confidential minutes of a call with a seed company, 28 July 2017 (ID8918).
872 Response by Stine to Questionnaire to trait technology suppliers/ trait discovery organizations and research institutes Q14, ID3019 question 12.

position of Monsanto. As explained in recital (1307), [details of business correspondence regarding licensing arrangements].

(1315) [Details of business correspondence regarding licensing arrangements], see Figure 188.

Figure 188 – [Details of business correspondence regarding licensing arrangements]

[…]

Source: MI 000329456.00001, [internal document], ID007889-007313.

(1316) Based, on the above, the Commission therefore concludes that the transaction is likely to lead to the foreclosure of germplasm competitors through the strengthening of the dominant position of Monsanto.

1.8.5. Conclusion: risk of strengthening of dominance

(1317) For the reasons set out above and in light of the results of the investigation, the Commission considers that the Transaction would strengthen a dominant position of Monsanto in HT and IR traits across broad acre crops and be incompatible with the internal market due to non-coordinated effects across broad acre crop HT and IR trait markets.

SECTION XI: CROP PROTECTION

(1318) As explained in Section V.3.1, the Commission will review the competitive effects of the Transaction with respect to its horizontal effects relative both to product and price competition and to innovation competition in the area of "crop protection" products, where the Parties are active. In the present Decision, "crop protection" includes both pest control products (pesticides) used in crops, *stricto sensu*, and, more generally, other related products such as non-agricultural uses of non-selective herbicides and bee health products.

(1319) The Commission will, in turn, asses the competitive effects of the Transaction on the Parties' activities in weed management (Section XI.1), seed treatment (Section XI.2), foliar fungicides (Section XI.3), foliar insecticides (Section XI.4), microbial crop efficiency products (Section XI.5) and bee health (Section XI.6).

(1320) Regarding weed management, the Commission successively assesses the Parties' activities in non-selective herbicides both in their agricultural (Section XI.1.2) and non-agricultural (Section XI.1.3) uses, their activities in innovation relative to non-selective herbicides (Section XI.1.4) and, finally, their activities in weed management systems which combine herbicides with traits making crops tolerant to them (Section XI.1.5). The Commission does not assess selective herbicides – which, unlike non-selective herbicides, do not harm the crop on which they are used – because the Parties do not overlap in selective herbicides in the EEA, Monsanto having no selective herbicide sales there.[873]

[873] In its comments on the Statement of Objections, ABL claimed that the Commission should also have investigated other indications (fungicides and insecticides) as well as overlaps in non-selective herbicides in arable crops (ABL comments on the Statement of Objections, ID10094, Section 2.2.8). The Commission disagrees, notably because there are no overlaps in other indications since Monsanto

1. WEED MANAGEMENT

1.1. Introduction and key concepts

(1321) Weed management includes the activities to control weeds. Such activities commonly involve the use of herbicides, which are products to kill unwanted weeds. However, weed management can refer more broadly to other weed control methods such as mechanical weed control.

(1322) In the following Sections, the assessment will focus specifically, on the one hand, on non-selective herbicides as such (Sections XI.1.2 to XI.1.4) and, on the other hand, on the combined uses over crops of herbicides containing herbicide tolerance traits (Section XI.1.5).

(1323) Non-selective herbicides ("NSH") are products which have a broad spectrum of action and kill both grasses and broadleaf weeds. In particular, and contrary to selective herbicides, they can kill or at least harm the crops on which they are used. They have four main agricultural uses: (i) so-called "burndown" pre- or post-season to clear a field of all vegetation (including volunteer crops), (ii) in combination with herbicide-tolerant crops to clear fields of weeds during the planting season, (iii) as a pre-harvest desiccating treatment, accelerating and evening the ripening process, and (iv) to kill weeds around crops (for resistant crops such as fruit trees, or by shielding vulnerable crops from the spray).[874] Use of NSH is more limited in the EEA than globally, largely because of stricter regulation in terms of both authorised doses and uses.

(1324) Globally, the NSH for agricultural use ("agricultural NSH") segment significantly evolved over the last decades as more and more growers switched to growing GM herbicide-tolerant crops (with the notable exception of the EEA). In parallel, newly developed resistance by key target weeds to NSH – most significantly glyphosate – is an increasing problem for growers in the absence of equally efficient alternatives.[875]

(1325) From a global perspective, there are four key NSH molecules: glyphosate, glufosinate ammonium ("glufosinate" or "GA"), diquat and paraquat. While all four molecules can be characterised as NSH, they differ in terms of mode of action ("MoA") and spectrum, and suitability for given uses. NSH are under regulatory pressure globally, in particular in the EEA, where paraquat is no longer approved and uses of the other three AIs are under re-assessment or have been already restricted (for instance, glufosinate).

Figure 189 – Global NSH market overview

[…]

Source: BASF presentation to the Commission on 2 October 2017, ID8268, slide 10.

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is not active in them in the EEA, and in arable crops for non-selective herbicides because Bayer's glufosinate ammonium is not significantly used in these crops, as explained in the present Section.

874 See Figure 205 and Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), ID2783, question 76.1.

875 BI 03094 "Phillips McDougall AgriService 2016"; BI 03095 "Phillips McDougall Industry Overview 2016".

Figure 190 – EEA NSH market overview

[…]

Source: BASF presentation to the Commission on 2 October 2017, ID8268, slide 11.

(1326) **Glyphosate**, developed by Monsanto, which launched it in 1974, is an amino-acid-based NSH. It is effective against both broadleaf and grass weeds, although it is notably more effective against grass weeds. Its effect is post-emergent, meaning that it is effective against vegetation that has already germinated and has grown. Glyphosate translocates once it makes contact with vegetation, meaning it penetrates through to the whole weed, including the roots. It has been off-patent globally since March 1991.

(1327) Glyphosate's characteristics make it the almost perfect NSH (broad spectrum of controlled weeds, no residual activity, systemic activity, broad post-emergence use, very low cost of production).[876] These characteristics have allowed glyphosate to become the worldwide best-selling crop protection product and the clear benchmark for all competing NSH. Glyphosate is the foundation of Monsanto's leading position in the crop protection, seeds and traits businesses.

(1328) Monsanto was historically able to gradually strengthen and expand its market position from its original activities in chemicals such as glyphosate to traits and seeds with the development and launch of herbicide tolerance systems combining HT traits and the corresponding herbicides. Today, glyphosate faces increasing resistance by weeds and competition from emerging competing products. Against this background, Monsanto's global strategy aims at developing [pipeline information; details of Monsanto's business strategy for pipeline projects].[877]

(1329) As an illustration, Monsanto recently launched in the United States a new stack of HT traits combining glyphosate tolerance and dicamba tolerance (Roundup Ready Xtend), as well as the corresponding mixture of AIs to be sprayed over crops incorporating that stack. The objective is to limit the development of resistance to glyphosate by adding a second MoA to the spray, but also to address the gaps in spectrum resulting from current resistance of a number of key weeds by adding dicamba's efficacy on certain weeds.

(1330) Looking forward, Monsanto is currently working on [pipeline information; details of Monsanto's business strategy for pipeline projects]. It is in particular working on the following [pipeline information]. Moreover, Monsanto is working on [pipeline information].

(1331) Monsanto also offers herbicides which complement those used over traited crops, again in view of resistance management and to broaden choice and efficacy in weed management. For instance, Monsanto sells the residual AI acetochlor used pre-emergence of crops, and is working on [pipeline information].

(1332) **Glufosinate** is also an amino-acid-based NSH. Similarly to glyphosate, it is a broad spectrum herbicide effective against both grass and broadleaf weeds. It is a post-emergent herbicide, primarily active against annual weeds. Unlike glyphosate, however, glufosinate does not translocate: it is a contact herbicide, only killing the parts of vegetation with which it comes into contact.

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876 See Bayer's weed management presentation of 29 September 2017, ID5994, slides 8-10.

877 See Figure 207.

(1333) Glufosinate was developed by Bayer and launched in 1986 and today is the second best-selling NSH worldwide. It appears that Bayer is the only significant producer and seller of glufosinate, at least in the EEA.

(1334) **Diquat and paraquat** are the other two NSH globally. However, their uses are more limited than those of glyphosate and glufosinate, and paraquat in particular is under strong regulatory pressure globally, so much so that it is rapidly losing sales. Paraquat is notably already no longer approved in the EEA.

(1335) Diquat is still currently approved in the EEA, but under strong regulatory pressure and its approval is expected not to be renewed.[878] In any event, its current uses in the EEA are quite specific, and significantly different from those of glufosinate and glyphosate.

(1336) Because new MoAs have not been introduced to the herbicide market in several decades, managing growing resistance to existing MoAs is of paramount importance. The issue is particularly acute in NSH because of the widespread use of glyphosate on glyphosate-tolerant crops, which has led to the development of resistant weed populations. In practice, many AIs can typically only be used once or, at most, twice per crop cycle, and sometimes entire MoAs are limited to one or two uses per crop cycle.

(1337) As a result of these two constraints – resistance management and a limited number of windows for treatment – growers need to develop spray programmes to fully address their weed control needs. To facilitate this process, commercial products are increasingly mixtures of several AIs with different MoAs. Such mixtures allow to limit resistance development and to broaden spectrum in order to solve as many weed problems as possible in the few available treatment opportunities. Another way to limit resistance is to rotate AIs – in particular different MoAs and chemical classes.[879]

(1338) Today, a large number of herbicide products on the market have a high level of differentiation and segmentation to address the specific needs of the grower (in particular for added weed spectrum, and the combination of residual and non-residual action).

(1339) Both Parties are active in agricultural NSH, globally and in the EEA. Globally, Monsanto sells glyphosate formulations mainly under the Roundup brand (as well as technical glyphosate to many competitors), while Bayer sells both limited quantities of glyphosate formulations (also in mixtures with other – selective – AIs) as well as, mainly, glufosinate formulations under the Basta and Liberty brands. Both Parties have innovation efforts in NSH, by developing either new NSH AIs or new formulations of their existing non-selective AIs in mixtures with selective AIs.

(1340) Bayer's global sales of agricultural NSH amounted to EUR […] in 2015 (n°2 globally). Monsanto's global sales amounted to EUR […] in 2015 (n°1 globally).[880]

878 See recital (1431).

879 See Commission Decision in Case M.7932 – Dow/DuPont (2017), Section V.6.6.1.6.

880 Parties' response to the Commission's request for information RFI 30, Annex 30.1A, ID4108.

(1341) In the EEA, the Parties' NSH for agricultural use only overlap in perennial crops as glyphosate is used both in perennial and non-perennial crops[881] while glufosinate is only significantly used in perennial crops.

(1342) In addition, NSH have non-agricultural uses to clear weeds outside of crops, for instance in public areas, landscapes (including golf courses) and along transportation channels (notably railways and roads). Likely in view of the limited revenues in these segments, NSH for non-agricultural uses ("non-agricultural NSH") tend to be "secondary" uses of molecules initially developed for agricultural uses. In particular, innovation appears to be limited to and tributary of developments for agriculture.[882]

(1343) Contrary to agricultural uses, in the EEA Bayer has significant sales of glyphosate formulations (mainly in mixtures with other AIs such as diflufenican and flufenacet) as well as mixtures of other AIs (for instance iodosulfuron, triclopyr, fluroxypyr and aminopyralid) under brands such as Pistol, Parcours, Speedline and Mileway for non-agricultural uses. Bayer typically manufactures these mixtures, procuring the required technical glyphosate from Monsanto.

(1344) Bayer's global sales of non-agricultural NSH amounted to EUR […] in 2015. Monsanto's global sales amounted to EUR […] in 2015.[883]

1.2. Competitive assessment in agricultural NSH: non-coordinated effects on product and price competition

(1345) The Commission assesses overlaps between the Parties' products in NSH only because Monsanto has no sales of selective herbicides in the EEA, and there is therefore no overlap in the EEA between the Parties in selective herbicides, which – as detailed in Section XI.1.2.1 – are not part of the same relevant product market as NSH.

1.2.1. Product market definitions

1.2.1.1. Commission precedents

(1346) In previous cases the Commission considered that agricultural NSH should be distinguished from selective herbicides and that NSH may be possibly further divided by crop. However, for perennial crops, the Commission considered that both NSH and selective herbicides should be included in the same product market, although it acknowledged mixed views from market participants and the fact that NSH and selective herbicides would typically address different needs for perennial crops.[884]

1.2.1.2. Notifying Party views

(1347) In the Form CO, the Notifying Party agreed with Commission precedents and submitted that NSH should be distinguished from selective herbicides. However, for

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881 Perennial crops are crops which last more than one season, as opposed to annual crops such as cereals, corn, cotton, OSR and soy. The Parties provided a full list of their classification of crops as perennial in their response to the Commission's request for information RFI 33, Annex 33.5, which notably includes fruits and nuts, grapes/vines, flowers and a few vegetables and other crops.

882 Form CO, part 2, paragraph 437.

883 Parties' response to the Commission's request for information RFI 30, Annex 30.1A, ID4108.

884 Commission Decisions in Case M.2547 – Bayer/Aventis Crop Science (2002), recitals 573-575; Case M.1806 – AstraZeneca/Novartis (2000), recitals 48, 54 and 66; Case M.6141 – CNAC/Koor Industries/Makhteshim Agan Industries (2011), recital 31; Case M.7962 – ChemChina/Syngenta (2017), recital 111.

the definition of the relevant product market for agricultural NSH, the Notifying Party claimed that a further segmentation by crop would not be appropriate for the competitive assessment of NSH "*because they do not differ depending on the crop that they are used on (with the exception of those perennial crops where both selective and non-selective herbicides can be used for weed control)*".[885]

(1348) In their response to the Article 6(1)(c) Decision, the Parties argued that: (i) the Parties' NSH only overlap in perennial crops, (ii) selective herbicides (used in mixtures to cover a broad spectrum of weeds) and NSH should be considered as part of the same market for perennial crops, (iii) further segmentation by specific perennial crop is not appropriate and (iv) "*the only further segmentation that appropriately yields useful analysis is grouping perennial crops by age and sensitivity,*[886] *such as sensitive perennial crops under three years of age on the one hand, and mature perennial crops over three years of age on the other. This delineates the respective uses of glufosinate ammonium and glyphosate in herbicides used in perennial crops, where the former is used in young, sensitive perennial crops for crop safety reasons, and the latter is used in mature perennial crops once the risk of damage from its use has passed*" (emphasis added).[887]

1.2.1.3. Commission assessment

(1349) As detailed in Sections XI.1.2.5 and XI.1.2.6, the Commission's investigation confirmed that the Transaction would likely give rise to a significant impediment to effective competition under any plausible market definition. Nevertheless, the investigation confirmed that it is likely appropriate to segment NSH by crop groupings.

(1350) On this basis, it would be possible to distinguish NSH for perennial crops from NSH for non-perennial crops. While it is true that, precisely because NSH are active across crops and weeds, they are not related to specific crops, the investigation revealed that only certain NSH are registered and used on specific different crops. In particular, the Parties themselves explain that, in the EEA, glyphosate can be used on perennial and non-perennial crops while glufosinate is only used on perennial crops.[888] Moreover, different NSH may be used preferentially on different crops in light of their specific characteristics.

(1351) The Parties' internal documents confirm that they segment agricultural NSH by crop groupings, distinguishing fruits/nuts as one group, as shown in Figure 191.

Figure 191 – Bayer's view of the EU NSH market per crop (2014)

[…]

Source: Form CO, part 2, Annex 2.2.3, slide 13.

(1352) Although from a supply-side perspective NSH may be used across several crops, from a demand-side perspective a given grower will typically grow only certain crops and have specific weed control needs for such crops, for which not all products would be equally effective.

885 Form CO, part 2, paragraph 33.

886 "Sensitivity" refers to the vulnerability of a given plant to the use of herbicides.

887 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 101-104.

888 Form CO, part 2, paragraphs 88-90 and 95-99.

(1353) Distinguishing as the Parties propose sensitive from mature perennial crops does not appear appropriate. Indeed, the same crop could be categorised as sensitive or mature depending on its age, with a cut-off point according to the Parties of three years. Such cut-off of three years is therefore not significant in terms of the real development and sensitivities of the actual plants. In terms of the use of NSH, the difference between sensitive and mature perennial crops appears to be more of a continuum with an indistinguishable limit, with the choice of weed control products by growers to be made in light of their differentiated attributes notably in terms of cost, efficacy and damage to crops/yield.

(1354) As the Parties acknowledge, the choice of NSH for perennial crops needs to be made on a case by case basis depending on the specific crop planted and among a limited range of differentiated products: "*[the choice between glufosinate and glyphosate] would no doubt [depend] on a number of factors, not limited to the value of the perennial crop (when compared to the cost of each product), and the geography and climate in which the crop is grown (therefore determining the weed spectrum and so affecting which product is more effective). For example, a grower would not purchase the more expensive herbicide containing glufosinate ammonium for use on a perennial crop where the value of the damage caused by glyphosate to the crop's yield would equal less than the increased marginal cost of the herbicide.*"[889] This supports the conclusion that glyphosate and glufosinate can both be used in perennial crops, with specific decisions on a given use to be made by growers in light of a number of considerations.

(1355) This assessment is confirmed by competitors: "*[t]he different choice of the farmers can be connected with some elements, such as: necessity of a more rapid response (glufosinate am) or of a better action of sistemicity [sic] (glyphosate)*" and "*[w]e believe that growers do in fact switch products based on price, product efficacy on certain segment and crops, and offerings available within the grower's country*".[890]

(1356) One competitor highlighted – notably in relation to young perennial crops – that "*[b]oth products control a large number of weeds and thus are each suitable for this use. Glyphosate is considerably less expensive and would be the preferred product in most situations. Glufosinate is stronger on some weeds compared to glyphosate and could be the better choice depending on weed spectrum. Also, glufosinate controls some weeds that may be resistant to glyphosate and could be preferred for this reason. Glufosinate is a contact product and could be preferred in young perennial crops. In case of accidental spraying on the perennial crop, glyphosate, being a systemic herbicide, could cause more damage than glufosinate. However, with proper usage, both products should be very effective*" (emphasis added).[891]

(1357) Another competitor explained that "*[w]hile Glyphosate might be less expensive, Glufosinate sometimes is easier to apply (because of the dependency of the leaf development - see above). Depending on the intended biological effect, there might be a technical advantage for one of the both active ingredients*" (emphasis added).[892]

(1358) Furthermore, regarding the Parties' argument that, for perennial crops, the relevant product market should include both NSH and selective herbicides, the Notifying

889 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 109.
890 Questionnaire to Crop Protection Competitors (Q4), ID3327 and ID3530, question 20.1.
891 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), ID3633, question 78.3.1.
892 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), ID2783, question 78.3.1.

Party itself explained in the Form CO that "*[h]erbicides formulated with glyphosate are effective against a broad range of weeds, because glyphosate is a broad-spectrum herbicide. Selective herbicides tend to have a narrower range of weeds against which they are effective. […] Bayer's selective herbicides are used standalone only in perennial crops where the use of a non-selective herbicide such as glyphosate is not possible due to the crop safety reasons considered above, such as the youth or sensitivity of the crop, or the proximity of the foliage or fruit to the ground (i.e., non-tree crops). For these reasons, selective herbicides are not substitutable for formulated herbicides containing glyphosate [which is a NSH], but rather are complementary products used as mixing partners*" (emphasis added).[893] This statement supports the finding that selective herbicides and NSH would not be part of the same relevant product market for herbicides used in perennial crops.[894]

(1359) Therefore, based on the investigation, the Commission considers that NSH form a separate relevant product market from selective herbicides and should be further divided by crop groupings, separating in particular perennial crops from other crops, without however further dividing such groups by individual crop.

1.2.1.4. Conclusion

(1360) In light of precedents and in view of the Parties' arguments, and taking into account the results of the investigation, the Commission considers that, for the purpose of examining the effects of the Transaction, the relevant product market for agricultural herbicides should be segmented, on the one hand, between selective herbicides and NSH and, on the other hand and within NSH, between perennial crops and non-perennial crops. As to the definition of the relevant product market for NSH, the Commission considers that agricultural NSH for perennial crops is the only segment where the Parties materially overlap in the EEA. For the avoidance of doubt, the relevant product market is therefore NSH for perennial crops, which does not include selective herbicides. The Commission considers that concerns would arise in view of the Parties' overlaps and high shares also under the alternative market definition suggested by the Parties of agricultural NSH for all crops, which the Commission assesses where relevant.[895]

1.2.2. Geographic market definition

1.2.2.1. Commission precedents

(1361) In previous cases, notably Case M.7932 – Dow/DuPont, the Commission considered that crop protection product markets are national in their geographic scope.[896]

1.2.2.2. Notifying Party views

(1362) The Notifying Party acknowledges these precedents, notably in light of the fact that crop protection products are authorised nationally. However, the Notifying Party mentions the growing importance of parallel trade and regulations whereby many characteristics of crop protection products are set at the EEA level (such as the AI approval as well as maximum residue levels – "MRLs"). Eventually, the Notifying

893 Form CO, part 2, paragraphs 195-196.

894 See Commission Decision in Case M.7962 – ChemChina/Syngenta (2017), recital 111.

895 See Section XI.1.2.6.3.

896 Commission Decisions in Case M.6141 – CNAC/Koor Industries/Makhteshim Agan Industries (2011), recitals 37-39; Case M.7932 – Dow/DuPont (2017), recital 332.

Party proposes to leave the geographic market definition – either national or at EEA level – open.[897]

1.2.2.3. Commission assessment

(1363) The investigation and the Commission's most recent precedents confirm – in the absence of new arguments or evidence to the contrary brought by the Notifying Party – that crop protection product markets are national in geographic scope. This conclusion applies throughout Section XI.1 to Section XI.6 to all crop protection products.

(1364) This conclusion notwithstanding, in the crop protection industry several aspects of crop protection products – some of which raised by the Notifying Party – are decided or implemented at a wider than national level, either at EEA level or globally. For instance, strategy formation, R&D and the production of AIs take place at a global level, while AI approval takes place at the EEA level.

(1365) It follows that in the analysis of national markets the Commission will duly take into account such global and EEA elements because competition in national markets is strongly influenced by these other two levels.

1.2.2.4. Conclusion

(1366) In light of precedents and the views of the Notifying Party, but also the results of the investigation, the Commission considers that crop protection product markets are national in geographic scope.

1.2.3. Activities of the Parties and their competitors in the EEA

1.2.3.1. Monsanto's current and forthcoming portfolio

(1367) Monsanto's EEA sales of agricultural NSH amounted to EUR […] in 2016, of which EUR […] ([…]%) for perennial crops. The largest sales occurred in […].[898]

(1368) In the EEA, Monsanto only sells glyphosate, mostly under the Roundup brand. Monsanto also sells technical glyphosate for formulation into finished products to a number of players, including Bayer, as well as branded and non-branded formulated glyphosate products for resale.

(1369) Glyphosate is Monsanto's commercially most important crop protection product, accounting for about […]% of Monsanto's crop protection turnover worldwide and […]% of its overall turnover. It is the product on which the company based its successful business across traits, seeds and crop protection, and at the centre of the company's efforts to preserve and expand this business looking forward.

(1370) In that regard, Monsanto is currently developing [pipeline information]. It is developing [pipeline information]. In the Parties' words, [quote from internal document; pipeline information].[899] This [details of Monsanto's business strategy for pipeline projects] approach is illustrated by the Monsanto internal document in Figure 192.

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897 Form CO, part 2, paragraphs 37-40 and 342-344; Form CO, part 3, paragraphs 85-100; Form CO, part 4, paragraphs 99-102, 111 and 115.

898 Parties' response to the Commission's request for information RFI 82, Annex 82.4, ID7048.

899 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 119.

Figure 192 – Monsanto's "Comprehensive Portfolio"

[…]

Source: MI 0009662.00001 [internal document], ID5194-20, slide 7 (yellow highlight added).

1.2.3.2. Bayer's portfolio of existing products and forthcoming pipeline projects

(1371) Bayer's EEA sales of agricultural NSH amounted to EUR […] in 2016, of which EUR […] ([…]%) for perennial crops. The largest sales occurred in […].[900]

(1372) In the EEA, Bayer manufactures and sells NSH chiefly based on the glufosinate AI under the Basta and Finale brands. Bayer sells limited quantities of glyphosate formulations (also in mixtures with other – selective – AIs such as diflufenican) notably under the Zarpa, Expansiel and Vanquish brands, and resells branded Roundup. For agricultural uses, only small volumes of glyphosate are involved, which Bayer purchases entirely from Monsanto.

(1373) [Pipeline projects], as illustrated in Figure 193 and Figure 194.[901]

Figure 193 – [Pipeline projects]

[…]

Source: BI 01598 [internal document], ID451-217, slide 84.

(1374) [Pipeline information] would typically be used to control annual grasses and broadleaf weeds. It is a residual, pre-emergent herbicide that does not translocate. Target crops would be tree crops (such as olives, fruit trees, citrus and grapes) in an inter-row application.

(1375) [Pipeline information].

Figure 194 – [Pipeline information]

[…]

Source: BI 33808 [internal document], "*Scenario 2 (2)*" *tab (yellow highlight added).*

(1376) Finally, as detailed in Section XI.1.4.2.2, Bayer has a number of different pipeline projects ([pipeline information]) which target Monsanto's franchise built around glyphosate, either standalone or in mixtures with other AIs. Some of these projects are already or foreseen to soon be sufficiently advanced to have a high likelihood of being launched commercially in the EEA.[902]

1.2.3.3. Competing products

(1377) In the EEA, the only other NSH is diquat.

(1378) The market investigation confirmed it to be used in a different manner from glyphosate and glufosinate,[903] and accordingly as a more distant competitor to the

900 Parties' response to the Commission's request for information RFI 82, Annex 82.4, ID7048.

901 Form CO, part 2, paragraphs 279-281 and Annexes 2.2.2 and 2.2.3; Parties' response to the Commission's request for information RFI 20, Annex 2.5.6; Parties' response to the Commission's request for information RFI 33, Annex 33.14.

902 [Pipeline information; Bayer's strategy for pipeline projects].

903 Questionnaire to Crop Protection Competitors (Q4), ID3530, question 19.1.

Parties' products. Moreover, the Parties expect that diquat's approval will likely not be renewed.[904]

(1379) A number of products mixing selective AIs to replicate NSH efficacy are present in the EEA, but have relatively limited sales.

1.2.4. Notifying Party arguments

(1380) In the Form CO and their response to the Article 6(1)(c) Decision, the Parties in essence argued that – irrespective of the chosen market definition – glufosinate and glyphosate do not compete because, in light of their different technical characteristics (spectrum, systematicity, regulatory constraints, etc.) and – particularly – cost, their uses are different in practice. The Parties also argued in their response to the Article 6(1)(c) Decision that mixtures of selective herbicides with proper application technologies can be used to replicate NSH and would therefore constitute a competitive constraint on NSH.[905]

(1381) The Notifying Party further argued that glyphosate and glufosinate are under regulatory pressure and that their uses will likely be strongly limited in the near future, thereby reducing the likelihood of any competition concern being raised by the Transaction for NSH.[906]

(1382) In their response to the Statement of Objections, the Parties in essence argued that the Commission's concerns in the Statement of Objections would be fully addressed by the proposed Commitments – which would fully remove the overlap between the Parties – and that, in any event, Bayer would not have continued to support glufosinate in the EEA absent the Transaction, thereby eliminating any overlap. [Pipeline information].[907]

1.2.5. The Transaction would give rise to a number of affected markets with a high combined share and an increment

1.2.5.1. Reliability and relevance of market share data

(1383) The Commission illustrates below its competition assessment at the formulated product level with shares computed at the level of crop groupings at the national level. These shares are meant to provide an informative approximation at an aggregated level. The Commission uses shares for these groupings at the EEA level for context, as being informative of the strength of market players at the level of their portfolio of AIs.

(1384) These shares were provided by the Parties on the basis of the Agrowin database. The Commission understands that Agrowin is widely recognised in the agrochemical industry and used internally in the ordinary course of business for the purpose of estimating market size and the market positions of the different players.

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904 Form CO, part 2, Annex 2.2.2, pages 6 and 7.

905 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 85-114.

906 Form CO, part 2, paragraphs 69-71 and 78-79.

907 Parties' response to the Statement of Objections, ID9941, paragraphs 319-330, […]; Parties' response to the first Letter of Facts, ID10661, paragraphs 74-77.

1.2.5.2. Affected markets

(1385) As shown in Table 144 to Table 148, the Transaction would give rise to a number of affected markets with a high combined share and an increment under any plausible relevant product market definition.

(1386) Indeed, affected markets under a definition of the relevant product market for all NSH across crops are Austria, Bulgaria, the Czech Republic, France, Germany, Greece, Italy, the Netherlands, Poland, Portugal, Romania, Spain and the United Kingdom (13 countries). Most of these markets remain affected even when segmenting NSH by crop groupings to isolate perennial crops (and even further splitting these into sensitive and mature perennial crops), or when including also selective herbicides for perennial crops.[908]

Table 144 – Non-selective herbicides for agricultural uses, for all crops (2016)

Country	Market size (EUR million)	Bayer	Monsanto	***Combined***	ChemChina-Syngenta	DowDuPont	BASF	FMC	Nufarm
EEA	[…]	[5-10]%	[20-30]%	***[30-40]%***	[10-20]	[0-5]	[0-5]	[5-10]	[0-5]
Austria	[…]	[50-60]%	[20-30]%	***[80-90]%***	[10-20]	[0-5]	[0-5]	[0-5]	[0-5]
Bulgaria	[…]	[0-5]%	[80-90]%	***[90-100]%***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
Czech Republic	[…]	[5-10]%	[10-20]%	***[20-30]%***	[10-20]	[0-5]	[0-5]	[0-5]	[0-5]
France	[…]	[10-20]%	[20-30]%	***[40-50]%***	[10-20]	[0-5]	[0-5]	[5-10]	[5-10]
Germany	[…]	[5-10]%	[20-30]%	***[30-40]%***	[10-20]	[0-5]	[0-5]	[20-30]	[0-5]
Greece	[…]	[5-10]%	[30-40]%	***[40-50]%***	[20-30]	[0-5]	[0-5]	[0-5]	[5-10]
Italy	[…]	[10-20]%	[30-40]%	***[40-50]%***	[10-20]	[0-5]	[0-5]	[0-5]	[0-5]
Netherlands	[…]	[10-20]%	[20-30]%	***[40-50]%***	[20-30]	[10-20]	[0-5]	[0-5]	[10-20]
Poland	[…]	[0-5]%	[30-40]%	***[40-50]%***	[30-40]	[0-5]	[0-5]	[0-5]	[5-10]
Portugal	[…]	[10-20]%	[10-20]%	***[20-30]%***	[20-30]	[5-10]	[0-5]	[0-5]	[10-20]
Romania	[…]	[0-5]%	[20-30]%	***[20-30]%***	[30-40]	[0-5]	[0-5]	[0-5]	[10-20]
Spain	[…]	[10-20]%	[10-20]%	***[20-30]%***	[10-20]	[0-5]	[0-5]	[0-5]	[0-5]
United Kingdom	[…]	[0-5]%	[40-50]%	***[40-50]%***	[10-20]	[0-5]	[0-5]	[0-5]	[5-10]

Source: Parties' response to the Commission's request for information RFI 82, Annex 82.4, ID7048.

[908] Parties' response to the Commission's request for information RFI 82, Annex 82.4, ID7048.

(1387) Specifically, affected markets under a definition of the relevant product market for NSH for perennial crops only (likely the appropriate product market definition in the Commission's view) are Austria, Bulgaria, the Czech Republic, France, Germany, Greece, Hungary, Italy, the Netherlands, Poland, Portugal, Romania, Slovakia, Spain and the United Kingdom (15 countries).

Table 145 – Non-selective herbicides for agricultural uses on perennial crops (2016)

Country	Market size (EUR million)	Bayer	Monsanto	***Combined***	ChemChina-Syngenta	DowDuPont	BASF	FMC	Nufarm
EEA	[...]	[10-20]%	[20-30]%	***[30-40]%***	[10-20]	[0-5]	[0-5]	[0-5]	[0-5]
Austria	[...]	[60-70]%	[30-40]%	***[90-100]%***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
Bulgaria	[...]	[20-30]%	[10-20]%	***[40-50]%***	[5-10]	[0-5]	[0-5]	[0-5]	[0-5]
Czech Republic	[...]	[60-70]%	[5-10]%	***[70-80]%***	[10-20]	[0-5]	[0-5]	[0-5]	[0-5]
France	[...]	[20-30]%	[20-30]%	***[40-50]%***	[5-10]	[0-5]	[0-5]	[5-10]	[10-20]
Germany	[...]	[60-70]%	[0-5]%	***[70-80]%***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
Greece	[...]	[5-10]%	[30-40]%	***[40-50]%***	[20-30]	[0-5]	[0-5]	[0-5]	[5-10]
Hungary	[...]	[20-30]%	[5-10]%	***[20-30]%***	[5-10]	[0-5]	[0-5]	[10-20]	[5-10]
Italy	[...]	[10-20]%	[20-30]%	***[40-50]%***	[10-20]	[0-5]	[0-5]	[0-5]	[0-5]
Netherlands	[...]	[10-20]%	[20-30]%	***[40-50]%***	[5-10]	[10-20]	[0-5]	[0-5]	[20-30]
Poland	[...]	[5-10]%	[50-60]%	***[60-70]%***	[10-20]	[0-5]	[0-5]	[0-5]	[5-10]
Portugal	[...]	[10-20]%	[10-20]%	***[20-30]%***	[10-20]	[10-20]	[0-5]	[0-5]	[10-20]
Romania	[...]	[5-10]%	[30-40]%	***[40-50]%***	[20-30]	[0-5]	[0-5]	[5-10]	[10-20]
Slovakia	[...]	[60-70]%	[0-5]%	***[60-70]%***	[10-20]	[10-20]	[0-5]	[0-5]	[0-5]
Spain	[...]	[10-20]%	[10-20]%	***[20-30]%***	[10-20]	[0-5]	[0-5]	[0-5]	[0-5]
United Kingdom	[...]	[20-30]%	[50-60]%	***[80-90]%***	[0-5]	[0-5]	[0-5]	[0-5]	[5-10]

Source: Parties' response to the Commission's request for information RFI 82, Annex 82.4, ID7048.

(1388) Separately, to confirm the robustness of the Commission's findings, although adding selective herbicide sales in perennial crops of course typically dilutes Monsanto's market shares since it does not sell selective herbicides in the EEA, this is not true for all national markets and the effect on the Parties' combined share is often small.

In practice, only France, Hungary, the Netherlands, Spain and the United Kingdom are no longer affected if selective herbicides are taken into account for mature perennial crops (and perennial crops overall, due to the fact that mature perennial crops are the largest segment), and only the United Kingdom for sensitive perennial crops.[909]

Table 146 – Non-selective and selective herbicides for agricultural uses on perennial crops (2016)

Country	Market size (EUR million)	Bayer	Monsanto	***Combined***	ChemChina-Syngenta	DowDuPont	BASF	FMC	Nufarm
EEA	[...]	[10-20]%	[10-20]%	***[20-30]%***	[10-20]%	[10-20]%	[0-5]%	[0-5]%	[0-5]%
Austria	[...]	[30-40]%	[10-20]%	***[40-50]%***	[0-5]%	[0-5]%	[0-5]%	[10-20]%	[0-5]%
Bulgaria	[...]	[20-30]%	[10-20]%	***[40-50]%***	[10-20]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Czech Republic	[...]	[50-60]%	[5-10]%	***[60-70]%***	[10-20]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Germany	[...]	[40-50]%	[0-5]%	***[40-50]%***	[0-5]%	[0-5]%	[5-10]%	[0-5]%	[0-5]%
Greece	[...]	[5-10]%	[20-30]%	***[30-40]%***	[20-30]%	[5-10]%	[0-5]%	[0-5]%	[5-10]%
Italy	[...]	[10-20]%	[10-20]%	***[30-40]%***	[10-20]%	[5-10]%	[5-10]%	[0-5]%	[0-5]%
Poland	[...]	[5-10]%	[20-30]%	***[20-30]%***	[20-30]%	[5-10]%	[5-10]%	[0-5]%	[5-10]%
Portugal	[...]	[10-20]%	[5-10]%	***[20-30]%***	[10-20]%	[10-20]%	[0-5]%	[0-5]%	[10-20]%
Romania	[...]	[5-10]%	[20-30]%	***[30-40]%***	[20-30]%	[0-5]%	[0-5]%	[0-5]%	[10-20]%
Slovakia	[...]	[40-50]%	[0-5]%	***[50-60]%***	[10-20]%	[5-10]%	[0-5]%	[0-5]%	[0-5]%

Source: Parties' response to the Commission's request for information RFI 82, Annex 82.4, ID7048.

[909] Parties' response to the Commission's request for information RFI 82, Annex 82.4, ID7048.

(1389) In addition, while Bayer has larger shares in sensitive perennial crops than in all perennial crops and Monsanto has larger shares in mature perennial crops than in all perennial crops, their combined share is similar in all scenarios, with affected markets being largely the same.[910]

Table 147 – Non-selective herbicides for agricultural uses on sensitive perennial crops (2016)

Country	Market size (EUR million)	Bayer	Monsanto	***Combined***	ChemChina-Syngenta	DowDuPont	BASF	FMC	Nufarm
EEA	[...]	[30-40]%	[10-20]%	***[50-60]%***	[10-20]	[0-5]	[0-5]	[0-5]	[0-5]
Austria	[...]	[80-90]%	[10-20]%	***[90-100]%***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
Bulgaria	[...]	[40-50]%	[10-20]%	***[60-70]%***	[5-10]	[0-5]	[0-5]	[0-5]	[0-5]
Czech Republic	[...]	[80-90]%	[0-5]%	***[80-90]%***	[5-10]	[0-5]	[0-5]	[0-5]	[0-5]
France	[...]	[40-50]%	[20-30]%	***[60-70]%***	[5-10]	[0-5]	[0-5]	[5-10]	[0-5]
Germany	[...]	[80-90]%	[0-5]%	***[80-90]%***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
Greece	[...]	[20-30]%	[20-30]%	***[40-50]%***	[20-30]	[0-5]	[0-5]	[0-5]	[0-5]
Hungary	[...]	[30-40]%	[0-5]%	***[40-50]%***	[0-5]	[0-5]	[0-5]	[5-10]	[5-10]
Italy	[...]	[30-40]%	[20-30]%	***[50-60]%***	[10-20]	[0-5]	[0-5]	[0-5]	[0-5]
Netherlands	[...]	[30-40]%	[20-30]%	***[50-60]%***	[5-10]	[10-20]	[0-5]	[0-5]	[10-20]
Poland	[...]	[20-30]%	[50-60]%	***[70-80]%***	[10-20]	[0-5]	[0-5]	[0-5]	[5-10]
Portugal	[...]	[30-40]%	[5-10]%	***[40-50]%***	[10-20]	[5-10]	[0-5]	[0-5]	[5-10]
Romania	[...]	[20-30]%	[20-30]%	***[40-50]%***	[20-30]	[0-5]	[0-5]	[0-5]	[10-20]
Slovakia	[...]	[80-90]%	[0-5]%	***[80-90]%***	[5-10]	[5-10]	[0-5]	[0-5]	[0-5]

[910] There are only two differences: Slovenia is an additional affected market in sensitive perennial crops, and Hungary is no longer affected in mature perennial crops.

Country	Market size (EUR million)	Bayer	Monsanto	***Combined***	ChemChina-Syngenta	DowDuPont	BASF	FMC	Nufarm
Slovenia	[...]	[30-40]%	[0-5]%	***[30-40]%***	[20-30]	[0-5]	[0-5]	[0-5]	[0-5]
Spain	[...]	[30-40]%	[10-20]%	***[40-50]%***	[10-20]	[0-5]	[0-5]	[0-5]	[0-5]
United Kingdom	[...]	[40-50]%	[40-50]%	***[80-90]%***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]

Source: Parties' response to the Commission's request for information RFI 82, Annex 82.4, ID7048.

Table 148 – Non-selective herbicides for agricultural uses on mature perennial crops (2016)

Country	Market size (EUR million)	Bayer	Monsanto	***Combined***	ChemChina-Syngenta	DowDuPont	BASF	FMC	Nufarm
EEA	[...]	[10-20]%	[20-30]%	***[30-40]%***	[10-20]	[0-5]	[0-5]	[0-5]	[5-10]
Austria	[...]	[50-60]%	[40-50]%	***[90-100]%***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
Bulgaria	[...]	[10-20]%	[10-20]%	***[30-40]%***	[5-10]	[0-5]	[0-5]	[0-5]	[0-5]
Czech Republic	[...]	[50-60]%	[5-10]%	***[50-60]%***	[10-20]	[0-5]	[0-5]	[0-5]	[0-5]
France	[...]	[10-20]%	[20-30]%	***[30-40]%***	[5-10]	[0-5]	[0-5]	[5-10]	[10-20]
Germany	[...]	[50-60]%	[0-5]%	***[60-70]%***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
Greece	[...]	[5-10]%	[30-40]%	***[30-40]%***	[20-30]	[0-5]	[0-5]	[0-5]	[5-10]
Italy	[...]	[10-20]%	[30-40]%	***[40-50]%***	[10-20]	[0-5]	[0-5]	[0-5]	[0-5]
Netherlands	[...]	[10-20]%	[20-30]%	***[30-40]%***	[5-10]	[10-20]	[0-5]	[0-5]	[30-40]
Poland	[...]	[5-10]%	[50-60]%	***[60-70]%***	[10-20]	[0-5]	[0-5]	[0-5]	[5-10]
Portugal	[...]	[10-20]%	[10-20]%	***[20-30]%***	[20-30]	[10-20]	[0-5]	[0-5]	[10-20]
Romania	[...]	[5-10]%	[30-40]%	***[40-50]%***	[20-30]	[0-5]	[0-5]	[5-10]	[10-20]
Slovakia	[...]	[40-50]%	[0-5]%	***[50-60]%***	[10-20]	[10-20]	[0-5]	[0-5]	[0-5]
Spain	[...]	[10-20]%	[10-20]%	***[20-30]%***	[10-20]	[0-5]	[0-5]	[0-5]	[0-5]

Country	Market size (EUR million)	Bayer	Monsanto	***Combined***	ChemChina-Syngenta	DowDuPont	BASF	FMC	Nufarm
United Kingdom	[...]	[10-20]%	[50-60]%	***[70-80]%***	[5-10]	[0-5]	[0-5]	[0-5]	[5-10]

Source: Parties' response to the Commission's request for information RFI 82, Annex 82.4, ID7048.

(1390) Similarly, market shares and affected markets are not significantly different whether looking at all perennial crops or only perennial tree crops.[911] The Commission provides shares for all perennial crops, which it views as the likely appropriate product market definition, not limited only to perennial tree crops.

(1391) Separately, while Monsanto manufactures and sells Roundup, it also owns a number of other glyphosate brands and product registrations. Monsanto sells these glyphosate formulations for resale to third parties, which to a large extent act as distributors for Monsanto. As the Parties explain, "*Monsanto branded products are defined as "True brand" (formulated glyphosate produced, registered and sold under the Roundup brand) or "White label" (formulated glyphosate sold and registered under Monsanto trademarks other than Roundup). Monsanto non-branded products are defined as "Private label" (formulated glyphosate sold under Monsanto registration but with a third party trademark) or "Third party label" (formulated glyphosate manufactured by Monsanto but sold under third party registration and trademarks)*".[912]

(1392) Accordingly, the Commission provides market shares where all Monsanto branded products sold for resale are allocated to Monsanto. This approach is conservative since it is likely that Monsanto derives not insignificant market power also from its sales of non-branded products, for some of which it holds the registration. In many affected markets, the inclusion of Monsanto branded sales for resale in any event has no or only a limited effect on Monsanto's market share.[913] In Austria, Greece, Hungary, Italy and Portugal, however, the impact is significant, likely because Monsanto's products [details of route to market].[914]

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911 Parties' response to the Commission's request for information RFI 82, Annex 82.4, ID7048. In particular, the Parties' combined share is significantly lower (change of more than four percentage points) when looking at perennial tree crops only in Germany, and is approximately equal (change of less than four percentage points) or higher in Austria, Bulgaria, the Czech Republic, France, Greece, Hungary, Italy, the Netherlands, Poland, Portugal, Romania, Slovakia, Spain and the United Kingdom, as well as in the EEA overall.

912 Parties' response to the Commission's request for information RFI 106, ID9008, footnote 2; see also Form CO, part 2, paragraph 546.

913 Compare the Parties' response to the Commission's request for information RFI 82, Annex 82.2, ID7047, and Annex 82.4, ID7048. In particular, when not including Monsanto branded sales of glyphosate for resale and when looking at all agricultural NSH across crops, Monsanto's share remains the same or similar (change of less than four percentage points) in Bulgaria, the Czech Republic, France, Germany, the Netherlands, Poland, Romania, Spain and the United Kingdom (9 of 13 affected national markets); and decreases by more than four percentage points only in Italy and the EEA overall (Monsanto no longer has a share, with a significant impact on the Parties' combined share, in Austria, Greece and Portugal). When looking at all perennial crops only, the effect is the same (in Slovakia, Monsanto's and the Parties' combined shares do not change at all), except in Hungary where Monsanto no longer has a share.

914 In Portugal, the combined share of the Parties (in practice, Bayer's share) remains the same, indicating that Bayer is the distributor of Monsanto's branded products in that market.

1.2.6. The Parties are important and close competitors

1.2.6.1. The leading position of glyphosate and glyphosate-based mixtures in agricultural NSH in the EEA

(1393) Glyphosate is the highest selling crop protection AI globally, largely because of its use over herbicide-tolerant crops. It is a heavily genericised off-patent molecule manufactured, supplied and sold by many players worldwide, in particular from China.

(1394) In the EEA – where there are no over-the-top uses of glyphosate – glyphosate (including in mixtures) is also the leading NSH AI. In particular, it accounts for approximately 80% of agricultural NSH sales in the largest markets such as France, Germany, Italy and Spain.[915] For instance, a technical institute confirmed that: "*[l]e GLY est très dominant dans les HNS et compte pour 90% des usages pour la protection de la vigne.*"[916]

(1395) Another institute stated that for burndown "*le GLY est très dominant, sans alternative chimique*" and that "*[d]ans les régions françaises où le GLY n'est pas autorisé pour la destruction des couverts végétaux en interculture, les agriculteurs désherbent mécaniquement*".[917]

(1396) Moreover, market players have confirmed glyphosate to be the preferred option for growers in many circumstances, highlighting in particular its effectiveness and cost-efficiency.[918] For instance, a technical institute confirmed that glyphosate is "*très utilisé du fait de l'absence d'autres produits aussi souples et à larges spectres*".[919]

(1397) It appears that for many uses, because glyphosate is the only "perfect" NSH,[920] it is in fact the only viable chemical solution, in the absence of which growers would turn to mechanical solutions. For instance, a technical institute confirmed that "*personne ne sait – en l'absence de nouveaux produits et d'innovation pour l'instant – par quoi remplacer ce produit pratiquement indispensable. L'alternative principale – utilisée notamment en agriculture biologique, agroécologie, Démeter – est la solution mécanique, le travail du sol. Mais cela pose des difficultés techniques au niveau du pied de vigne, et occasionne un surcoût très important du fait de l'important besoin de main d'œuvre.*"[921]

(1398) Another institute stated that "*[l]'éventuelle disparition du GLY entraînerait un surcoût (direct) pour les agriculteurs d'un milliard d'euros en France pour les grandes cultures (notamment du fait de la main d'œuvre pour un désherbage mécanique)*".[922]

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915 Parties' response to the Commission's request for information RFI 82, Annex 82.4, ID7048.

916 Agreed non-confidential minutes of a call with an institute, 13 July 2017 (ID3855).

917 Agreed non-confidential minutes of a call with an institute, 19 July 2017 (ID4672).

918 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), questions 77-80; Questionnaire to Distributors and Institutes (Q2), questions 70-73; Questionnaire to Growers (Q3), questions 27-30; Questionnaire to Crop Protection Competitors (Q4), questions 20-23; Questionnaire to Row Crop Competitors (Q5), questions 97-100.

919 Agreed non-confidential minutes of a call with an institute, 13 July 2017 (ID3855).

920 See Bayer's weed management presentation of 29 September 2017, ID5994, slides 8-10.

921 Agreed non-confidential minutes of a call with an institute, 13 July 2017 (ID3855).

922 Agreed non-confidential minutes of a call with an institute, 19 July 2017 (ID4672).

(1399) Glyphosate's leading position in NSH is confirmed in Bayer's internal documents, as shown in Figure 195 to Figure 197.

Figure 195 – [Market position]

[…]

Source: BI 00433 [internal document], ID451-543, slide 16 (yellow highlight added).

Figure 196 – [Market position]

[…]

Source: Form CO, part 2, Annex 2.2.2, slide 9 (yellow highlight added).

Figure 197 – [Market position]

[…]

Source: Form CO, part 2, Annex 2.2.3, slide 11.

(1400) In sum, glyphosate appears to be the leading AI in NSH for perennial crops in the EEA, and the key AI Bayer is closely targeting with its own products.

1.2.6.2. Monsanto's leading position in glyphosate and agricultural NSH in the EEA

(1401) Although glyphosate is genericised at the global level, Monsanto continues – decades after patent expiry – to hold a significant position on the global glyphosate market, particularly in relation to over-the-top uses,[923] as illustrated in Table 155 as well as Figure 198 and Figure 199.

Figure 198 – [Market position]

[…]

Source: BI-EDISC-0328945 [internal document], ID5882-1298, slide 3 (yellow highlight added).

Figure 199 – [Market position]

[…]

Source: BI 00433 [internal document], ID451-543, slide 34.

(1402) Indeed, with the expiration of patent protection looming, Monsanto developed and launched herbicide tolerance traits in crops, which enabled the use of glyphosate over-the-top in addition to the traditional burndown and so-called "tree, nuts and vines" ("TNV") uses. In so doing, it both significantly increased glyphosate sales (and in particular its own sales)[924] globally and derived very significant revenue from the newly created trait business, which it gradually complemented with acquisitions of seed businesses in which to introgress its traits.

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923 See the Parties' response to the Commission's request for information RFI 106, Annexes 106.1 and 106.2.

924 Over-the-top sales are not automatically available to all sellers of the adequate herbicides since this use typically requires specific regulatory authorisations, which themselves require access to proprietary field-testing data also protected under data protection schemes. Moreover, independently generating such data may be impossible for some players since a licence from the owner of a patented trait is often required to conduct field testing on the use of herbicides on top of crops incorporating that trait (see the Parties' response to the Commission's request for information RFI 82, ID6901, paragraphs 27-59, and the agreed non-confidential minutes of a call with a competitor, 26 October 2017 (ID8426), paragraph 9).

(1403) In the EEA, Monsanto, as the company which originally developed the AI, is still today the leading glyphosate player. Although Monsanto closely monitors [internal assessment of competitive relationships] – this close monitoring [internal assessment of competitive relationships] being illustrated for instance by Figure 200 to Figure 202 – generics have not been able to significantly reduce its sales or market share in the EEA, and Monsanto continues to sell Roundup at a price premium to other glyphosate formulations.[925]

Figure 200 – [Internal assessment of competitive relationships]

[…]

Source: MI 02347 [internal document] ID1455-5167, slide 6.

Figure 201 – Summary of EEA Roundup business (1)

[…]

Source: MI 02354 [internal document], ID1455-5307, slide 73.

Figure 202 – Summary of EEA Roundup business (2)

[…]

Source: MI 02354 [internal document], ID1455-5307, slide 74.

(1404) The Parties confirmed this leading if not dominant position of Monsanto regarding glyphosate products, notably its very large share of global supply compared even to all generic players combined: "*generic suppliers account for approximately* [60-70]*% of world supply in Metric Tons as compared to Monsanto's* [40-50]*%*". At the worldwide and EEA levels, Monsanto's share of glyphosate products is significantly larger than any other player's: in the EEA, Monsanto has a share of [20-30]% and the second-largest player is ChemChina-Syngenta with [10-20]%; worldwide, Monsanto has a share of [30-40]% and the second-largest player is again ChemChina-Syngenta with [10-20]%, the aggregation of all generic Chinese players reaching a [10-20]% share only. In addition, <u>all</u> glyphosate players – including at least some Chinese generic players – appear to "*source glyphosate in some form from Monsanto*", although "*the extent to which the relevant purchasers of glyphosate source their demand from Monsanto*" may vary.[926]

(1405) Monsanto is, by way of consequence, the leading agricultural NSH player, as shown in Table 144 and Table 145 above. In particular, Monsanto appears to have a dominant position in the sale of formulated glyphosate for resale in the EEA with a [50-60]% share in 2015, the share of each competitor being at most [5-10]%.[927]

(1406) Market players have confirmed this leading position, emphasising the superior efficacy of Monsanto glyphosate formulations as well as brand loyalty, the latter notably in relation to regulatory and technical support.[928] For instance, a large

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925 Form CO, part 2, paragraphs 63-65.

926 Parties' response to the Commission's request for information RFI 106, paragraph 19 and Annex 106.3. See also the Parties' response to the Commission's request for information RFI 106, Annexes 106.1 and 106.2.

927 Form CO, part 2, Table 2.61.

928 Agreed non-confidential minutes of a call with an institute, 13 July 2017 (ID3855); Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), questions 77-80; Questionnaire to Distributors and Institutes (Q2), questions 70-73; Questionnaire to Growers (Q3), questions 27-30; Questionnaire to

competitor explained that "*Roundup has an optimized formulation which drives the efficacy and allows for an earlier soil cultivation after use. Roundup is a strong established brand in the EEA.*"[929] Another competitor more generally stated that "*[g]lyphosate […] would be the preferred product in most situations.*"[930]

(1407) Moreover, as illustrated in recital (1370), Monsanto's development of [pipeline information] are designed to preserve its current sales and market share in the EEA.

(1408) In sum, Monsanto is a leading if not dominant player in NSH in the EEA, and thus the key player which Bayer is targeting with its competing products.

1.2.6.3. Non-coordinated effects in national markets

(1409) The Transaction would likely give rise to non-coordinated effects on current and potential product and price competition in national agricultural NSH markets for perennial crops by creating a dominant position, strengthening Monsanto's or Bayer's dominance or by eliminating the other Party as an important competitive constraint and key challenger.

(1410) Bayer's agricultural NSH sales are significantly lesser than Monsanto's. The use of glufosinate is limited by regulations and glufosinate cannot be used as widely as glyphosate. In particular, it appears that glufosinate cannot realistically be used and is indeed seldom used for burndown.[931] The market investigation confirmed that glufosinate cannot be used for all needs addressed by glyphosate, which is often described as an indispensable tool by market participants.[932]

(1411) While it is therefore not contested that glufosinate is not as successful a commercial product as glyphosate and likely not as ideal a NSH, the investigation revealed that glufosinate and glyphosate are likely the closest competitors in NSH, in particular regarding perennial crops, and compete head-to-head for a significant part of NSH uses.[933]

(1412) Indeed, very few NSH are approved for use in the EEA: glyphosate, glufosinate and diquat. Glufosinate is thus the second-best selling NSH in the EEA, and the main challenger to glyphosate, as illustrated in Figure 203.

Figure 203 – EU agricultural NSH market by AI

[…]

Source: Form CO, part 2, Annex 2.2.2, slide 3.

(1413) Moreover, both glufosinate and glyphosate are *true* NSH – in the sense that they kill a broad spectrum of plants, typically including crops if applied to them – and not just *broad spectrum* (mixtures of selective) herbicides. In that sense, they are evidently

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Crop Protection Competitors (Q4), questions 20-23; Questionnaire to Row Crop Competitors (Q5), questions 97-100.

929 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), ID2783, question 80.

930 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), ID3633, question 78.1.1.

931 Parties' response to the Commission's request for information RFI 82, Annex 82.4, ID7048.

932 Agreed non-confidential minutes of a call with an institute, 13 July 2017 (ID3855); Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), questions 76-78; Questionnaire to Distributors and Institutes (Q2), questions 69-71; Questionnaire to Growers (Q3), questions 27-29; Questionnaire to Crop Protection Competitors (Q4), questions 19-21; Questionnaire to Row Crop Competitors (Q5), questions 96-98.

933 See also Bayer's internal document BI 01839, notably slides 8-71.

very close to one another, as confirmed by Figure 204. They are both post-emergent products, acting on existing weeds.

Figure 204 – [Pipeline information]

[…]

Source: Form CO, part 2, Annex 2.2.3, slide 20.

(1414) The investigation revealed that both glufosinate and glyphosate are used in a number of the same crops to address weed management needs,[934] as illustrated in Figure 205.

Figure 205 – NSH uses

[…]

Source: BI 00433 [internal document], ID451-543, slide 9 (yellow highlight added).

(1415) [Details of Monsanto's pricing and product positioning strategy].[935]

(1416) Where it can compete – for instance in NSH for perennial crops – Bayer's glufosinate is in fact one of very few alternative solutions to glyphosate – if not the only chemical alternative – often with a larger market share than Monsanto and a degree of brand loyalty.[936] Bayer's share is sometimes so large – notably in perennial crops – that Bayer appears to be in a dominant position in a number of markets such as Austria, the Czech Republic, Germany and Slovakia (see Table 145).

(1417) In fact, as shown in Figure 206, it appears that Bayer and Monsanto are particularly close in perennial crops, since Monsanto's branded Roundup seems to be a preferred option for growers as opposed to generic glyphosate, likely in view of a perceived greater quality or safety.

Figure 206 – Roundup use on perennials (France)

[…]

Source: MI 02187 [internal document], slide 19 (yellow highlight added).

(1418) Conversely, as illustrated in Table 148 above, Bayer's glufosinate sales result in significant market shares also in mature perennial crops, thereby contradicting the Parties' arguments on the alleged lack of substitutability and closeness.

(1419) Respondents to the market investigation have confirmed that both AIs can be used to address the same needs, especially if appropriate application methods are used to account for their differentiated technical characteristics.[937]

(1420) A crop protection competitor thus confirmed that "*[a]gainst weeds on perennial crops growers can use both products*".[938] Another large competitor emphasised that "*[i]n general it depends on the crop, cultivation technology and cost. Glyphosate tends to be more used on crops like cereals, however there are crops like berries, e.g.*

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934 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), questions 76-78; Questionnaire to Distributors and Institutes (Q2), questions 69-71; Questionnaire to Growers (Q3), questions 27-29; Questionnaire to Crop Protection Competitors (Q4), question 20.

935 See also the Form CO, part 2, Annexes 2.2.1 to 2.2.3.

936 Form CO, part 2, paragraph 273.

937 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), questions 77, 78.3 and 78.4.1; Questionnaire to Crop Protection Competitors (Q4), question 20.

938 Questionnaire to Crop Protection Competitors (Q4), ID9269, question 20.1.

strawberry, where both are used. It is difficult to make a general statement of why some growers prefer one more over the other"[939] and that "*[i]n general both can be used stand alone or tank mixed, it depends on the weed spectrum that needs to be controlled*".[940]

(1421) For young perennial crops specifically, the same large competitor highlighted that "*[f]armers tend to prefer glufosinate […], however with the right equipment that provides a safe cover for the crop both can be used with no risk for the crop*".[941]

(1422) The Monsanto internal document captioned in Figure 207 shows that Monsanto [internal assessment of competitive relationships].

Figure 207 – Monsanto herbicide portfolio overview

[…]

Source: MI 000038684.00001 [internal document], ID5441-23702, slide 16.

(1423) Moreover, as illustrated in Figure 208, Bayer is working on [details of Bayer's pricing strategy].

Figure 208 – [Details of Bayer's pricing strategy]

[…]

Source: BI 00433 [internal document], ID451-543, slide 12 (yellow highlight added).

(1424) [Pipeline information].

(1425) In sum, Bayer appears to be the only significant alternative to Monsanto in the NSH market. In fact, where glufosinate is not an alternative to glyphosate, it seems that glyphosate will simply not have any chemical alternative. The Transaction is thus likely to create or strengthen Bayer's or Monsanto's dominant position in NSH for perennial crops, or at least result in non-coordinated effects on current and potential product and price competition through the elimination of Bayer or Monsanto as an important competitive constraint and key challenger to the other Party.

(1426) Indeed, a major crop protection competitor confirmed that glyphosate and glufosinate are the leading NSH: "*[g]lufosinate, glyphosate and paraquat [not sold in the EEA] are the market-leading non-selective herbicides*".[942] In addition, a majority of crop protection competitors responding to the market investigation directly voiced concerns over anticompetitive effects of the Transaction in agricultural NSH:[943] "*[d]ominant position, risk of monopolistic situation in non-selective segment*" and "*[i]f the new company sells both Glyphosate and GA, they surely dominate the market*".[944]

(1427) This importance and closeness is confirmed by another competitor, which explained that "*Monsanto is strong in herbicides, particularly glyphosate […]. In Europe, glyphosate (Monsanto) and glufosinate (Bayer) are the two unescapable non-selective herbicides. They are essentially used for the same applications (i.e., when*

939 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), ID3580, question 78.1.1.
940 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), ID3580, question 78.2.1.
941 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), ID3580, question 78.3.1.
942 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), ID2783, question 76.1.
943 Questionnaire to Crop Protection Competitors (Q4), question 24.
944 Questionnaire to Crop Protection Competitors (Q4), ID9266 and ID9267, question 24.1.

you seek to eliminate the entire weed population). Glyphosate is more widely used and cheaper (explaining Monsanto's successful business), but glufosinate ammonium is necessary when weeds develop resistance to glyphosate, and Bayer has been gradually reducing glufosinate's costs narrowing the price gap with glyphosate. After the transaction, Bayer and Monsanto would have strong combined crop protection capabilities. They would be strong on cereal herbicides, as well as corn and grapes" (emphasis added).[945]

(1428) In sum, the Transaction would likely give rise to a significant impediment to effective current and potential product and price competition in a number of national agricultural NSH markets for perennial crops in the EEA, by creating a dominant position, strengthening Monsanto's or Bayer's dominance or by eliminating one Party as an important competitive constraint and key challenger to the other.

1.2.7. The increasing regulatory pressure on NSH molecules in the EEA does not remove all overlaps in the EEA or eliminate the Commission's concerns

(1429) As argued by the Notifying Party in the Form CO,[946] regulatory pressure does appear to be growing on NSH. In fact, all NSH are under different levels of regulatory pressure.

(1430) Indeed, renewal of glyphosate's EEA approval for five years was voted in November 2017 after several postponements and much uncertainty.[947] Several countries – most notably France and Belgium – appear to be considering limitations to chemical NSH use, with very few exceptions. For instance, a customer explained that "*le glufosinate va être [r]etiré du marché*".[948]

(1431) Glufosinate's approval was scheduled for renewal in 2018, as well as diquat's. As explained in Section XI.1.2.7 of the Statement of Objections, the Parties expected that glufosinate's approval would likely be renewed in the EEA, but possibly with further restrictions on its uses. The Parties appear to expect that diquat's approval would likely not be renewed.[949]

(1432) However, in their response to the Statement of Objections, [details of Bayer's business strategy].[950]

(1433) In Germany and the United Kingdom, Bayer has already lost its product authorisations for Basta, and Bayer's (consumption) "*market share will therefore decline to nil over the coming years as existing stocks are fully utilised by farmers*",[951] thus eliminating any overlap with Monsanto's products.

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945 Agreed non-confidential minutes of a call with a competitor, 29 March 2017 (ID1289).

946 Form CO, part 2, paragraphs 69-71 and 78-79.

947 The Standing Committee on Plants, Animals, Food and Feed voted on appeal the renewal of glyphosate's approval – expiring on 15 December 2017 – for five years on 27 November 2017.

948 Questionnaire to Distributors and Institutes (Q2), ID2893, question 74.1. See also the Parties' response to the Commission's request for information RFI 119, ID10506.

949 Form CO, part 2, Annex 2.2.2, pages 6 and 7.

950 Parties' response to the Statement of Objections, ID9941, paragraphs 323-327 [details of Bayer's business strategy] Bayer's internal documents BI 33822, BI 33823 and BI 33843.

951 Form CO, part 2, paragraphs 155 and 180. See also the Pesticides Register of Authorised Plant Protection Products of the United Kingdom at https://secure.pesticides.gov.uk/pestreg/.

(1434) In their response to the Commission's request for information RFI 114, the Parties clarified that [details of Bayer's business strategy].[952]

(1435) [Details of Bayer's business strategy].[953]

(1436) At country level, France (on 26 October 2017), Germany, Spain (on 27 November 2017) and the United Kingdom have withdrawn their product authorisations for glufosinate formulations, with limited sell-out periods until 24 January 2018 for sale and 24 October 2018 for use in France, and until 22 May 2018 in Spain.[954]

(1437) While these regulatory developments regarding glufosinate undoubtedly impact a number of national markets, contrary to the Notifying Party's claim, this regulatory pressure does not entail that the scope for the Transaction to have possible anticompetitive effects would disappear going forward.

(1438) On the one hand, the lost national authorisations only affect France, Germany, Spain and the United Kingdom – where the overlaps are already or would be fully removed or the markets at least no longer affected with the elimination from the markets of Bayer's glufosinate products – at the latest by 24 October 2018 (in France). They do not affect any of the other affected national markets.

(1439) [Details of Bayer's business strategy].

(1440) In parallel, glyphosate is a key tool in agricultural production, all the more so globally because of its widespread use over tolerant crops.[955] It is therefore unlikely that Monsanto's products based on glyphosate – which has recently been re-approved in the EEA – would have its possible uses significantly reduced by regulation in that timeframe. Current national plans in EEA affected markets to restrict the uses of glyphosate or disallow them entirely remain largely hypothetical and would likely not be fully in force before glufosinate products can no longer be used in the EEA.[956]

(1441) Accordingly, the Transaction would likely significantly impede effective competition during a period of almost two years.

(1442) Moreover, such regulatory pressure highlights the relative importance and strong position of the Parties' products on NSH markets in view of the resulting almost complete lack of alternative products. It is fully taken into account in the assessment of the current competitive landscape and dynamics, and does not in that respect prevent the likelihood that the Transaction would cause significant non-coordinated effects.

(1443) Furthermore, looking forward, the Parties are committing substantial resources to solutions to possible restrictions on their leading NSH molecules, with the goal of

952 Parties' response to the Commission's request for information RFI 114, ID10198, paragraphs 1-25.

953 Parties' response to the Commission's request for information RFI 114, ID10198, paragraphs 1-25.

954 Parties' response to the Commission's request for information RFI 114, ID10198, paragraphs 1-25; Bayer's internal documents BI 33822, BI 33823 and BI 33843.

955 See Section XI.1.5.

956 See the Parties' response to the Commission's request for information RFI 119, ID10506, notably Annex 119.1, ID10508.

preserving – or even increasing if they are able to do so – their sales, as illustrated by the Bayer internal document captioned in Figure 210 below.[957]

(1444) In sum, although regulatory pressure appears to affect NSH in the EEA, it does not affect all national markets and appears to affect diquat the most with a significant likelihood that it would lose approval, therefore making glyphosate and glufosinate – and in particular the Parties' respective products where they retain product authorisations – even closer competitors.

(1445) In any event, the Parties have plans in place to limit the effects of this regulatory pressure on their sales, as further explained in the following Section XI.1.2.8.

1.2.8. The Parties aim to preserve or if possible even strengthen their positions in agricultural NSH markets through the launch of closely competing forthcoming products

(1446) Monsanto is working on [pipeline information] which take care of the most significant concerns identified by authorities in the re-approval process. It is developing [pipeline information], with the aim of addressing growing concerns regarding glyphosate-resistant weeds, [pipeline information].[958]

(1447) [Pipeline information and details of Bayer's strategy for pipeline products] – as illustrated in Figure 209.[959]

Figure 209 – […]

[…]

Source: BI 00433 [internal document], ID451-543, slide 18 (yellow highlight added).

(1448) [Details of Bayer's business strategy][960].

(1449) [Details of Bayer's strategy for pipeline products; pipeline information].

Figure 210 – [Pipeline information]

[…]

Source: BI 01598 [internal document], ID451-217, slide 84 (yellow highlight added).

Figure 211 – [Pipeline information]

[…]

Source: BI 33717 [internal document], ID9882, [internal document] tab (yellow highlight added).

Figure 212 – [Pipeline information; details of Bayer's strategy for pipeline products]

[…]

Source: Parties' response to the Statement of Objections, Annex SO.VIII.4.1 [internal document], pages 6-7 (yellow highlight added).

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957 Form CO, part 2, paragraphs 74-75 and 80, and Annex 2.2.1. See also Bayer's internal document BI 01839, notably pages 43-45.

958 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 118-123; Form CO, part 2, paragraphs 74 and 278, and Table 2.31; Parties' response to the Commission's request for information RFI 20, Annex 2.5.9; Parties' response to the Commission's request for information RFI 33, Annex 33.3.

959 See also Bayer's internal document BI 01839, notably slides 8-71.

960 See Section XI.1.5.

Figure 213 – [Pipeline information]

[…]

Source: Parties' response to the Statement of Objections, Annex SO.VIII.4.1 [internal document], pages 7-8 (yellow highlight added).

Figure 214 – [Pipeline information]

[…]

Source: BI 33808 [internal document] (yellow highlight added).

Figure 215 – [Pipeline information]

[…]

Source: BI 33813 [internal document], slide 7 (yellow highlight added).

Figure 216 – [Pipeline information]

[…]

Source: BI 33813 [internal document], slide 8 (yellow highlight added).

Figure 217 – [Pipeline information]

[…]

Source: BI 33813 [internal document], slide 14 (yellow highlight added).

Figure 218 – [Pipeline information]

[…]

Source: BI 33812 [internal document], slide 11 (yellow highlight added).

Figure 219 – [Pipeline information]

[…]

Source: BI 33812 [internal document], slide 13 (yellow highlight added).

Figure 220 – [Pipeline information]

[…]

Source: BI 33771 [internal document], slide 2 (yellow highlight added).

Figure 221 – [Pipeline information]

[…]

Source: BI 33765 [internal document] (yellow highlight added).

Figure 222 – [Pipeline information]

[…]

Source: BI 33913 [internal document] (yellow highlight added).

(1450) [Pipeline information].[961]

Figure 223 – [Pipeline information]

[…]

Source: BI 01598 [internal document], ID451-217, slide 75 (yellow highlight added).

(1451) [Pipeline information; details of Bayer's strategy for pipeline products].[962]

Figure 224 – [Pipeline information]

[…]

Source: BI 08667 [internal document], ID6632, slide 9 (yellow highlight added).

(1452) As another element further detailed in Section XI.1.4, Bayer has a number of different pipeline projects ([pipeline information]) which target Monsanto's franchise built around glyphosate, either standalone or in mixtures with other AIs. Some of these projects are already or foreseen to soon be at a sufficiently advanced development stage to have a high likelihood of being launched commercially in the EEA.[963] In so doing, they would have, absent the Transaction, contributed to [pipeline information; details of Bayer's strategy for pipeline products].[964]

(1453) [Pipeline information].[965] These projects are planned for several uses, including burndown and TNV uses.[966]

(1454) In sum, the Parties aim to preserve or if possible even strengthen their positions in agricultural NSH markets through the launch of closely competing forthcoming products.

(1455) It appears likely that the Parties' incentives to independently pursue these forthcoming products in close competition with each other would disappear post-Transaction. It similarly appears that the merged entity would on the contrary likely manage its combined portfolio so as to maximise its revenues, including the possibility that it could use its increased market power to raise prices or reduce customer's choice.

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961 See the Parties' response to the Statement of Objections, ID9941, paragraph 330, and the Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 114, for the argument that growers would only use this more expensive mixture if straight glyphosate could not be used. The Commission notes that growers choose the products which best meet their needs among a wide range of differentiated products, notably with regard to price, spectrum and efficacy. Growers may therefore consider both the more expensive mixture (which has add-on efficacy) and straight glyphosate for specific uses before making a decision.

962 Form CO, part 2, paragraphs 279-281; Parties' response to the Commission's request for information RFI 20, Annex 2.5.6; Parties' response to the Commission's request for information RFI 33, Annex 33.14.

963 In their response to the Statement of Objections, the Parties contested that any of these projects would be sufficiently advanced to be considered potential competitors since any launch would likely not occur before […] (Parties' response to the Statement of Objections, ID9941, paragraphs 393-400). The Commission notes that the evidence confirms that it is currently foreseen that [pipeline information] (see Section XI.1.4).

964 See Section XI.1.4.5 on the likely effects of the Transaction on innovation competition between Monsanto as the current leading player and Bayer as its key current challenger. Also see the Parties' response to the Statement of Objections, ID9941, paragraph 414.

965 See the Commission Decision in Case M.7932 – Dow/DuPont (2017), Section V.3.3.

966 See Section XI.1.4.2.2.

1.2.9. Limited competitive constraints from competitors

(1456) The only true NSH alternative to glyphosate and glufosinate in the EEA is diquat, which is under regulatory pressure and may have its uses further regulated or even its entire EEA approval not renewed in the short term.[967]

(1457) In fact, the Parties themselves assess competition as being limited to each other. In particular, generic competition seems contained for both glyphosate and glufosinate, and is almost non-existent for glufosinate, as evidenced in Figure 199 to Figure 202.[968]

(1458) Beyond generic competition, the Parties appear not to identify or assess any competitor apart from each other in their internal documents.

(1459) The Parties' products thus already today face relatively limited competitive constraints.

(1460) Looking forward – as detailed in Section XI.1.4 – it appears that only very few players have projects to discover and develop new NSH – which have not been discovered in decades and are much needed in view of ever fewer available chemicals and growing resistance to these remaining few.

(1461) In Figure 225, Bayer surveys all of its competitors' herbicide pipeline projects it is aware of, as of 5 July 2017.

Figure 225 – [Internal assessment of competitive relationships]

[…]

Source: BI-EDISC-0170032 [internal document], ID5608-032418, slide 99.

(1462) In the internal document from which Figure 225 is extracted, Bayer assesses each of these projects individually. It appears that most of these projects are selective herbicides, [internal assessment of competitive relationships].[969]

(1463) It is therefore unlikely that competitors would constitute a significant competitive constraint able to compensate the likely non-coordinated effects of the Transaction. In any event, no element of the file contradicts the Commission's conclusion that the Transaction would likely cause non-coordinated effects in a number of EEA national markets for agricultural NSH in perennial crops.

1.2.10. Conclusion as to the non-coordinated effects of the Transaction on product and price competition in the relevant markets for agricultural non-selective herbicides for perennial crops

(1464) For the reasons set out above and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to agricultural NSH for perennial crops in Austria, Bulgaria, the Czech Republic, Greece, Hungary, Italy, the Netherlands, Poland, Portugal, Romania and Slovakia. In particular, in relation to agricultural NSH for perennial crops, the Commission considers that the Transaction would – depending on the specific market – (i) likely eliminate an important competitive constraint and result in non-coordinated effects on current and potential

967 Agreed non-confidential minutes of a call with an institute, 19 July 2017 (ID4672).

968 See also Bayer's internal document BI 01839, notably slides 21-22.

969 Bayer's internal document BI-EDISC-0170032 [internal document], ID5608-032418, slides 100 to 121.

product and price competition (for Austria, Bulgaria, the Czech Republic, Greece, Hungary, Italy, the Netherlands, Poland, Portugal, Romania and Slovakia) or (ii) likely create or strengthen a dominant position due to non-coordinated effects (for Austria, the Czech Republic, Germany, Poland and Slovakia).[970]

1.3. Competitive assessment in non-agricultural non-selective herbicides: non-coordinated effects on product and price competition

1.3.1. Product market definition

1.3.1.1. Commission precedents

(1465) In previous cases, the Commission considered that industrial vegetation management ("IVM") products, on the one hand, and a category comparable to turf and ornamentals, on the other hand, constituted separate product markets and are both separate from agricultural NSH.[971]

(1466) The Commission also considered that NSH should be distinguished by the timing of their application, namely the stage in the lifecycle of the weed when they are applied.[972]

1.3.1.2. Notifying Party views

(1467) In the Form CO, the Notifying Party agreed with Commission precedents regarding the separation of IVM form turf and ornamentals, but proposed, on the basis of the lack of substitutability between different categories of products, to further segment IVM NSH products into: (i) pre-emergent, (ii) post-emergent (non-railway), (iii) pre-post-emergent, (iv) brush killers and (v) NSH and services used to control vegetation for railways.[973] On the one hand, the first three segments are distinctions based on the timing of application of NSH on weeds. On the other hand, brush killers address particularly tough weeds. Similarly, the last segment isolates the specific field of vegetation management for railways, where NSH are often offered in combination with application services, and in the context of tenders, which would be a relevant market differentiation in Bayer's view.[974]

(1468) In their response to the Article 6(1)(c) Decision, the Parties in essence argued regarding possible segmentations of IVM that "*there is a clear delineation between pre-emergent, post-emergent and pre-post-emergent NSH and as such, these form separate relevant markets*".[975]

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970 Although France, Germany, Spain and the United Kingdom would be affected markets on the basis of the available market share data (see Table 145) and concerns were therefore raised in their regard in the Statement of Objections (paragraph 1202), the Commission's in-depth investigation has shown that in these countries glufosinate is already or will soon no longer be sold (see Section XI.1.2.7). Accordingly, the Commission considers that the Transaction would not significantly impede effective competition in these national markets.

971 Commission Decisions in Case M.2547 – Bayer/Aventis Crop Science (2002), recitals 926 and 998-999; Case M.1806 – AstraZeneca/Novartis (2000), recital 580; Case M.1378 – Hoechst/Rhône-Poulenc (1999), recital 40.

972 Commission Decision in Case M.7962 – ChemChina/Syngenta (2017), recitals 116-117.

973 Form CO, part 2, paragraphs 311 and 339. Pre-emergent products are sprayed on the ground before weeds emerge and kill them when they do. Post-emergent products are sprayed on existing weeds to kill them. Pre-post-emergent products combine both actions, killing both emerged and yet-to-emerge weeds.

974 Form CO, part 2, paragraphs 312-338.

975 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 143-184.

(1469) To support their view, the Parties put forward the following arguments: (i) "*differentiated demands depending on the type of treatment [customers require] and the amount of weed growth they can tolerate*"; (ii) the fact that "*pre- or post-emergent herbicides are not a substitute for pre-post-emergent herbicides, either because they do not provide the same outcome in terms of maintaining a weed-free environment and/or due to substantial price differences*"; and (iii) the fact that "*while consumers of pre-post-emergent herbicides could in principle obtain the same results by combining post- and pre-emergent herbicides, this is unlikely to impose a substantial competitive constraint due to the [expertise and cost] issues related to self-mixing*".

(1470) According to the Parties, IVM product purchasers (such as weed management contractors, municipalities, infrastructure operators or industrial companies with large open spaces) are varied and accordingly have strongly differentiated weed control needs. These needs could however be divided in three broad categories corresponding to the three categories of products which would in their view be separate product markets: (a) the need "*to remove weeds from an area and keep it weed free for a season*" (pre-post-emergent herbicides); (b) the need "*to remove weeds from an area but with tolerance for a certain amount of growth*" (post-emergent herbicides); and (c) not "*a need to remove existing weeds, but […] to prevent them emerging in the future*" (pre-emergent herbicides).

(1471) For instance, municipalities would "*typically tolerate some weed growth due to the low costs and risks of weed presence. As they do not require a completely weed-free solution and weed growth may be not be a year-round problem, municipalities will typically use curative [that is to say, post-emergent] treatments on any weeds that emerge, rather than incur the expense of preventing weed growth.*"

(1472) On the contrary, airports and industrial sites would "*require the prevention of weed emergence. For such customers, post-emergence application are [sic] limited to cases of severe infestation.*"

(1473) In particular, the Parties acknowledge that "*[i]n principle the same outcome of a weed-free area for six months using a pre-post-emergent herbicide can be achieved by using five to six applications of a post-emergent herbicide*".[976] However, they contend that there is no such alternative in practice because (i) regulatory or other relevant restrictions often would not allow a sufficient number of sprays of post-emergent products to obtain the weed-free outcome enabled by pre-post-emergent products and desired by customers of such products; and (ii) even if this were possible, the cost difference would be prohibitive for these price-sensitive customers, since it would be on average twice as expensive in the EEA.

(1474) Hence, according to the Parties, "*any user who requires weed control to keep an area entirely weed-free would choose a pre-post-emergent herbicide instead of a post-emergent herbicide either on the basis of cost (if regulatory restrictions are not in place), or because it is the only option available in countries where herbicide application is restricted*".[977]

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976 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 160.

977 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 167.

1.3.1.3. Commission assessment

(1475) As detailed in Sections XI.1.3.5 and XI.1.3.6, the Commission's investigation confirmed that the Transaction would likely give rise to a significant impediment to effective competition under any plausible market definition. Nevertheless, the investigation confirmed that it is likely appropriate to define the relevant product market as the combination of post-emergent and pre-post-emergent products.

(1476) The Commission takes note that while a majority of the relevant respondents to the Commission's questionnaires confirmed that it is appropriate to segment non-agricultural NSH between IVM and turf and ornamentals, there was significant disagreement as to the relevance of further segmenting IVM. A significant number of respondents highlighted that brush killers and railway services were separate segments.[978]

(1477) In one instance, an NSH customer explained: "*[t]he segmentation between turf/ornamentals and IVM yes, but the sub-segmentation within IVM is less understandable. Indeed separating railways (which is a sector, a use) from types of herbicides (which we use) seems a little complicated to me. There should be a distinction either by sector/use or by type of herbicides. Unless railways are a very specific sector*".[979]

(1478) A crop protection competitor confirmed that "*[t]his is commonly used in the industry: turf/ornamentals and IVM*".[980]

(1479) Regarding post-emergent and pre-post-emergent products, relevant respondents overall straightforwardly confirmed that in terms of technical substitutability they can both be used to address certain needs.[981] Respondents appeared to consider that actual substitutability would depend on a number of factors such as the exact customer need and preferences, prices, etc.

(1480) In another instance, a competitor explained that "*[t]here are wide ranging customer needs across different segments (eg long residual activity, rapid burndown effect, short term activity in the soil)*".[982] Another competitor also highlighted that "*[t]his is connected to the specific agronomical problems/situations to be solved*".[983]

(1481) In this respect, Figure 227 below illustrates the Commission's findings that the internal documents of the Parties themselves reveal that industry players consider IVM and turf and ornamentals as separate markets, and that brush killers and railway applications are distinct segments.

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978 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), questions 82 and 82.1; Questionnaire to Crop Protection Competitors (Q4), questions 25-26; Questionnaire to NSH Customers (Q6), questions 4-6.

979 Questionnaire to NSH Customers (Q6), ID3471, question 4.1. Courtesy translation of French original: "*La séparation gazon/ornementale avec IVM oui, mais la séparation au sein d'IVM est moins compréhensible. Effectivement séparer les voies ferrées (qui est un secteur, un usage) avec des types d'herbicides (que nous utilisons) me parait un peu compliqué. Il faudrait soit une séparation par secteur/usage soit par type d'herbicides. A moins que le secteur des voies ferrées soit très spécifique*".

980 Questionnaire to Crop Protection Competitors (Q4), ID3068, question 25.1.

981 Questionnaire to Crop Protection Competitors (Q4), question 26; Questionnaire to NSH Customers (Q6), question 5.

982 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), ID3580, question 83.1.

983 Questionnaire to Crop Protection Competitors (Q4), ID3530, question 26.1.

(1482) The Parties' internal documents also confirm that pre-post-emergent products and post-emergent products compete at least to a certain extent.[984]

(1483) There is no doubt that pre-post-emergent products and post-emergent products are differentiated in terms of efficacy and cost. There is no doubt that IVM NSH customers have differentiated needs in terms of the level and duration of weed control required, the specific spectrum of weeds they face, their willingness to pay and other considerations such as their ability (because of regulations of otherwise) to use certain products more or less often.

(1484) In addition, these differentiated needs may change over time, and within the same year in view of evolving conditions impacting weed infestations.

(1485) It is also not contested that both pre-post-emergent and post-emergent products are technically substitutable in the sense that they both control existing weeds post-emergence.

(1486) Importantly, such diversity of customer needs and product profiles entails that for a significant proportion of their actual weed control needs, customers of IVM NSH in practice have the choice of using either pre-post-emergent products or post-emergent products, including in terms of cost. This would in particular be true at their initial decision-making point regarding their weed control strategy, since options may thereafter be limited by that first decision.

(1487) For instance, the Parties themselves acknowledge that airports and industrial sites also use post-emergent products.[985] This appears to be in direct contradiction with their general approach that the IVM overall business would be so strictly segmented according to the entirely separate needs of different customer groups that each segment should be considered a separate relevant product market.[986]

(1488) Regarding non-agricultural NSH, the Commission thus takes the view that IVM NSH products and turf and ornamental NSH products form separate relevant product markets. Within IVM, the investigation revealed that different products will address different needs, in particular brush killers and railway applications.[987] Moreover, customer needs are strongly differentiated and may vary for the same customers in view of evolving climatic conditions and weed pressure.

(1489) The Commission therefore finds that, within IVM, brush killers and railway applications would likely constitute separate relevant product markets, as would the product market combining both "post-emergent" and "pre-post-emergent" products

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984 See for instance Form CO, part 2, Annex 2.15.1, slide 4.

985 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 155.

986 In their response to the Statement of Objections, the Parties disagreed that there would be a contradiction, in essence arguing that their view is that users such as airports and industrial sites would always use pre-post-emergence products, and only use post-emergence products when necessary as a complement, not a substitute (Parties' response to the Statement of Objections, ID9941, paragraph 334). The Commission notes that this explanation is already clear from paragraph 1210 of the Statement of Objections, which quotes the Parties' response to the Article 6(1)(c) Decision, and does not change the Commission's conclusion that IVM markets do not appear to be strictly separated according to customer groups with differing needs as was claimed by the Parties.

987 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), questions 82-84; Questionnaire to Distributors and Institutes (Q2), questions 75-77; Questionnaire to Crop Protection Competitors (Q4), questions 25-27; Questionnaire to NSH Customers (Q6), questions 4-6.

as identified by the Notifying Party in light of the fact that all of these products target existing (not particularly tough) weeds.

(1490) Conversely, the Commission finds that both (i) limiting the relevant product market to post-emergent products only and, possibly, (ii) expanding it to include all IVM products would likely not adequately reflect competitive dynamics and would therefore likely not be appropriate.

1.3.1.4. Conclusion

(1491) In light of its precedents, considering the views of the Notifying Party, and taking into account the results of the investigation, the Commission considers that the relevant product markets for non-agricultural NSH should be segmented between (i) IVM and (ii) turf and ornamentals.

(1492) Moreover, the Commission considers that, within IVM, brush killers and NSH and services for weed management in railways respectively constitute separate relevant product markets.

(1493) The Commission further considers that, still within the IVM segment, (i) pre-emergent products, (ii) post-emergent products and (iii) pre-post-emergent products should be grouped into two separate relevant product markets respectively comprising: (a) pre-emergent products (i) and pre-post-emergent products (iii), and (b) post-emergent products (ii) and pre-post-emergent products (iii), depending on the timing of application on weeds.

(1494) The Commission considers that concerns would arise in view of the Parties' overlaps and high shares also under the alternative market definitions suggested by the Parties of (α) post-emergent products alone, or (β) all non-agricultural NSH for IVM, which the Commission assesses where relevant.[988]

1.3.2. Geographic market definition

(1495) As explained in Section XI.1.2.2, the Commission considers that crop protection product markets are national in geographic scope.

1.3.3. Activities of the Parties and their competitors in the EEA

1.3.3.1. Monsanto's current and forthcoming portfolio

(1496) In 2016, Monsanto's EEA sales of non-agricultural IVM NSH amounted to EUR […], all sales of post-emergent products. Its largest markets were […]. Its EEA sales of turf and ornamental NSH amounted to EUR […].[989]

(1497) As already mentioned, in the EEA, Monsanto only sells glyphosate, mostly under the Roundup brand. Monsanto sells technical glyphosate for formulation into finished products to a number of players, including Bayer, as well as branded and non-branded formulated glyphosate products for resale.

(1498) Because IVM in the EEA is not the main focus for Monsanto, [pipeline information; details of Monsanto's strategy for pipeline products] markets its NSH formulations developed for agricultural uses.[990]

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988 See Section XI.1.3.6.3.

989 Parties' response to the Commission's request for information RFI 77, Annex 77.4, ID6511; Parties' response to the Commission's request for information RFI 30, Annex 30.1A, ID4108.

990 Parties' response to the Commission's request for information RFI 85, ID7293, paragraphs 1-7.

1.3.3.2. Bayer's current and forthcoming portfolio

(1499) In 2016, Bayer's EEA sales of non-agricultural IVM NSH amounted to EUR […], of which EUR […] for post-emergent products and EUR […] (37.5%) for pre-post-emergent products. Its largest markets were France and Germany.[991]

(1500) As already mentioned, in the EEA and for IVM, Bayer mainly sells glyphosate formulations (typically in mixtures with other – selective – AIs such as diflufenican and flufenacet) notably under the Pistol brands. Bayer sells glufosinate under the Finale brands, as well as mixtures of selective AIs (for instance iodosulfuron, triclopyr, fluroxypyr and aminopyralid) under brands such as Pistol, Parcours, Speedline and Mileway. Bayer has limited sales of pelargonic acid (Harmonix Devatol), a biological herbicide.

1.3.3.3. Competing products

(1501) Competing products in non-agricultural NSH, supplied by a relatively large number of competitors – some of which however are not active in agricultural products – appear to fall in one of the following three groups: (i) glyphosate formulations, including mixtures; (ii) mixtures of selective AIs; and (iii) biological products. Their individual sales are relatively limited compared with the Parties'.[992]

1.3.4. Notifying Party arguments

(1502) In the Form CO and their response to the Article 6(1)(c) Decision, the Parties in essence argued that – if the relevant product markets are correctly defined – the Parties would only overlap with respect to post-emergent IVM non-agricultural NSH in France, Spain and the United Kingdom, where no concerns could arise because of (i) very small share increments, (ii) lack of closeness between the Parties' products, (iii) the absence of overlapping forthcoming products from the Parties sufficiently close to launch and (iv) a sufficient competitive constraint from existing and potential competitors.[993]

(1503) In their response to the Statement of Objections, the Parties in essence argued that the Commission's concerns in the Statement of Objections are fully addressed by the proposed Commitments.[994]

1.3.5. For non-agricultural NSH in the EEA, the Transaction would give rise to a number of affected markets with a high combined share and an increment

(1504) As shown in Table 149 to Table 151, the Transaction would give rise to a number of affected markets with a high combined share and an increment under any plausible relevant product market definition for non-agricultural NSH, in the EEA.

(1505) Indeed, affected markets under a definition of the relevant product market for all IVM NSH are Belgium, Denmark, France, the Netherlands, Spain and the United Kingdom. All of these markets except the Netherlands remain affected – with

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991 Parties' response to the Commission's request for information RFI 77, Annex 77.4, ID6511. In their response to the Statement of Objections, the Parties noted that Bayer does not have an IVM business as such in Germany, but merely provides herbicide application services for railways (Parties' response to the Statement of Objections, ID9941, paragraph 334).

992 Parties' response to the Commission's request for information RFI 77, Annex 77.4, ID6511.

993 Form CO, part 2, paragraph 349; Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 185-200.

994 Parties' response to the Statement of Objections, ID9941, paragraphs 331-334.

different separate and combined market shares for the Parties – in the most likely relevant product market for pre-post-emergent and post-emergent IVM NSH. France, Spain and the United Kingdom even remain affected in a hypothetical relevant product market for post-emergent IVM NSH only.[995]

Table 149 – Non-selective herbicides for IVM non-agricultural uses

Country	Market size (EUR million)	Bayer	Monsanto	***Combined***	ChemChina-Syngenta	DowDuPont	BASF	FMC	Nufarm
EEA	[…]	[20-30]%	[10-20]%	***[40-50]%***	[0-5]%	[5-10]%	[0-5]%	[0-5]%	[10-20]%
Belgium	[…]	[60-70]%	[10-20]%	***[70-80]%***	[0-5]%	[5-10]%	[0-5]%	[0-5]%	[0-5]%
Denmark	[…]	[10-20]%	[10-20]%	***[30-40]%***	[10-20]%	[5-10]%	[0-5]%	[20-30]%	[0-5]%
France	[…]	[30-40]%	[5-10]%	***[30-40]%***	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[40-50]%
Netherlands	[…]	[10-20]%	[30-40]%	***[40-50]***	[0-5]%	[10-20]%	[10-20]%	[0-5]%	[0-5]%
Spain	[…]	[0-5]%	[30-40]%	***[30-40]%***	[0-5]%	[20-30]%	[0-5]%	[5-10]%	[10-20]%
United Kingdom	[…]	[10-20]%	[10-20]%	***[30-40]%***	[0-5]%	[5-10]%	[0-5]%	[0-5]%	[5-10]%

Source: Parties' response to the Commission's request for information RFI 77, Annex 77.4, ID6511.

Table 150 – Non-selective herbicides for post-emergent IVM non-agricultural uses

Country	Market size (EUR million)	Bayer	Monsanto	***Combined***	ChemChina-Syngenta	DowDuPont	BASF	FMC	Nufarm
EEA	[…]	[0-5]%	[40-50]%	***[40-50]%***	[5-10]%	[5-10]%	[0-5]%	[5-10]%	[5-10]%
France	[…]	[0-5]%	[20-30]%	***[20-30]%***	[10-20]%	[0-5]%	[0-5]%	[10-20]%	[10-20]%
Spain	[…]	[5-10]%	[70-80]%	***[80-90]%***	[0-5]%	[0-5]%	[0-5]%	[10-20]%	[0-5]%
United Kingdom	[…]	[0-5]%	[30-40]%	***[40-50]%***	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[10-20]%

Source: Parties' response to the Commission's request for information RFI 77, Annex 77.4, ID6511.

[995] Parties' response to the Commission's request for information RFI 77, Annex 77.4, ID6511.

Table 151 – Non-selective herbicides for pre-post-emergent and post-emergent IVM non-agricultural uses

Country	Market size (EUR million)	Bayer	Monsanto	***Combined***	ChemChina-Syngenta	DowDuPont	BASF	FMC	Nufarm
EEA	[…]	[20-30]%	[20-30]%	***[50-60]%***	[5-10]%	[0-5]%	[0-5]%	[5-10]%	[10-20]%
Belgium	[…]	[70-80]%	[10-20]%	***[90-100]%***	[0-5]	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Denmark	[…]	[20-30]%	[20-30]%	***[40-50]%***	[20-30]%	[5-10]%	[0-5]%	[30-40]%	[0-5]%
France	[…]	[40-50]%	[10-20]%	***[50-60]%***	[5-10]%	[0-5]%	[0-5]%	[5-10]%	[10-20]%
Spain	[…]	[0-5]%	[50-60]%	***[50-60]%***	[5-10]%	[0-5]%	[0-5]%	[10-20]%	[20-30]%
United Kingdom	[…]	[10-20]%	[30-40]%	***[50-60]%***	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[10-20]%

Source: Parties' response to the Commission's request for information RFI 77, Annex 77.4, ID6511.

1.3.6. The Parties are important and close competitors

1.3.6.1. The leading market positions of glyphosate and glyphosate-based mixtures in non-agricultural NSH in the EEA

(1506) Much like in agricultural uses, glyphosate (including in mixtures) is the leading IVM NSH AI. In particular, it accounts for more than [50-60]% of IVM NSH sales in the largest markets such as France, Italy, Spain and the United Kingdom (and more than [70-80]% in Belgium and Denmark), and for approximately [40-50]% of all IVM sales in the EEA ([90-100]% for pre-post-emergent and post-emergent products together; [90-100]% for post-emergent products only).[996]

(1507) This is largely due to the fact that, in the words of the Parties, "*in IVM most of the innovations generally stem from new formulations of active ingredients developed initially for the agricultural segments*" and that "*any company can develop a new pre-post- or post-emergent herbicide using generic* ***glyphosate***" (emphasis added).[997]

(1508) Accordingly, the Commission finds that glyphosate is the leading AI in IVM much as it is for agricultural NSH.

1.3.6.2. The Parties' leading position in IVM NSH in the EEA

(1509) As shown in Table 149 to Table 151, and likely due to glyphosate's leading position in IVM, in the EEA Monsanto appears to have a leading if not dominant position in IVM in a number of national markets (the Netherlands, Spain and the United Kingdom). In particular, in the likely product market comprising both pre-post-emergent and post-emergent products, Monsanto would likely be dominant at least in

[996] Parties' response to the Commission's request for information RFI 77, Annex 77.4, ID6511.

[997] Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 198 and 200.

Spain and possibly also in the United Kingdom in view of its very high market shares and the much smaller market shares of competitors (see Table 151).

(1510) Bayer's internal documents confirm this leading position of Monsanto, and itself, in IVM in the EEA, as shown in Figure 226 to Figure 229.

Figure 226 – EU IVM market (2015)

[…]

Source: BI 10590 [internal document], ID7307-18, slide 2.

Figure 227 – IVM competitor landscape by segment (2016)

[…]

Source: BI 10675 [internal document], ID7307-102, slide 37.

Figure 228 – IVM key competitors globally

[…]

Source: BI 10597 [internal document], ID7307-25, slide 28.

Figure 229 – Bayer EU IVM SWOT analysis

[…]

Source: BI 10590 [internal document], ID7307-18, slide 14 (yellow highlight added).

(1511) Indeed, somewhat by contrast with agricultural NSH overall, in IVM Bayer appears to have a leading if not dominant position in a number of national markets, such as Belgium and France, notably in the likely product market comprising both pre-post-emergent and post-emergent products (see Table 151).

(1512) Moreover, Monsanto supplies technical or formulated glyphosate to a number of competitors in the IVM space. Its effective market power is therefore likely larger than suggested merely by its market shares.

(1513) The Notifying Party contends, however, that brand loyalty is less relevant in IVM NSH than in agricultural NSH because IVM users are more price-sensitive and less concerned than growers with regulatory and technical support.[998]

(1514) This may explain why Monsanto's share of IVM sales – while very significant for the post-emergent segment (see Table 150) – is lower for all IVM at the EEA level than Bayer's (see Table 149). This may in turn be explained by the fact that, in contrast with agricultural NSH, in IVM Bayer mainly sells glyphosate mixtures.

(1515) Crop protection competitors confirmed the Parties' leadership in IVM: "*Bayer and Monsanto are the main players in the non-agriculture non-selective herbicide segment*" and "*Bayer and Monsanto are both already strong in this area. The merged company has increased power and leverage*".[999]

(1516) In sum, Bayer and Monsanto are both leading if not dominant players in IVM NSH in the EEA.

1.3.6.3. The Commission considers that the Transaction would likely give rise to non-coordinated effects on current and potential product and price competition in national

[998] Form CO, part 2, paragraph 427.

[999] Questionnaire to Crop Protection Competitors (Q4), ID3068 and ID3679, questions 28.1.

IVM NSH markets by creating a dominant position, strengthening Bayer's or Monsanto's dominance or by eliminating Bayer or Monsanto as an important competitive constraint and key challenger to the other Party

(1517) As shown in Section XI.1.3.5, in the likely relevant product market comprising both pre-post-emergent and post-emergent products, the Transaction would strengthen Bayer's dominant position in Belgium and France and Monsanto's dominant position in Spain and the United Kingdom, through the addition of the other Party's significant incremental market shares.

(1518) Even in a product market alternatively defined at the level of either all IVM products or post-emergent products only, either Bayer or Monsanto would be in a dominant or at least leading position in Belgium, the Netherlands, Spain and the United Kingdom, which the Transaction would strengthen with the addition of the other Party's significant incremental shares.

(1519) In any event and at the very least, the Transaction would result in the Parties having high and leading combined market shares with a significant increment under all reasonable alternative market definitions in Belgium, France (except in all IVM, where Nufarm would be the leader), the Netherlands (except in pre-post-emergent products and post-emergent products combined, as well as in post-emergent products only), Spain and the United Kingdom.

(1520) Moreover, unlike for agricultural uses, in IVM Bayer mainly competes with glyphosate mixtures – in addition to formulations of glufosinate, mixtures of selective herbicides and biological products – which may be closer technical substitutes to straight glyphosate formulations than glufosinate products. Bayer therefore appears to likely be a closer competitor to Monsanto in non-agricultural uses than in agricultural uses of NSH.

(1521) As a concrete illustration of competition between the Parties, Figure 230 confirms that there is at least a certain degree of competition between Bayer's Pistol Flex (diflufenican+iodosulfuron) pre-post-emergent product and glyphosate, a post-emergent product.

Figure 230 – Pistol Flex and glyphosate as substitutes

[…]

Source: BI 10633 [internal document], ID7307-61, slide 16 (yellow highlight added).

(1522) Furthermore, as shown in Table 149 above, although possibly more players are active in IVM than in agricultural NSH, the Parties are by far the largest players.

(1523) In fact, it is likely that market shares underestimate the Parties' market power. On the one hand, Monsanto supplies glyphosate to a number of competitors, the independence of which from Monsanto is necessarily somewhat reduced. On the other hand, the Parties are the largest and most innovative players in agricultural NSH and NSH generally, from which they likely draw a degree of market power in IVM markets where there appears to be no sector-specific innovators. For instance, Bayer is actively working on several forthcoming products.

(1524) In sum therefore, the Commission finds that the Transaction is likely to create or strengthen Monsanto's or Bayer's – depending on the specific national market – dominant or at least leading position in IVM, or at the very least to result in non-coordinated effects on current and potential product and price competition through

the elimination of the other Party as an important competitive constraint and key challenger, under all plausible market definitions for IVM non-agricultural NSH in the EEA, and in particular for the national relevant product markets combining pre-post-emergent and post-emergent products in Belgium, Denmark, France, Spain and the United Kingdom.

1.3.7. The Parties are confident to increase or at least preserve their sales in spite of some degree of regulatory pressure on NSH molecules

(1525) The growing regulatory pressure on NSH generally[1000] is of course reflected in non-agricultural uses. In fact, it appears to perhaps be most acute in that space, in all likelihood because it exposes the broader public to these products rather than just trained professionals such as growers.

(1526) For instance, France and Belgium appear to be at the forefront of progressively banning any use of chemicals in public spaces (already effective in France as of 1st January 2017), with very limited exceptions.[1001]

(1527) However, contrary to the Notifying Party's conclusions,[1002] this regulatory pressure highlights the relative importance and strong position of products still being sold for IVM such as those of the Parties in view of the resulting almost complete lack of significant alternatives. It is fully taken into account in the assessment of the current competitive landscape and dynamics, and does not in that respect prevent the likelihood that the Transaction would cause significant non-coordinated effects.

1.3.8. The Parties aim to preserve or even strengthen their positions in non-agricultural NSH markets through the launch of closely competing forthcoming products

(1528) While Monsanto does not appear to have any IVM-specific project for the EEA, it is generally working to [pipeline information]. Monsanto sees this as a positive commercial opportunity to [pipeline information], as shown in Figure 231.

Figure 231 – [Details of Monsanto's business strategy]

[…]

Source: MI 305700 [internal document], ID7299-305, slide 10.

(1529) Regarding Bayer, it is likely that its early pipeline projects ([pipeline information]) detailed further in Section XI.1.4 – some of which appear to be relatively close to having a high likelihood of launch[1003] and should therefore be considered as possible sources of potential competition – would likely be used in IVM, thus ensuring the long-term competitiveness of Bayer's IVM NSH portfolio.[1004]

1000 See Section XI.1.2.7.

1001 Form CO, part 2, paragraphs 354-364 and 375-379. Also see the Parties' response to the Commission's request for information RFI 119, ID10506, notably Annex 119.1, ID10508.

1002 See the Form CO, part 2, paragraphs 354-364, 376-381, 384 and 388.

1003 In their response to the Statement of Objections, the Parties disagreed that any of these projects would be sufficiently advanced to be considered potential competitors since any launch would likely not occur before [pipeline information] (Parties' response to the Statement of Objections, ID9941, paragraphs 393-400). [Pipeline information] (see Section XI.1.4).

1004 See Section XI.1.4.5 on the likely effects of the Transaction on innovation competition between Monsanto as the current leading player and Bayer as its key current challenger. Also see the Parties' response to the Statement of Objections, ID9941, paragraph 414.

(1530) The Parties are therefore developing closely competing forthcoming products to continue to address the needs currently met with their respective existing products. It seems that these products would be substitutes for at least some uses, and would preserve the Parties' combined market position in the forthcoming future.

(1531) In sum, the Commission considers that the Parties' current incentives to independently pursue the said forthcoming products in close competition with each other would likely disappear post-Transaction. It similarly appears that the merged entity would on the contrary likely manage its combined portfolio so as to maximise its revenues, including the possibility that it could use its increased market power to raise prices or reduce choice.

1.3.9. Limited competitive constraints from competitors

(1532) As explained in Section XI.1.3.3.3 and in line with the Parties' own products, glyphosate formulations by far constitute the largest proportion of sales, with a number of players supplying either straight formulations or mixtures with different selective AIs.

(1533) However, most of these players have relatively limited sales and market shares, significantly smaller than the Parties' combined shares in the national markets for non-selective herbicides for pre-post-emergent and post-emergent IVM non-agricultural uses. In particular, among the global R&D-integrated crop protection players, only DowDuPont ([0-5]% share at the EEA level) and ChemChina-Syngenta ([5-10]% share at the EEA level) appear to have significant shares across the EEA. Among generics, Nufarm ([10-20]% share at the EEA level) and FMC ([5-10]% share at the EEA level) appear to have significant positions across the EEA (see Table 151 above). Such is also the case of a number of players which are active in IVM but not in agricultural NSH (such as Compo Expert, Everris ICL, Rigby Taylor and Spiess Urania).

(1534) In their response to the Statement of Objections, the Parties argued that the Commission would not have adequately reflected the existence of strong competition in certain EEA countries, mentioning in particular Nufarm in France.[1005] The Commission notes that, while Nufarm has a [40-50]% share – larger than the Parties' combined share – in France in the hypothetical market including all IVM NSH (as shown in Table 149, which was already in the Statement of Objections), its market share is only [10-20]% in the most likely relevant product market of pre-post-emergent and post-emergent IVM NSH as defined by the Commission, far smaller than the Parties' combined [50-60]% share (see Table 151).

(1535) Moreover, a large number of these players procure either their glyphosate AI or even formulations at least partly from Monsanto.

(1536) In parallel, mixtures of selective AIs and biological products appear to be limited mainly to certain segments. Biological products in particular seem to be capturing market share largely in markets where chemical NSH face particular regulatory pressure.

(1537) Looking forward and as explained in recital (1507) in the words of the Parties, "*in IVM most of the innovations generally stem from new formulations of active*

[1005] Parties' response to the Statement of Objections, ID9941, paragraph 334.

ingredients developed initially for the agricultural segments".[1006] [Pipeline information] (see Section XI.1.4).

(1538) Furthermore, the Parties' internal documents confirm the limited competitive constraint by competitors, as illustrated in Figure 227 to Figure 230.

(1539) It is therefore unlikely that competitors would constitute a significant competitive constraint able to compensate the likely non-coordinated effects of the Transaction in IVM NSH. In any event, no element of the file contradicts the Commission's conclusion that the Transaction would likely cause non-coordinated effects on product and price competition in a number of EEA national IVM NSH markets.

1.3.10. Conclusion on the assessment of non-coordinated effects on product and price competition in the markets for non-agricultural non-selective herbicides

(1540) For the reasons set out above and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely give rise to significant impediments to effective competition in relation to non-agricultural NSH (pre-post-emergent and post-emergent IVM) in Belgium, Denmark, France, Spain and the United Kingdom (see Table 151 above). More particularly, the Commission considers that the Transaction would likely – depending on the specific market – (i) eliminate an important competitive constraint and result in non-coordinated effects on current and potential product and price competition (for Belgium, Denmark, France, Spain and the United Kingdom) or (ii) create or strengthen a dominant position due to non-coordinated effects (for Belgium, France, Spain and the United Kingdom) (see Table 151 above).

1.4. Competitive assessment in non-selective herbicide innovation: non-coordinated effects on innovation competition

(1541) The Commission's framework of analysis to assess the likely impact of the Transaction on innovation competition – which is applied in the present Decision taking into account the specific facts of the case and characteristics of the relevant markets – is described below as well as in Section V.3.

(1542) In the Dow/DuPont Decision, the Commission described several circumstances that appear to be relevant for the assessment of the present case, including: (i) the innovation process in crop protection from discovery to development and commercialisation; (ii) the dynamics in crop protection innovation and in particular the importance of rivalry and competition; (iii) the high barriers to entry in crop protection innovation (mainly upfront costs, regulatory and field testing capabilities, broad access to market for monetisation) and the differentiated innovation capabilities of the main categories of industry players, with only a small number of players able to successfully launch new products globally; and (iv) the fact that although concentration is already high at industry level, this concentration is even higher at the innovation space level because each player cannot innovate in all innovation spaces.[1007]

[1006] Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 198.

[1007] See Commission Decision in Case M.7932 – Dow/DuPont (2017), Section V.8.

1.4.1. Definition of innovation spaces in NSH

1.4.1.1. Commission precedents

(1543) In the Dow/DuPont Decision, the Commission considered that innovation should not be understood as a market in its own right, but as an input activity for downstream product markets. While innovation eventually results in products competing on these markets, the assessment of innovation competition cannot be directly conflated with the relevant downstream product markets.

(1544) The assessment of the effects on innovation competition of a merger in the crop protection industry such as the present one requires the identification and analysis of those spaces in which innovation competition occurs, so as to assess whether the Transaction would significantly impede innovation competition in such spaces.

(1545) Indeed, R&D players such as the Parties do not innovate for all the product markets composing the entire crop protection industry at the same time. They do not innovate randomly without targeting specific spaces within that industry. When setting up their innovation capabilities and conducting their research, they target specific innovation spaces which are upstream of lucrative product markets and product markets which are of strategic interest for the R&D player in question. In order to assess innovation competition, it is thus important to consider the spaces in which this innovation competition occurs.

(1546) The innovation efforts of R&D companies, such as the Parties, are targeted based on discovery concepts for lead crops and lead pests and on profitability calculations. The characteristics of these concepts may vary across crop protection indications, as for instance in insecticides the pest seems to be the leading target for innovation, whereas in herbicides the selectivity by crop is an important element.[1008]

(1547) While the spaces where innovation competition takes place, which correspond to the discovery targets of those innovation efforts, are not necessarily identical to individual downstream crop protection markets, these concern an input that will eventually affect competition on downstream product markets since R&D companies, such as the Parties, compete in these spaces through their lines of research, which generate early pipeline products.

(1548) In terms of geographic scope, innovation spaces are generally global or at least regional (for instance at the EEA level), taking into account common features of broad geographic areas and with specific projects to be developed and launched in all profitable national markets.

1.4.1.2. Notifying Party views

(1549) The Notifying Party has not expressed any specific view on the issue of the definition of innovation spaces. However, it did explain that "*the research targets of all relevant companies reflect the true extent of R&D competition in weed management*",[1009] a statement which appears to be very much in line with the Commission's approach.

[1008] See Commission Decision in Case M.7932 – Dow/DuPont (2017), Section V.8.6.1.

[1009] Parties' white paper on non-selective herbicides, ID5016-22, paragraphs 4 and 27-43.

1.4.1.3. Commission assessment of the definition of innovation spaces in NSH

(1550) In defining innovation spaces regarding NSH, the Commission takes note of the fact that NSH are specific herbicides in that they do not need to preserve the crop and therefore can be used across crops, subject to regulatory restrictions. The corresponding R&D targets would thus typically reflect the different uses of NSH as described in recital (1323) rather than merely the key weeds which need to be controlled in a given crop since ideally all (relevant) weeds would be eliminated across several crops.

(1551) The Parties are in fact very clear that their innovation efforts are geared towards the development of products for burndown (and to clear all weeds in perennial crops, which are generally not harmed by such products) or for use over tolerant crops, as shown for instance in Figure 239.

(1552) The Commission thus takes the view that innovation spaces for NSH are burndown and over-the-top uses across crops, as well as weed management in perennial crops (TNV). It must be noted, however, that when looking at innovation spaces for NSH the Parties attempt to discover and develop molecules that would be suited for as many areas as possible, and usually at least for burndown and over-the-top uses. Therefore, when assessing the Parties' innovation efforts, the Commission will focus on their efforts for NSH overall and will only further discuss the specific impact on burndown and over-the-top uses across crops, as well as weed management in perennial crops, as appropriate.

(1553) The Commission further takes the view that innovation spaces for NSH are global, because innovation efforts are rolled-out in all possible geographies across the globe.

1.4.1.4. Conclusion

(1554) In light of its precedents and considering the views of the Notifying Party, and taking into account the results of the investigation, the Commission considers that the relevant space to assess NSH innovation is the one including R&D investment and activities targeting the development of NSH products, either as such or for specific NSH uses such as conventional use in perennial crops (TNV), burndown and over-the-top uses across crops, globally.

1.4.2. Activities of the Parties and their competitors

1.4.2.1. Monsanto's innovation in NSH

(1555) Monsanto [details of Monsanto's strategy for pipeline products]. Indeed, most of Monsanto's R&D efforts in NSH aim at [details of Monsanto's strategy for pipeline products].

Figure 232 – Monsanto overall business strategy

[…]

Source: MI 08242 [internal document], ID2330-45, slide 5.

(1556) In particular, Monsanto is heavily involved in [details of Monsanto's strategy for pipeline projects]. For instance, Monsanto recently launched a glyphosate+dicamba mixture for use over its newly launched Roundup Ready 2 Xtend soy and cotton crops, and is developing a [pipeline information] (global launch planned in […]) for [pipeline information] uses, including on [pipeline information]. EEA launch for

these two mixtures [pipeline information]. Monsanto benchmarks the [pipeline information] against glyphosate and glufosinate in trials.[1010]

(1557) A broader view of Monsanto's development projects is provided in Figure 233.

Figure 233 – Monsanto's […] development pipeline

[…]

Source: MI 08242 [internal document], ID2330-45, slide 40.

(1558) A significant aspect of Monsanto's lifecycle management strategy for its glyphosate franchise consists in gaining access to [details of Monsanto's strategy for pipeline products], an [quote from internal document] model which it internally assesses as [details of Monsanto's strategy for pipeline products], as illustrated in Figure 234 to Figure 236.

Figure 234 – Monsanto's [quote from internal document] approach (1)

[…]

Source: MI 9059 [internal document], ID4146, slide 7.

Figure 235 – Monsanto's [quote from internal document] approach (2)

[…]

Source: MI 342573 [internal document], ID9078-3, slide 3.

Figure 236 – Monsanto's [quote from internal document] approach (3)

[…]

Source: MI 342573 [internal document], ID9078-3, slide 27.

(1559) In particular, Monsanto is currently mainly pursuing a collaboration with Sumitomo on a new PPO inhibitor post-emergent NSH for [pipeline information] and to accompany herbicide tolerance traits in [pipeline information]. Global launch is planned for [pipeline information]. Monsanto benchmarks this new AI against [pipeline information] in trials.[1011]

(1560) In the context of the collaboration, Sumitomo [pipeline information], while Monsanto [pipeline information].[1012] Monsanto will [Pipeline information].[1013]

(1561) It must be noted that Monsanto appears to be [pipeline information] in the development of this project, which does not appear to be [pipeline information]. Indeed, when looking at [pipeline information].[1014]

1010 Form CO, part 2, paragraph 278 and Table 2.31; Parties' response to the Commission's request for information RFI 20, Annex 2.5.9; Parties' response to the Commission's request for information RFI 33, Annex 33.3.

1011 Form CO, part 2, Table 2.31; Parties' response to the Commission's request for information RFI 20, Annex 2.5.9; Parties' response to the Commission's request for information RFI 33, Annex 33.3.

1012 The Parties confirmed that Monsanto [pipeline information; quote from internal document] (Parties' response to the Statement of Objections, ID9941, paragraph 341).

1013 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 117. In their response to the Statement of Objections, the Parties pointed to an inaccuracy in paragraph 1306 of the Statement of Objections saying that Monsanto would have the right to sell [pipeline information] (Parties' response to the Statement of Objections, ID9941, paragraph 341). The Commission corrected this inaccuracy in the present Decision, and emphasises that the key point of paragraph 1306 of the Statement of Objections was that Monsanto could sell [pipeline information].

(1562) The Parties contested the Commission's interpretation of the evidence used to reach the preliminary conclusion that Monsanto would be the [pipeline information] in the collaboration with Sumitomo, in essence because this evidence would relate to [pipeline information], and because Monsanto – by contrast with Sumitomo – would not be able to [pipeline information].[1015]

(1563) The Commission notes that the Parties' explanations confirm that its understanding in recital (1561) is correct for [pipeline information].[1016]

(1564) Moreover, the Parties confirm Monsanto as being [pipeline information] in the collaboration with the fact that Monsanto would – under the Monsanto-Sumitomo Agreement [pipeline information] – receive [pipeline information; quote from internal document].[1017]

(1565) In parallel, Monsanto is also developing [pipeline information]. It is likely that Monsanto will in parallel develop [pipeline information]. At the very least, Monsanto will need to obtain regulatory approval for [pipeline information], as explained in footnote 924.

1.4.2.2. Bayer's innovation in NSH

(1566) Similarly to Monsanto, [details of Bayer's strategy for pipeline products], as illustrated in Figure 237 and Figure 238.[1018]

Figure 237 – [Details of Bayer's strategy for pipeline products]

[…]

Source: BI 33513 [internal document], ID9005-2, slide 11 (yellow highlight added).

Figure 238 – [Pipeline information]

[…]

Source: BI 33538 [internal document], ID9005-27, slide 2 (yellow highlight added).

(1567) [Details of Bayer's strategy for pipeline products].

(1568) [Details of Bayer's strategy for pipeline products].

Figure 239 – [Details of Bayer's strategy for pipeline products]

[…]

Source: BI-EDISC-1129453 [internal document], ID7496-35046, slide 9.

1014 Monsanto's internal document MI 08262 [internal document], ID2330-65, slide 15.

1015 Parties' response to the Statement of Objections, ID9941, paragraphs 431-433 and 474.

1016 Parties' response to the Statement of Objections, ID9941, paragraph 430.

1017 Parties' response to the Statement of Objections, ID9941, paragraphs 433 and 474.

1018 See also Bayer's internal document BI 01839, notably slide 42.

(1569) [Pipeline information].[1019]

Figure 240 – [Details of Bayer's strategy for pipeline products]

[…]

Source: Bayer's weed management presentation of 29 September 2017, ID5994, slide 9 (yellow highlight added).

(1570) Figure 241 and Figure 242, presented to Bayer's Research Portfolio Committee in December 2016, illustrate Bayer's overall weed management portfolio and action plan.

Figure 241 – Bayer weed management pipeline

[…]

Source: BI 33594 [internal document], ID9418, slide 3.

Figure 242 – Bayer weed management action plan 2017

[…]

Source: BI 06588 [internal document], ID5270, slide 167.

(1571) As is apparent from Figure 242, Bayer pursues several earlier projects as shown in Figure 243.[1020]

Figure 243 – [Pipeline information]

[…]

Source: BI 17727, ID7329-7031, slide 4.

(1572) In view of the development stage of Bayer's early pipeline projects, planned peak sales as well as specific target geographic markets are however typically not available yet.

(A) [Pipeline information]

(1573) [Pipeline information] are translocational [pipeline information] inhibitors from a novel chemical class, which show promising efficacy across a large spectrum of weeds – notably weeds resistant to glyphosate and broadleaf weeds – and are being optimised in particular as NSH for burndown and OTT uses.

Figure 244 – [Pipeline information]

[…]

Source: BI 10533, ID7119-29, slide 3.

[1019] The Parties claimed that the Commission would have characterised Figure 240 as a "*typical benchmarking analysis*" although it is not an ordinary course of business document but rather an analysis made for the Commission on the basis of Bayer's limited knowledge "*to establish similarities between R&D efforts of Bayer and Monsanto*" (Parties' response to the Statement of Objections, ID9941, paragraph 371). It is evident from recital (1569) (and corresponding paragraph 1312 in the Statement of Objections) that this is not how the Commission described the document. However, although made for the Commission, the document still is a benchmarking exercise which confirms overlaps between Monsanto and Bayer, albeit not the "typical" benchmarking done in the ordinary course of business.

[1020] Form CO, part 2, paragraphs 282-288; Parties' response to the Commission's request for information RFI 20, Annex 2.5.6; Parties' response to the Commission's request for information RFI 33, Annex 33.14.

(1574) [Pipeline information].[1021]

Figure 245 – [Pipeline information]

[…]

Source: BI 06589, ID5271, slide 20.

(1575) [Pipeline information].

Figure 246 – [Pipeline information]

[…]

Source: BI 10533, ID7119-29, slide 17.

(1576) [Pipeline information].

Figure 247 – [Pipeline information]

[…]

Source: BI 33681 [internal document], page 78 (yellow highlight added).

Figure 248 – [Pipeline information]

[…]

Source: BI 33681 [internal document], page 86 (yellow highlight added).

(B) [Pipeline information]

(1577) Bayer has been developing [pipeline information] for burndown, TNV and post-emergence applications in a transgenic system of herbicide tolerance. [Pipeline information].[1022]

Figure 249 – [Pipeline information]

[…]

Source: BI 17892, ID7329-7196, slide 4.

Figure 250 – [Pipeline information]

[…]

Source: BI 17892, ID7329-7196, slide 25.

(1578) [Pipeline information][1023].

Figure 251 – [Pipeline information]

[…]

Source: BI 33681 [internal document], page 88 (yellow highlight added).

Figure 252 – [Pipeline information]

[…]

Source: BI 33681 [internal document], page 94 (yellow highlight added).

1021 Parties' white paper on non-selective herbicides, ID5016-22, paragraph 24.

1022 Bayer's internal document BI 17892, ID7329-7196.

1023 Parties' response to the Statement of Objections, ID9941, paragraphs 384-386 and 588.

(C) [Pipeline information]

(1579) Bayer is researching [pipeline information] herbicides, primarily for [pipeline information]. [Pipeline information] herbicides are effective against grass weeds that are known to have developed resistance to other herbicides with the same MoA ([pipeline information]) and to glyphosate, but have only limited activity on broadleaf weeds. Therefore, although they would likely not be a full competitor to glyphosate in burndown applications on their own in general, [pipeline information].[1024]

Figure 253 – [Pipeline information]

[…]

Source: BI 19550, ID7386, slide 3.

(1580) [Pipeline information].

Figure 254 – [Pipeline information]

[…]

Source: BI 08665 [internal document], ID6630, slide 11 (yellow highlight added).

Figure 255 – [Pipeline information]

[…]

Source: BI 08665 [internal document], ID6630, slide 22 (yellow highlight added).

(1581) In addition, glyphosate is also stronger on grass weeds than it is on broadleaf weeds. Accordingly, although possibly not full substitutes to glyphosate in all applications, [pipeline information] would likely be very close substitutes to glyphosate in the specific context of [pipeline information] where they would be able to control the most relevant weeds, particularly in mixtures with glufosinate. This appears to be confirmed by the fact that [pipeline information].

(1582) The most recent update documents confirm that in December 2017 [pipeline information], as shown in Figure 256.[1025]

Figure 256 – [Pipeline information]

[…]

Source: BI 33592 [internal document], ID9420, slide 11.

(1583) Figure 257 to Figure 260 and Figure 394, presented to Bayer's Research Portfolio Committee in December 2017, [pipeline information].

Figure 257 – [Pipeline information]

[…]

Source: BI 33681 [internal document], page 34 (yellow highlight added).

[1024] In their response to the Statement of Objections, the Parties emphasised that [pipeline information] testing for burndown in 2018 will be limited to [pipeline information] – which is not grown to any appreciable extent in the EEA – in view of [pipeline information].

[1025] Bayer's internal document BI 19550, ID7386.

Figure 258 – [Pipeline information]

[…]

Source: BI 33681 [internal document], page 36.

Figure 259 – [Pipeline information]

[…]

Source: BI 33681 [internal document], page 38 (yellow highlight added).

Figure 260 – [Pipeline information]

[…]

Source: BI 33681 [internal document], page 39 (yellow highlight added).

1.4.2.3. Competitors' innovation in NSH

(1584) The Parties, like many players in the industry, carefully monitor competitors, in particular pipelines, through expert intelligence. They monitor patent activity and reproduce competitor patented molecules to assess targets and efficacy. They also scrutinise ISO common name applications as well as investor presentations, where all crop protection players present their pipelines, which are the heart of their future revenues and value. The Parties are thus able to identify competitor pipeline pressure, which is notably needed to correctly project future sales and the current value of their own pipeline projects. These competing existing and future products are thus taken into account in the Parties' predictions for the success of their own forthcoming products.

(1585) On the basis of the information contained in the Parties' competitive intelligence, it appears that there is little competing R&D activity in NSH, notably in given MoAs such as [pipeline information], as confirmed by Figure 261 and Figure 262.

Figure 261 – Weed control pipeline landscape

[…]

Source: BI-EDISC-0170032 [internal document], ID5608-032418, slide 99.

Figure 262 – Weed management competitor patent activity

[…]

Source: BI 06588 [internal document], ID5270, slide 20.

(1586) Indeed, it appears that BASF and Dongbu FarmHannong (now LG) are the only two players aside from the Parties (in addition to Sumitomo, which the Commission considers to not be independent from Monsanto in light of their collaboration on Sumitomo's [pipeline information] PPO) which have [pipeline information] research, although BASF's research appears to be less recent.[1026]

(1587) Similarly, novel [pipeline information] research appears to be largely limited to Bayer, BASF and Syngenta, and [pipeline information] research appears to be largely limited to Bayer and Syngenta.

[1026] The Parties also mentioned FMC as having some patent activity, but did not provide any further evidence on specific projects for NSH (Parties' response to the second Letter of Facts, ID10930, paragraphs 126-127).

(1588) More players tend to be active in research for other MoAs, which however the Parties consider less promising than [pipeline information] for NSH.[1027]

1.4.3. Notifying Party views[1028]

(1589) In their response to the Article 6(1)(c) Decision, the Parties in essence argued that Bayer's pipeline projects were at very early stages, with global launch dates after 2030 – at a point in time when, moreover, it is not clear if and to what extent growers will still be able to use glyphosate – and at a point where uncertainty is still great and likelihood of launch low.

(1590) They further argued that – except for the PPO collaboration with Sumitomo, [pipeline information] – Monsanto's portfolio is entirely made of [pipeline information].

(1591) Finally, the Parties in essence argued that they would have no incentive to discontinue Bayer's efforts in new AIs because: (i) Monsanto does not have duplicative efforts; (ii) there is a large market need for such molecules notably in view of regulatory pressure on existing NSH; (iii) many competitors accordingly have NSH as an R&D target with possible pipeline projects and are active in the same classes as Bayer; (iv) Bayer's projects are unable to fully replicate glyphosate as a standalone burndown NSH; (v) their [pipeline information] efforts have different timelines and are from different chemical classes; and (vi) other players are also pursuing [pipeline information], such as LG and BASF.

(1592) In their white paper on non-selective herbicides,[1029] the Parties further developed the arguments that: (a) Monsanto is not active in [details of Monsanto's strategy for pipeline projects] and there is therefore no risk of redundancy with Bayer's discovery efforts; (b) the R&D foci of the Parties are thus different, Bayer targeting the discovery of new AIs which are not substitutes for Monsanto's portfolio of products (in particular glyphosate) and Monsanto focusing on [details of Monsanto's strategy for pipeline projects]; (c) the Parties assume that developing NSH and in particular a "*new glyphosate*" is a key R&D target – allegedly the only adequate reflection of innovation competition, as opposed to pipeline reviews – for capable players, and several players appear to have relevant candidates in the pipeline or to work in the chemical classes which Bayer is exploring; (d) the Transaction would not in any way reduce Bayer's incentives to pursue its NSH R&D efforts in spite of glyphosate sale cannibalisation in view of sufficient customer demand, also taking into account the issue of growing regulatory pressure and resistance to glyphosate.

(1593) In their response to the Statement of Objections, the Parties in essence further argued that: (i) Monsanto is not a real innovator because [details of Monsanto's strategy for pipeline projects]; (ii) the Transaction would not reduce the intensity of Bayer's R&D efforts in NSH since the key driver for NSH innovation is increasing regulatory and resistance pressure, as also evidenced by the existence of these projects in spite of Bayer already owning glufosinate; (iii) the Commission would not have produced sufficient evidence of likely effects on innovation competition, Bayer having on the contrary recently increased its own R&D efforts in NSH; (iv) the target uses of

1027 See Bayer's weed management presentation of 29 September 2017, ID5994, slides 10-12.

1028 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 115-141; Parties' white paper on non-selective herbicides, ID5016-22, paragraphs 2-5 and 11-51.

1029 Parties' white paper on non-selective herbicides, ID5016-22.

Bayer's R&D projects do not fully overlap with Monsanto's Roundup franchise; (v) a large number of competitors likely also innovate for NSH in view of the large revenue expectations, partly driven by growing regulatory and resistance pressure on current products; and (vi) the offered Commitments would solve any concerns.[1030]

(1594) In the Form CO, the Notifying Party had claimed that [pipeline information] herbicides display particular effectiveness against grasses that grow in warm climates but are less effective against grasses more common in cooler climates such as those found in the EEA, for example Alopecurus or Lolium. Moreover, [pipeline information] herbicides would have been found to be less effective against mature weeds in the later stages of development. Combined, these two features would, according to the Notifying Party, make them ill-suited for the type of burndown applications desired by growers in the EEA.[1031]

(1595) These arguments notwithstanding, the Commission's investigation leads to a different conclusion regarding innovation competition between the Parties, as reasoned in the following Sections.

1.4.4. The Parties are important and close competitors in innovation for NSH with overlapping lines of research, pipeline products and existing products

1.4.4.1. The Parties' past innovation in herbicides has led to their leading positions in product competition today

(1596) As shown in Sections XI.1.2 and XI.1.3, the Parties are the two leading NSH players globally with glyphosate and glufosinate, which are perceived as the only two real alternative NSH.[1032]

(1597) This important and close product and price competition today is obviously evidence of past competing innovation efforts in NSH. Indeed, both Parties developed NSH products, which were launched on the market and grew to become the two largest – and in fact almost only – NSH products globally and in the EEA.

(1598) The fact that there are virtually no competing products to the Parties' on the EEA markets today illustrates further the importance and closeness of innovation competition between Bayer and Monsanto in the past.

1.4.4.2. The Parties currently have similar R&D efforts relative to innovation in NSH

(1599) Currently, both Parties have R&D efforts in NSH, as detailed in Section XI.1.4.2.

(A) Monsanto is an innovator in NSH

(1600) Monsanto's strategic goal in crop protection is to [details of Monsanto's strategy for pipeline projects], notably in the face of growing resistance and regulatory pressure. To do so, it is developing [pipeline information]: it for instance recently launched a mixture of glyphosate and dicamba in the United States. In parallel, Monsanto is likely developing an [pipeline information]. Monsanto is also [details of Monsanto's

1030 Parties' response to the Statement of Objections, ID9941, paragraphs 335-486. See also the Parties' response to the first Letter of Facts, ID10661, paragraphs 5-102; Parties' response to the second Letter of Facts, ID10930, paragraphs 104-163.

1031 Form CO, part 2, paragraph 283.

1032 See also Table 155 regarding OTT use of NSH.

strategy for pipeline projects],[1033] as illustrated by the recent collaboration with Sumitomo on the [pipeline information] PPO project and on flumioxazin supply.

(1601) Moreover, Monsanto seeks to increase the sales of its Roundup franchise by [details of Monsanto's strategy for pipeline projects].[1034]

(1602) While it appears that Monsanto no longer [details of Monsanto's strategy for pipeline projects], this should not dismiss its capabilities as an innovator in NSH more generally, as for instance illustrated in Figure 275, an excerpt of Monsanto's management presentation.

(A.i) Monsanto's residual [details of Monsanto's strategy for pipeline projects] capabilities and future plans

(1603) First, Monsanto initially had these capabilities, which it used to discover, develop and market glyphosate, the most successful crop protection AI ever.

(1604) Second, Monsanto intentionally decided to exit chemical discovery as it diversified its overall portfolio into traits and seeds, and to rely for its chemical needs on its [pipeline information] approach – [details of Monsanto's strategy for pipeline projects] – which it determined to be a more effective and therefore profitable way forward.

(1605) In particular, although such an [pipeline information] strategy would perhaps not be as effective as in-house discovery capabilities in order to be able to address any given space in the full spectrum of crop protection discovery, as well as to adapt and modify these targeted discovery efforts, it is likely that they are an effective way for Monsanto to procure the (novel) herbicidal AIs it needs in view of its core business strategy to [details of Monsanto's strategy for pipeline projects]. It is thus able to [details of Monsanto's strategy for pipeline projects] in what it likely considers to be a more profitable way.

(1606) Furthermore, Figure 263 to Figure 274 suggest that Monsanto may be [details of Monsanto's strategy for pipeline projects] (see in particular Figure 263 as well as Figure 276) [details of Monsanto's strategy for pipeline projects].

Figure 263 – [Details of Monsanto's strategy for pipeline projects]

[…]

Source: MI 342561 [internal document], slide 3 (yellow highlight added).

Figure 264 – Monsanto's novel heribicide [pipeline information] strategy

[…]

Source: Parties' response to the Commission's request for information RFI 33, Annex 33.3 REVISED (yellow highlight added).

Figure 265 – [Details of Monsanto's strategy for pipeline projects]

[…]

Source: MI 342556 [internal document], slide 28 (yellow highlight added).

[1033] Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 119.

[1034] See Section XI.1.5.

Figure 266 – [Details of Monsanto's strategy for pipeline projects]

[…]

Source: MI 000028408.00001 [internal document], slide 35 (yellow highlight added).

Figure 267 – [Details of Monsanto's strategy for pipeline projects]

[…]

Source: MI 000028408.00001 [internal document], slide 25 (yellow highlight added).

Figure 268 – [Details of Monsanto's strategy for pipeline projects]

[…]

Source: MI 000343182.00001 [internal document], slide 5 (yellow highlight added).

Figure 269 – [Details of Monsanto's strategy for pipeline projects]

[…]

Source: MI 000343182.00001 [internal document], slide 7 (yellow highlight added).

Figure 270 – [Details of Monsanto's strategy for pipeline projects]

[…]

Source: MI 000343182.00001 [internal document], slide 8 (yellow highlight added).

Figure 271 – [Details of Monsanto's strategy for pipeline projects]

[…]

Source: MI 000343182.00001 [internal document], slide 10 (yellow highlight added).

Figure 272 – [Details of Monsanto's strategy for pipeline projects]

[…]

Source: MI 000343182.00001 [internal document], slide 16 (yellow highlight added).

Figure 273 – [Details of Monsanto's strategy for pipeline projects]

[…]

Source: MI 000343041.00001 [internal document], slide 7 (yellow highlight added).

Figure 274 – [Details of Monsanto's strategy for pipeline projects]

[…]

Source: MI 000335243.00001 [internal document], slide 9 (yellow highlight added).

(1607) The Parties disagreed that the [pipeline information] approach – which would be recent – would be effective for Monsanto to procure novel AIs or would even have been applied for herbicides.[1035] However, the Commission notes that – irrespective of how it was called or "branded" in-house at the time – Monsanto's collaboration with Sumitomo on [pipeline information] for instance follows the [pipeline information] model and has clearly been effective for Monsanto.

[1035] Parties' response to the Statement of Objections, ID9941, paragraphs 354-356; Parties' response to the first Letter of Facts, ID10661, paragraphs 92-96.

(1608) Finally, it is uncontested that Monsanto is a leading player in novel technology such as sprayable RNAi under its "BioDirect" franchise. As shown in Figure 343, Monsanto is in that framework working on [pipeline information], in particular to [details of Monsanto's strategy for pipeline projects] which has come under pressure because of [details of Monsanto's strategy for pipeline projects].[1036]

(1609) As a concrete illustration, where Monsanto strives to [details of Monsanto's strategy for pipeline projects], it is able to do so either by [details of Monsanto's strategy for pipeline projects]. This is for instance what Monsanto is doing for its [pipeline information] projects, as further detailed in Section XI.1.5.5.4 and illustrated in the Monsanto internal document excerpts in Figure 275 and Figure 276.

Figure 275 – [Details of Monsanto's strategy for pipeline projects]

[…]

Source: MI 00011, ID1635-280, slide 43.

Figure 276 – Examples of [pipeline information] at Monsanto

[…]

Source: MI 342573 [internal document], ID4146, slide 14.

(1610) Furthermore, Figure 276 may suggest that Monsanto has some [pipeline information] capabilities or may be rebuilding some capabilities in that respect, since the [pipeline information].

(1611) On the one hand, the Parties themselves confirmed Monsanto's strong capabilities as an innovator in NSH, in particular [pipeline information] but also to a limited extent in [pipeline information].[1037]

Table 152 – [Details of Monsanto's strategy for pipeline projects]

[…]

Source: Parties' response to the Commission's request for information RFI 114, ID10198, Table 1.

Table 153 – [Extract from internal document]

[…]

Source: Parties' response to the Commission's request for information RFI 114, ID10198, Table 1.

(1612) Noticeably, it is clear from Table 152 and Table 153 that Monsanto does have some [details of Monsanto's strategy for pipeline projects] capabilities in herbicide R&D,

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1036 The Parties in essence explained that the Commission would have overestimated the impact of Monsanto's [pipeline information] (Parties' response to the first Letter of Facts, ID10661, paragraphs 47-50). However, the Commission notes that – [pipeline information] – it is indeed aimed at [details of Monsanto's strategy for pipeline projects], and is clearly innovative.

1037 See the Parties' response to the Commission's request for information RFI 114, ID10198, paragraphs 35-46, as well as the Parties' response to the Statement of Objections, ID9941, paragraph 360: [quote from confidential submission]. The Parties contested the conclusions drawn by the Commission from this evidence (Parties' response to the first Letter of Facts, ID10661, paragraphs 83-86). However, the Commission notes that the Parties explained that Monsanto would not [pipeline information].

as also directly confirmed by the Parties: "*[a]s is evident from [*Table 152 and Table 153], [quote from internal document] (emphasis added).[1038]

(1613) Importantly, the Parties confirmed that Monsanto – apparently inspired by [details of Monsanto's strategy for pipeline projects] – tried a similar approach and [details of Monsanto's strategy for pipeline projects] in September 2017.[1039] While these attempts appear not to have been successful, it is not clear to the Commission why such efforts to [details of Monsanto's strategy for pipeline projects] would be a sign of [details of Monsanto's strategy for pipeline projects] and innovation when conducted by [details of Monsanto's strategy for pipeline projects], but not a sign of innovative activity when conducted by Monsanto.[1040]

(A.ii) Monsanto's strong [pipeline information] capabilities

(1614) In addition to [pipeline information] capabilities, [pipeline information] still require a substantial amount of innovation to [pipeline information], which – in addition to bringing more options to growers – pursue Monsanto's objectives of [pipeline information].

(1615) The Parties confirmed Monsanto's [pipeline information] capabilities for [quote from internal document], and emphasised that some of these capabilities are [quote from internal document].[1041] The Commission highlights how strong these capabilities – in particular those highlighted above in Table 152 and Table 153 – likely are, taking into account that they do not include all of the capabilities and assets devoted to developing HT traits.

(1616) Figure 277 to Figure 279 illustrate further Monsanto's strong capabilities and investment in [pipeline information], including with [pipeline information] but also new AIs such as the [pipeline information] PPO developed with Sumitomo (also referred to as "MON 57229").

Figure 277 – [Details of Monsanto's strategy for pipeline projects]

[…]

Source: MI 000335277.00001 [internal document], slide 4 (yellow highlight added).

Figure 278 – [Details of Monsanto's strategy for pipeline projects]

[…]

Source: MI 000332145.00001 [internal document], slide 4 (yellow highlight added).

1038 Parties' response to the Commission's request for information RFI 114, ID10198, paragraph 36.

1039 Parties' response to the Statement of Objections, ID9941, paragraph 360; Parties' response to the Commission's request for information RFI 114, ID10198, paragraph 42.

1040 The Parties in essence disagreed with the Commission's view that the efforts illustrated in Figure 276 could be comparable to what [details of Monsanto's strategy for pipeline projects] has done with [pipeline information] (Parties' response to the first Letter of Facts, ID10661, paragraphs 89-91). However, the Commission notes that both projects consisted in [details of Monsanto's strategy for pipeline projects], and whether or not each project was successful is a separate consideration. Moreover, the Commission disagrees with the Parties' view that [quote from confidential submission] simply because [quote from confidential submission]. When the discovery efforts happened is irrelevant: the fact is that [pipeline information] is a [details of Monsanto's strategy for pipeline projects] discovery.

1041 Parties' response to the Commission's request for information RFI 114, ID10198, paragraph 37.

Figure 279 – [Details of Monsanto's strategy for pipeline projects]

[…]

Source: MI 000332145.00001 [internal document], slide 9 (yellow highlight added).

(1617) In particular, Figure 280 to Figure 285, describing Monsanto's detailed activities in relation to its collaboration with Sumitomo on the [pipeline information] PPO, confirm that Monsanto is [pipeline information] the PPO collaboration with Sumitomo – [pipeline information] – and not just a [pipeline information]. Indeed, Monsanto is active in [pipeline information].[1042]

Figure 280 – Monsanto collaboration with Sumitomo on [PPO] (1)

[…]

Source: MI 342614 [internal document], slide 2.

Figure 281 – Monsanto collaboration with Sumitomo on [PPO] (2)

[…]

Source: MI 342615 [internal document], slide 3 (yellow highlight added).

Figure 282 – Monsanto collaboration with Sumitomo on [PPO] (3)

[…]

Source: MI 342615 [internal document], slide 8 (yellow highlight added).

Figure 283 – Monsanto collaboration with Sumitomo on [PPO] (4)

[…]

Source: MI 342919 [internal document], slide 11 (yellow highlight added).

Figure 284 – Monsanto collaboration with Sumitomo on [PPO] (5)

[…]

Source: MI 342919 [internal document], slide 6.

Figure 285 – Monsanto collaboration with Sumitomo on [PPO] (6)

[…]

Source: MI 342919 [internal document], slide 76 (yellow highlight added).

(1618) The Parties in essence argued that this evidence would only show Monsanto's activities to develop [pipeline information].[1043] However, the Commission notes, first, that such [pipeline information] work demonstrates innovation from Monsanto [pipeline information] and, second, that the Parties themselves acknowledge the existence – [pipeline information]– of a specific [pipeline information] for at least one product: [quote from confidential submission].[1044]

(1619) The Commission also emphasises that the Parties acknowledged that Monsanto works on [pipeline information] and [pipeline information] for [PPO], which [pipeline information], thereby confirming that Monsanto collaborates with

[1042] Parties' response to the Statement of Objections, ID9941, paragraph 432.

[1043] Parties' response to the second Letter of Facts, ID10930, paragraphs 107-114.

[1044] Parties' response to the second Letter of Facts, ID10930, paragraphs 113-114.

Sumitomo on the development of [PPO] although Sumitomo is likely also [pipeline information].[1045]

(1620) The Parties indirectly confirmed Monsanto's valuable [pipeline information] capabilities, as illustrated by the fact that Monsanto would – under the Monsanto-Sumitomo Agreement [terms of collaboration]. Another illustration is the Parties' explanation that [terms of collaboration].[1046]

(1621) In the specific case of the [PPO], the Parties directly confirmed that Monsanto is working on its own formulations, since both [quote from confidential submission].[1047]

(1622) Finally, commercial success and impact on the market requires an effective route to market, where Monsanto's strong footprint and capabilities are not disputed.

(A.iii) Conclusion on Monsanto's capabilities as an NSH innovator

(1623) In their responses to the Statement of Objections and Letters of Facts, the Parties continued to argue that Monsanto would not be an innovator in NSH, in essence because […] it would lack […] capabilities and activities. As a consequence, in the Parties' view there would be no overlap in innovation activities between the Parties in NSH and hence no innovation-related concern.[1048] The Commission disagrees with this conclusion.

(1624) On the one hand, the primary source of innovation-related concerns raised in NSH consists in the reduction of incentives for Bayer to invest in NSH post-transaction due to the cannibalisation between Bayer's current NSH research and the glyphosate-related profits of Monsanto. Whether Monsanto is currently engaged or not in […] in NSH is irrelevant for this reasoning.

(1625) On the other hand, the Commission reiterates its finding from the Statement of Objections that Monsanto is an innovator in NSH. Indeed, contrary to what the Parties suggested,[1049] innovation is not limited to […], for which it is undisputed that Monsanto has strong capabilities. In addition, the evidence in Section XI.1.4.4 confirms that Monsanto also has some […] assets and […] capabilities. The Commission accordingly disagrees with the view that Monsanto is not an innovator in NSH simply because it currently has a different innovation model compared to Bayer.

(1626) Indeed, as emphasised by the Parties, Bayer and Monsanto have somewhat differentiated innovation business models, and the Commission has never claimed that Monsanto's innovation activities are the same as Bayer's. However, this difference should not be overstated: at a general level, both companies seek to at least preserve and if possible expand their revenues and market presence in existing

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1045 Parties' response to the second Letter of Facts, ID10930, paragraphs 115-119.

1046 Parties' response to the Statement of Objections, ID9941, paragraphs 430-434.

1047 Parties' response to the Statement of Objections, ID9941, paragraph 434.

1048 Parties' response to the Statement of Objections, ID9941, paragraphs 336-366 and 405; Parties' response to the first Letter of Facts, ID10661, paragraphs 78-102; Parties' response to the second Letter of Facts, ID10930, paragraphs 106-132.

1049 Bayer described Monsanto's innovative activities in the [R&D] as [assessment of Monsanto's capabilities] (Parties' response to the Statement of Objections, ID9941, paragraphs 337, 339, 344-346, 357 as well as paragraphs 351, 544-547 and 555-559; Parties' response to the first Letter of Facts, ID10661, paragraphs 87 and 99-102; Parties' response to the second Letter of Facts, ID10930, paragraphs 107-114 and 123-125).

and new segments. They do so by using a number of tools: branding, market segmentation, proprietary mixtures, novel AIs (also in mixtures with older AIs) discovered and developed in-house or procured from third parties, etc.. It must also be borne in mind that all of these actions entail costs, and the ability of companies to fund R&D is of course not unlimited.

(1627) Monsanto's innovation efforts in crop protection are to a large extent specifically focused on […], which is currently a very large source of revenues. In this way, Monsanto is able to focus a larger portion of its finite R&D funds on other areas – such as […][1050] and other efforts in promising areas of crop protection for Monsanto to expand its presence in other segments such as […] – than it would be if it used more funds in […]. In all likelihood, this allocation results from Monsanto's assessment of where funds are best used and returns higher, and its likely satisfaction that its current innovation efforts in NSH meet its needs to protect the largest crop protection franchise in the world.

(1628) [R&D strategy].[1051]

(1629) This evidence confirms that even novel AIs are used for LCM. The reason appears to be that Bayer, […], is a very large player in some markets, where its innovation efforts are focused on preserving the sales of its existing AIs and products for as long as possible also with less costly efforts than only by the discovery and development of fully novel AIs and products. In that way, Bayer is able to […].

(1630) Accordingly, at its stage of the lifecycle of glyphosate Monsanto focuses on developing [R&D strategy].

(1631) However, contrary to the Parties' claims,[1052] LCM and discovery are not two separate and antithetic innovation models. On the contrary, innovation is a complex continuum: new AIs (notably from new MoAs) are used in particular to extend the market presence of older AIs and products. These novel molecules are also rarely sold in straight products, but typically in mixtures with older AIs. In a sense, new AIs are a tool for the lifecycle management of the overall portfolio and market presence above and beyond the lifecycle management of specific products and AIs.

(1632) In fact, Monsanto's innovation model includes […], for instance via the cooperation with Sumitomo. Bayer has similar practices, which are standard in the industry, typically to fill gaps in its portfolio or to create novel mixtures.

(1633) Finally, the Commission does not agree with the Parties' view – reiterated in their response to the Statement of Objections – that the Commission would have itself confirmed in its Dow/DuPont Decision the Parties' view that Monsanto is not a real innovator because it is not […].[1053]

(1634) Because the Parties had made this argument several times, the Commission explained already in the Statement of Objections that it "*concluded in Case M.7932 – Dow/DuPont that Monsanto constituted a* "distant competitor of the Parties [Dow and DuPont] and the other global R&D-integrated players as regards innovation competition" *(recital 2242). However, this conclusion was reached in the specific*

1050 See the Parties' response to the Statement of Objections, ID9941, paragraph 354.

1051 Parties' response to the Statement of Objections, ID9941, paragraphs 353 and 426.

1052 Parties' response to the Statement of Objections, ID9941, paragraphs 344-346.

1053 Parties' response to the Statement of Objections, ID9941, paragraphs 361-366. See also the Parties' response to the first Letter of Facts, ID10661, paragraphs 80-82.

facts of that case, looking at the issue of overall innovation capabilities at the industry level and taking into account the fact that both Dow and DuPont were fully integrated crop protection innovators active at all stages of the innovation process from discovery to commercialisation. Moreover, Case M.7932 focused on selective herbicides, not NSH as is the case here. In that context, it is not contested that Monsanto's abilities to innovate across the chessboard of innovation spaces in the entire crop protection industry with in-house discovery capabilities are likely more limited than those of fully integrated innovators such as Dow, DuPont or Bayer (as well as Syngenta and BASF). Nevertheless, it is conversely apparent that Monsanto's […] *approach and its broader innovation capabilities are fully adequate to meet its innovation needs in NSH, where it aims to* […]. *Furthermore, a significant impediment to effective competition can arise not only where two innovators have fully duplicative efforts, but also where one innovator is actively targeting the current leading player's portfolio (taking into account also the likely lifecycle management to preserve this portfolio). In sum, the Commission's conclusion in Case M.7932 does not contradict the Commission's conclusion as to Monsanto's innovation capabilities in NSH in the present case*".[1054]

(1635) The Commission confirms this explanation and emphasises that, in the Dow/DuPont Decision, it clearly stated that – although the Commission did *a priori* consider Monsanto as a competitor as it considered BASF or Syngenta – Monsanto was typically not a relevant competitor in the specific markets assessed in the Dow/DuPont Decision because Monsanto is in fact mainly active in the EEA on a crop protection segment where the parties in that case (Dow and DuPont) were hardly present, namely NSH. The Commission also confirmed that Monsanto is a key player and an innovator in NSH.

(1636) The above conclusions are illustrated by the following excerpts of the Dow/DuPont Decision dealing with competition in herbicides and herbicide innovation: (i) "*[Monsanto] specialises in pre-plant and non-selective applications, mainly on the basis of glyphosate, which is a different segment from those on which the Parties focus*"; (ii) "*[a]s for Monsanto, this company has been focusing on innovations related to pre-plant or pre-emergence applications, mainly on the basis of glyphosate, which is a different segment from those that the Parties are focusing on*"; (iii) "*Monsanto is historically present for innovations related to pre-emergence applications (mainly Glyphosate-related). In particular, among the […] patents of Monsanto in the highest quality group ([…]), which are the main determinants for the patent share of Monsanto, the first […] patents in terms of quality concern explicitly pre-plant or pre-emergence applications, which are related mainly to its AI Glyphosate introduced more than thirty years ago. The Commission also notes that the Parties do not have a significant presence for pre-plant or pre-emergence applications, suggesting that Monsanto is a distant competitor to Dow and DuPont*"; (iv) "*[i]n conclusion, while the Commission will consider the activities of Monsanto where relevant for the assessment, the Commission finds that Monsanto is a distant competitor of the Parties and the other global R&D-integrated players as regards innovation competition*"; (v) "*[a]lso, while Dow and DuPont specialise in broadleaf herbicides, Bayer and BASF do not have a clear focus in terms of weed classes as they currently have portfolios that are more balanced between graminicides and broadleaf herbicides. As for Syngenta, this competitor focuses more on graminicides*

[1054] Statement of Objections, ID9631-ID9633, footnote 795.

while Monsanto is mostly present in non-selective herbicides"; (vi) "*[t]he key strategy of Monsanto instead related in crop protection-seed combinations*"; (vii) "*Monsanto indicated, it is "*not conducting any non-collaborative discovery work to identify new synthetic chemistry active ingredients […] it considered whether it could develop a substantial innovation capability in crop protection, but this would have required significant time and resources*"*"; and (viii) "*[o]ther players such as the Japanese innovators, Monsanto, Sumitomo or FMC do not have similar capabilities and incentives*" (emphasis added in all cases).[1055]

(1637) On the Parties' specific point that – if Monsanto is indeed an innovator in crop protection – the Commission should have taken this into account in its Dow/DuPont Decision, the Commission confirms that this was indeed the case, for instance in assessing selective herbicides and nematicides.[1056]

(1638) Overall, the Commission finds that Monsanto is an innovator in NSH even though it is no longer […].[1057]

(1639) Furthermore – although the Parties disagreed that this would be the case and further contested that this would be relevant at all[1058] – Figure 286 to Figure 288 confirm that Bayer views Monsanto as an innovator in herbicide tolerance (HT), but also more broadly in weed management. In particular, Bayer considers that Monsanto is active in the development of the [PPO] with Sumitomo, and highlights the "*parallel approach*" (Figure 287) between weed control and HT in Monsanto as relevant for weed management systems.

Figure 286 – [Market intelligence]

[…]

Source: BI 33681 [internal document], page 15 (yellow highlight added).

Figure 287 – [Market intelligence]

[…]

Source: BI 33681 [internal document], page 21 (yellow highlight added).

Figure 288 – [Market intelligence]

[…]

Source: BI 33681 [internal document], page 14 (yellow highlight added).

1055 See Commission Decision in Case M.7932 – Dow/DuPont (2017), recitals 786, 2007, 2236, 2237, 2239, 2242, 2643, 2918.

1056 See Commission Decision in Case M.7932 – Dow/DuPont (2017), recitals 786, 1125, 1673.

1057 Also see, for instance, Commission Decision in Case M.7932 – Dow/DuPont (2017), Sections V.8.3 and V.8.6.3, notably Sections V.8.6.3.1-V.8.6.3.2 and recitals 2236-2237, 2239 and 2256-2257, which were already referred to in footnote 799 of the Statement of Objections.

1058 Parties' response to the Statement of Objections, ID9941, paragraphs 347-350; Parties' response to the second Letter of Facts, ID10930, paragraphs 120-122. The Parties claimed in paragraph 348 of their response to the Statement of Objections that the Commission would have misinterpreted Figure 260 of the Statement of Objections regarding Bayer's view of Monsanto's innovation capabilities in weed management. The Commission notes in that regard that the accuracy of its interpretation flows from a straightforward reading of the evidence referred to by the Parties in paragraph 349 of their response to the Statement of Objections, as well as Figure 269 of the Statement of Objections.

(1640) Indeed, Figure 289 confirms that […].[1059]

Figure 289 – [Competitors in PPO]

[…]

Source: BI 33681 [internal document], page 76 (yellow highlight added).

(1641) Moreover, the Commission is of the view that the fact that Bayer sees Monsanto as an innovator in NSH – while not necessary and determinative – is relevant to further confirm Monsanto's role as an innovator in NSH. The Parties do not provide any contemporaneous evidence showing that Bayer would not consider Monsanto as an innovator in NSH.

(1642) On the contrary, a competitor confirmed that "*Monsanto is among the leading crop protection innovators; Monsanto's crop protection pipeline has the 2nd highest investor valuation […]. Monsanto is strong in herbicides, particularly glyphosate and dicamba (with the launch of Xtend). […] Moreover, Monsanto also licenses herbicides from others, in particular in corn and soybean. It is the most innovative and risk-taking player in the industry, in-sourcing introductory technologies from third parties and developing them into new technologies and products (for example, biologicals, seed treatment, sprayable RNAi)), with a very large R&D budget. Monsanto's crop protection pipeline is also growing. Bayer is one of the big 2 players in crop protection (with Syngenta), but is overtaking Syngenta in R&D, with a lot of new technology in the pipeline or recently launched. It is particularly strong in the EU, with a remarkable pipeline. In the EU, Bayer has a strong herbicide presence and pipeline, including for specialty crops like vegetables. In Europe, glyphosate (Monsanto) and glufosinate (Bayer) are the two unescapable non-selective herbicides. They are essentially used for the same applications (i.e., when you seek to eliminate the entire weed population). […] On mixtures, the merged entity would have the ability of hindering competitors that rely on Bayer/Monsanto's active ingredients. Bayer and Monsanto have massive R&D capabilities (particularly in seeds for Monsanto and in crop protection for Bayer). They are the most aggressive players in R&D and are particularly strong in both seeds and crop protection. Monsanto is considered the most innovative, creative and risk taking company in the Ag sector, while Bayer heavily invested in R&D, being able to massively launch new technologies. Bayer also leverages its large portfolio to create many more mixtures/segmentations than competitors, and to capture sales and market share accordingly. Monsanto tends to acquire and use other companies' crop protection discovery inventions and fully develop them, creating barriers for competitors*" (emphasis added).[1060]

(B) Bayer is an innovator in NSH

(1643) Figure 290 to Figure 292 show that […].

Figure 290 – [R&D strategy]

[…]

Source: BI 33676 [internal document], slide 20 (yellow highlight added).

[1059] Parties' response to the first Letter of Facts, ID10661, paragraphs 97-102.

[1060] Agreed non-confidential minutes of a call with a competitor, 29 March 2017 (ID1289).

Figure 291 – [R&D strategy]

[…]

Source: BI 33676 [internal document], slide 12 (yellow highlight added).

Figure 292 – [R&D strategy]

[…]

Source: BI 33676 [internal document], slide 18 (yellow highlight added).

(1644) In addition, such lifecycle management activities often entail procuring novel molecules from third parties or innovating with novel mixtures of existing AIs. The Parties themselves explained that "*[h]aving access to both [*[PPO] *and* [pipeline product]*] could enable the merged entity to develop lifecycle management strategies around these herbicides*".[1061] The Parties thus acknowledge that novel molecules such as [pipeline product] can also be used for lifecycle management, which is what Monsanto is doing for instance with the [PPO].

(1645) This project highlights the fact explained above[1062] that "lifecycle management" innovation and "discovery" innovation are not strictly separate activities and that innovation is a complex continuum, where new AIs (especially from new MoAs) are used in particular to extend the market presence of older AIs, products and portfolios.

(1646) In addition to these lifecycle management projects, Bayer has NSH as a clear discovery target, and has several promising lines of research in its early pipeline, as detailed in Section XI.1.4.2.2. All of the investigated chemical classes have NSH uses (burndown, TNV and OTT) in their scope, either as the primary concept or as a secondary one, as shown in Figure 293 and Figure 294.

Figure 293 – Bayer pipeline portfolio fit to R&D targets

[…]

Source: BI 06588 [internal document], ID5270, slide 36.

Figure 294 – [R&D strategy]

[…]

Source: BI 06588 [internal document], ID5270, slide 32.

(1647) As illustrated in Figure 295 and Figure 296, [R&D strategy] shown in Figure 297.

Figure 295 – [R&D strategy]

[…]

Source: BI 33593 [internal document], ID9419, slide 3 (yellow highlight added).

Figure 296 – [R&D strategy]

[…]

Source: BI 33593 [internal document], ID9419, slide 6.

[1061] Parties' response to the Statement of Objections, ID9941, paragraph 426.

[1062] See recital (1631).

Figure 297 – [R&D strategy]

[…]

Source: BI 33593 [internal document], ID9419, slide 5.

(1648) In sum, the Commission considers that the Parties currently have similar R&D efforts relative to innovation in NSH.

1.4.4.3. The Parties currently have overlapping and close R&D projects in NSH

(1649) It is clear from the description of the Parties' R&D efforts in NSH innovation that some projects overlap.

(1650) These efforts in part aim at prolonging the commercial viability of the Parties' respective current NSH products. Because the Parties' current product portfolios compete closely, it is only natural that their respective R&D efforts to rejuvenate these portfolios would overlap, targeting the same uses. In particular, both Parties are developing new mixtures of existing AIs.

(1651) Bayer also has projects to develop novel AIs ([NSH lines of research 1, 2 and 3]), which – in addition to targeting Monsanto's overall glyphosate franchise as explained in Section XI.1.4.4.4 – overlap with Monsanto's current R&D efforts to develop [pipeline product].

(1652) Finally, [pipeline product] line of research [pipeline product]directly overlap with Monsanto's [PPO] project in collaboration with Sumitomo. […], as illustrated by Figure 298. [Launch timetable].

Figure 298 – [Pipeline products]

[…]

Source: Bayer's weed management presentation of 29 September 2017, ID5994, slide 13.

(1653) In their response to the Statement of Objections, the Parties argued that "*the chemistry from Sumitomo and the herbicide that Bayer is seeking to develop from the* [pipeline product] *class of chemistries do not appear to overlap in their application profiles*". This would in essence be because they would not prioritise targets similarly, [pipeline product], whereas [pipeline product].[1063]

(1654) However, it is apparent from the up-to-date information provided in the present Section that both projects target [pipeline product]. Moreover, Sumitomo started the development of the [PPO] chemical before it had a partner to develop a corresponding trait and OTT uses, thereby likely having burndown as its main focus, at least initially. [Pipeline product]. The Commission therefore concludes that the [pipeline product] and [PPO] projects overlap in their target uses, the respective prioritisation of given uses for each project being somewhat unclear. In any event, differences in prioritisation for given uses are immaterial to the existence of the

[1063] Parties' response to the Statement of Objections, ID9941, paragraphs 384-386 and 425-427. See also the Parties' response to the second Letter of Facts, ID10930, paragraphs 133-156. The Commission notes that it never stated or concluded that burndown and HT System uses are both being "*pursued with equal priority*" (paragraph 139) for [pipeline product] and Monsanto's [PPO]. Such a perception would be the Parties' own – and incorrect – inference. Conversely, the evidence abundantly shows and the Parties do not dispute that both uses are among the targets for both projects, either as a key priority or at least as an upside.

overlap as such and can only have an incidence in terms of the closeness of competing projects, which the Commission already assesses in the present Section.

(1655) For instance, Figure 299 to Figure 301, describing the key technical characteristics of Sumitomo's/Monsanto's [PPO] project, confirm that [PPO] is planned to target […]. Figure 299 notably confirms that [PPO] is […] and […], with a […].

Figure 299 – Summary of [PPO] characteristics

[…]

Source: MI 302755 [internal document], page 3 (yellow highlight added).

(1656) The Parties notably argued that [PPO] would be prioritised for […] uses, in particular because it has some [pipeline product].[1064] However, the Commission notes that […] uses are still being actively pursued, and [pipeline product]. Moreover, some limited […] is not an absolute obstacle to […] uses: it only requires waiting longer after application of the herbicide before planting the crop.

(1657) Figure 300 specifically describes [PPO]'s activity against […], a key weed. It thus confirms [pipeline product].

Figure 300 – [PPO] control of resistant weeds

[…]

Source: MI 302755 [internal document], page 9 (yellow highlight added).

(1658) Figure 301 is Sumitomo's internal comparison of several PPOs, including [PPO] and BASF's saflufenacil, on key characteristics. It in particular confirms [pipeline product], in contrast with saflufenacil.

Figure 301 – Sumitomo PPO comparison

[…]

Source: MI 302755 [internal document], page 19 (yellow highlight added).

(1659) The above evidence confirms the Commission's findings that Sumitomo's/Monsanto's [PPO] effort targets […] and that [pipeline product].

(1660) Furthermore, Figure 302 to Figure 305 confirm that the [PPO] and [pipeline product] are likely close technically, [pipeline product]. Indeed, the referenced documents show that [PPO] and tiafenacil – the Dongbu FarmHannong molecule [pipeline product].

[1064] Parties' response to the second Letter of Facts, ID10930, paragraphs 135-136.

(1661) The Parties disagreed that belonging to the same chemical class would necessarily make molecules very close in their technical profiles, notably efficacy.[1065] The Commission notes that it does not argue that the evidence presented would show strict identity in efficacy between tiafenacil, [PPO] and Bayer's [pipeline product] project. However, the evidence does show that all three projects are relatively close, if only because they are from the same chemical class, which the Parties do not contest.

Figure 302 – Similarity of [PPO] and tiafenacil (1)

[…]

Source: MI 305593 [internal document], slide 51 (yellow highlight added).

Figure 303 – Similarity of [PPO] and tiafenacil (2)

[…]

Source: MI 305595 [internal document], slide 8 (yellow highlight added).

Figure 304 – Similarity of [PPO] and tiafenacil (3)

[…]

Source: MI 342610 [internal document], slide 23.

Figure 305 – Similarity of [PPO] and tiafenacil (4)

[…]

Source: MI 342611 [internal document], slide 23.

(1662) Moreover, [R&D strategy].[1066]

(1663) Figure 306 to 316, […].

Figure 306 – [R&D strategy]

[…]

Source: BI 33715 [internal document], slide 9.

Figure 307 – [R&D strategy]

[…]

Source: BI 33711 [internal document], page 28 (yellow highlight added).

Figure 308 – [R&D strategy]

[…]

Source: BI 33712 [internal document], page 17 (yellow highlight added).

1065 Parties' response to the second Letter of Facts, ID10930, paragraphs 144-149.

1066 Parties' response to the Commission's request for information RFI 111, ID9859, paragraph 5. See also the […] provided as Bayer's internal document BI 33710, as well as the Bayer's internal document BI 33713.

Figure 309 – [R&D strategy]

[…]

Source: BI 33712 [internal document], page 22 (yellow highlight added).

(1664) In particular, Figure 310 to Figure 315, [pipeline product].

Figure 310 – [Pipeline product]

[…]

Source: BI 17890 [internal document], ID7329-007194, slide 3 (yellow highlight added).

Figure 311 – [Pipeline product]

[…]

Source: BI 17890 [internal document], ID7329-007194, slide 4 (yellow highlight added).

Figure 312 – [Pipeline product]

[…]

Source: BI 17890 [internal document], ID7329-007194, slide 5 (yellow highlight added).

Figure 313 – [Pipeline product]

[…]

Source: BI 17890 [internal document], ID7329-007194, slide 6 (yellow highlight added).

Figure 314 – [Pipeline product]

[…]

Source: BI 17890 [internal document], ID7329-007194, slide 8 (yellow highlight added).

Figure 315 – [Pipeline product]

[…]

Source: BI 17890 [internal document], ID7329-007194, slide 10 (yellow highlight added).

Figure 316 – [Pipeline product]

[…]

Source: BI 33714 [internal document] (yellow highlight added).

(1665) In sum, the Commission considers that the Parties currently have overlapping and close R&D projects relative to NSH and the products resulting from these projects are likely to cannibalise each other's future NSH sales.

1.4.4.4. Bayer's innovation efforts in NSH target Monsanto's glyphosate franchise

(1666) Monsanto's glyphosate is the clear NSH global market leader, but one facing challenges, in particular the spread of resistance. In order to take advantage of such challenges, Bayer was pre-Transaction directly targeting glyphosate and its franchise and attempting to grow its own sales with its current products and pipeline projects, as illustrated in Figure 209.[1067]

[1067] See also Bayer's internal document BI 01839, notably slide 31.

(1667) Indeed, a number of Bayer's projects directly target glyphosate, the reference NSH, such as the projects detailed in Section XI.1.4.2.2 ([NSH lines of research 1, 2 and 3]). Figure 317 illustrates that Bayer even sees some of these new chemistries as having a high potential to deliver replacement candidates for glyphosate.

Figure 317 – [R&D strategy]

[…]

Source: Bayer's weed management presentation of 29 September 2017, ID5994, slide 12.

(1668) In fact, molecules in these chemical classes are typically benchmarked against glyphosate and glufosinate. All of these Bayer projects, [pipeline product], have non-selective uses such as burndown, TNV and OTT as either key concepts or upsides, as illustrated in Figure 318.

Figure 318 – [R&D strategy]

[…]

Source: BI 33594 [internal document], ID9418, slide 8.

(1669) Moreover, the anticipated timing for their launch appears from Bayer's presentation in Figure 319 to be […]. The Commission notes in this regard that the planned launch globally for [PPO] is [pipeline product] at the earliest (see Figure 386 and Figure 395). […].

Figure 319 – [R&D strategy]

[…]

Source: Bayer's weed management presentation of 29 September 2017, ID5994, slide 4 (yellow highlight added).

(1670) [R&D strategy].

Figure 320 – [R&D strategy]

[…]

Source: BI 33594 [internal document], ID9418, slide 4.

Figure 321 – [R&D strategy]

[…]

Source: BI 33594 [internal document], ID9418, slide 5.

(1671) Monsanto is well aware of the likely threat to its business coming from Bayer. Internal documents from Monsanto [R&D strategy], as illustrated by the slides drawn from its […] in Figure 322 to Figure 325, where […].

Figure 322 – [Business strategy]

[…]

Source: MI 227784.00001, ID6152-10770, slide 48 (yellow highlight added).

Figure 323 – [Business strategy]

[…]

Source: MI 227784.00001, ID6152-10770, slide 26 (yellow highlight added).

Figure 324 – [Business strategy]

[…]

Source: MI 227784.00001, ID6152-10770, slide 29 (yellow highlight added).

Figure 325 – [Business strategy]

[…]

Source: MI 227784.00001, ID6152-10770, slide 31.

(1672) The Parties contested the probative value of these excerpts, claiming in essence that the […] document "*is not a systematic and thorough assessment of competitive threats in non-selective herbicides carried out by Monsanto*".[1068] The Commission notes nevertheless that such an exercise, involving […], is in all likelihood not as trivial as the Parties claimed. Moreover, there is no indication that the conclusions reached by participants – synthesised in the cited document and to which the Commission refers – would not be accurate.

(1673) Furthermore, contrary to the Parties' claims, [NSH lines of research 1, 2 and 3]. These projects could thus be likely candidates to become the flagships of their own franchises, similarly to glyphosate or glufosinate, or to significantly strengthen Bayer's existing glufosinate franchise. [Pipeline product].[1069]

(1674) Even if Bayer's pipeline molecules would not be able to fully replicate the characteristics of glyphosate standalone,[1070] it is clear from Bayer's internal documents that, [pipeline product].

(1675) [Pipeline product] the optimisation phase where many candidate molecules are tested and refined to obtain the best possible commercial product – using formulation technologies and adjuvants to enhance them – thereby allowing for significant improvements in terms of commercial efficacy.

(1676) In addition, the growing concerns over resistance entail that, in any event, most NSH products looking forward will likely be mixtures of AIs with different MoAs rather than solo formulations, as confirmed in [internal document] in Figure 326.

Figure 326 – [Pipeline product]

[…]

Source: MI 342580 [internal document], ID9254, slide 15 (yellow highlight added).

(1677) In their response to the Statement of Objections, the Parties argued that Bayer's R&D efforts in NSH do not "target" Monsanto's glyphosate franchise in essence because: (a) the primary goal is not directly to attack Monsanto *per se* but rather to exploit general market opportunities, notably in light of growing resistance and regulatory pressure; and (b) [R&D strategy].[1071]

1068 Parties' response to the Statement of Objections, ID9941, paragraph 372; Parties' response to the first Letter of Facts, ID10661, paragraph 45.

1069 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 131 and 134.

1070 The Parties argued for instance that [NSH line of research 2]. While this may be true in broad terms, the exact characteristics of specific candidate molecules will vary, and the relevance of such general statements is therefore limited in a competitive assessment.

1071 Parties' response to the Statement of Objections, ID9941, paragraphs 367-400; Parties' response to the first Letter of Facts, ID10661, paragraphs 19-22.

(1678) On the first point, the Commission explained in the present Section that the target uses of Bayer's NSH R&D efforts (burndown, TNV and weed management systems) are the same uses where glyphosate generally and Monsanto's Roundup products in particular are the current leaders on the market. Accordingly, it is likely that Bayer's R&D projects would eventually capture significant sales and market share from Monsanto. Indeed, the growing resistance and regulatory pressure is particularly acute and relevant for glyphosate. The Commission therefore believes that what was meant by the expression "target" is clear (i.e. that Bayer's NSH lines of research notably have as targets uses where glyphosate is currently the leading AI, and the products deriving from these lines of research would therefore likely capture significant sales and market share from Monsanto) and is not how the Parties interpreted it in their response to the Statement of Objections.

(1679) On the second point, the evidence presented in the present Decision – and to a large extent already in the Statement of Objections – shows that at least part of the target uses for Bayer's NSH R&D projects are the same as the uses for which glyphosate is used and the leading AI (burndown, TNV and OTT), thus creating an overlap. The Commission never disputed that Bayer's projects also have […], for which there are likely no overlaps with Monsanto. In that regard, the Parties' claim that the glyphosate franchise is not a full substitute for any of Bayer's NSH R&D projects[1072] is immaterial to the Commission's concerns.

(1680) Indeed, the Commission shares the Parties' view that "*a chemical class is nothing like an active ingredient*".[1073] A chemical class is not just one given and old molecule or even formulated product, with only limited and clearly defined applications. It is a space in which to explore many different possibilities, with certain target applications in mind. In fact, the Commission's innovation concern is in part that the merged entity would post-Transaction likely focus its innovation efforts for these projects on applications and formulations which would limit competition with Monsanto's legacy Roundup franchise, as explained further in Section XI.1.4.5.

(1681) More specifically, Figure 327 to Figure 333 describe the fit of Bayer's pipeline with its R&D targets. Such pieces of evidence directly confirm that Bayer's NSH R&D efforts (in particular the [NSH lines of research 1, 2 and 3]) target the main NSH uses (burndown, TNV and weed management systems), where glyphosate is currently the leading AI globally. These pieces of evidence accordingly show a clear intent to focus these projects on these key uses going forward.

Figure 327 – [R&D strategy]

[…]

Source: BI 33681 [internal document], page 24.

Figure 328 – [R&D strategy]

[…]

Source: BI 33681 [internal document], page 6 (yellow highlight added).

[1072] Parties' response to the Statement of Objections, ID9941, paragraphs 373-376.

[1073] Parties' response to the Statement of Objections, ID9941, paragraph 375.

Figure 329 – [R&D strategy]

[…]

Source: BI 33681 [internal document], page 170 (yellow highlight added).

Figure 330 – [R&D strategy]

[…]

Source: BI 33681 [internal document], page 167 (yellow highlight added).

Figure 331 – [R&D strategy]

[…]

Source: BI 33681 [internal document] page 25 (yellow highlight added).

Figure 332 – [R&D strategy]

[…]

Source: BI 33681 [internal document], page 76 (yellow highlight added).

Figure 333 – [R&D strategy]

[…]

Source: BI 33676 [internal document], slide 29 (yellow highlight added).

(1682) Overall, in addition to the technical details of each R&D project provided in Section XI.1.4.2.2, the abovementioned evidence thus confirms the Commission's finding in the Statement of Objections that Bayer's R&D efforts in [NSH lines of research 1, 2 and 3] target the same NSH uses for which glyphosate is currently the leading AI, globally.

(1683) On the basis of the above, the Commission considers that Bayer's innovation efforts in NSH target Monsanto's glyphosate franchise.

1.4.5. The Transaction would likely reduce innovation competition between the Parties' close and important innovation efforts in NSH

(1684) As explained in Section V.3 according to paragraph 38 of the Horizontal Merger Guidelines "*effective competition may be significantly impeded by a merger between two important innovators, for instance between two companies with 'pipeline' products related to a specific product market*".

(1685) Moreover, in line with paragraph 28 of the Horizontal Merger Guidelines, the higher the substitutability between the Parties' products, the more likely it is that the Parties would reduce innovation post-Transaction.

(1686) This can be the case if the early pipeline product (or line of research) of one of the merging parties was likely to capture significant revenues from the actual or potential competing product of the other merging party (be it another early pipeline product – or line of research – or products currently marketed). This adverse externality is internalised post-merger – from the perspective of each innovator, the expected loss of profits on the products of the other merging firm adds to the opportunity cost of innovating – making it more likely that post-Transaction an early pipeline product (or line of research) is discontinued, deferred or redirected (particularly in the presence of significant development and commercialisation costs).

(1687) Consumers may also ultimately be harmed in this case by both the loss of product quality and variety and the reduced intensity of future product market competition in the markets where the discontinued/deferred/redirected early pipeline product would potentially have been introduced but for the Transaction. This effect applies both in the short-term, notably in relation to existing early pipeline products and current lines of research, and over time, in relation to future R&D efforts.

(1688) In the present case, the Commission assesses two possible effects on innovation competition, which both mainly result from these cannibalisation considerations.[1074]

(1689) On the one hand, the Commission should assess the effects that the Transaction would likely have on Bayer's incentives, post-Transaction, to fully pursue both lines of research where Monsanto's and Bayer's lines of research overlap, as opposed to discontinue, delay or redirect them.

(1690) On the other hand, the Commission should assess the effects that the Transaction would likely have on Bayer's incentives, post-Transaction, to fully pursue any current line of research which would overlap with Monsanto's leading existing portfolio, or to instead discontinue, delay or redirect its lines of research in order to not directly contest Monsanto's leading portfolio but to instead support it.

(1691) The Commission accordingly assesses below the two abovementioned aspects looking at both (i) the Parties' respective overall R&D efforts in NSH and (ii) the specific chemical classes where the Parties' have overlapping R&D projects.

1.4.5.1. Likely effects on overlapping R&D projects with the same MoAs

(1692) As explained in Section XI.1.4.4, both Parties each have significant R&D efforts in NSH, notably pipeline projects, where the other Party independently has R&D efforts and pipeline projects (as well as current products). The Parties' early NSH projects clearly overlap: Monsanto and Bayer have several post-emergent projects targeting in particular burndown applications and glyphosate-resistant weeds, as well as to accompany herbicide tolerance trait stacks, as confirmed in Figure 334.

Figure 334 – Competitive landscape in weed management innovation

[…]

Source: BI 06588 [internal document], ID5270, slide 28 (yellow highlight added).

(1693) Specifically, both Bayer and Monsanto each have a [pipeline products] targeting the same space of post-emergent weed control in burndown ([pipeline product]) and in combination with herbicide tolerance traits.

(1694) As the potential future products would be part of the same portfolio, the increased post-Transaction cannibalisation risk would reduce the incentives for innovation of the merged entity post-Transaction when it has to make decisions on which pipeline projects to advance from discovery to development and how to develop them.

(1695) Because of the resulting risk of significantly increased losses from cannibalisation that the Transaction would be likely to bring with the combination of these overlapping pipeline projects, the Commission considers that the Transaction would

[1074] For an overview of evidence that the Parties internalise cannibalisation as an important element of the estimated value of their pipeline projects – on the basis of which prioritisation and funding decisions are made – see Section X.1.7.2.2.

likely reduce the incentives for the merged entity to continue post-Transaction with both of the Parties' pipeline projects for each MoA with the same intensity as each of the Parties would have in the absence of the Transaction.

(1696) As a result, the Commission considers that for NSH innovation, where the Parties have overlapping pipeline projects in the same MoAs, the merged entity would post-Transaction have fewer incentives to put the same level of effort in innovation as the Parties would independently have put, but for the Transaction. This would be likely to result in several of the Parties' pipeline projects being discontinued, deferred or, most likely, simply redirected.

(1697) The Commission may not be able to identify precisely in which specific ways these pipeline projects would likely be discontinued, deferred or, most likely, redirected.

(1698) However, the Commission finds it probable that the pipeline projects described in Section XI.1.4.2 are candidates for a likely reduction of innovation efforts given the closeness of innovation competition between the Parties in NSH innovation, in particular where the Parties' projects are in the same MoA.

(1699) The Parties notably explained that they could not prevent Sumitomo from launching its [PPO] chemistry,[1075] assumedly with the consequence that this would eliminate any effect of the Transaction on continuation of the [PPO] line of research.

(1700) The Commission however emphasises that a launch by Sumitomo alone, unsupported by Monsanto's very broad access to distributors and farmers, would likely be much less successful than with such support from Monsanto. This would be the case both for […] uses, but also and in particular for […] uses, which would fully disappear since Monsanto is […]. To be able to also generate revenue from […] sales, Sumitomo would likely need to […], which is not guaranteed to be as successful[1076] and would likely delay launch by a significant amount of time.

(1701) Furthermore, […], the collaboration agreement between Monsanto and Sumitomo foresees that [R&D strategy]. These obligations would be transferred upon Bayer post-Transaction. Accordingly, Bayer would in all likelihood – under a literal reading of the clear terms of the agreement with Sumitomo, but also with only limited bearing on the Commission's broader conclusion that the Transaction would likely give rise to concerns in innovation competition for NSH in view of the overlapping efforts of the Parties – be legally bound to […],[1077] which is clear and specific evidence of which project would likely be affected by discontinuation, delay or reorientation.

(1702) The Parties disagreed that the agreement would bind the merged entity to […], and emphasised that the merged entity would have larger incentives to […].[1078] The Commission is unable to make determinations on issues of contractual law. However, the Parties' arguments have no bearing on the fact that there appears to be

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1075 Parties' response to the Statement of Objections, ID9941, paragraph 423.

1076 See the Parties' response to the Statement of Objections, ID9941, paragraphs 430-433, for the possibility that Sumitomo could prefer to sell its [PPO] chemical only under Monsanto's brand.

1077 See clauses 6.3.1, 13.1.1 and 13.2 of the agreement, MI 302719, ID6581. In explaining that […] (see the Parties' Remedies Concept Paper of 9 December 2017, paragraphs 26 and 39), the Parties indirectly confirm the Commission's conclusion that the agreement between Monsanto and Sumitomo would likely require […]. At the very least, the Parties' explanations confirm that […] by the merged entity post-Transaction would likely require […].

1078 Parties' response to the Statement of Objections, ID9941, paragraphs 429-447.

legal uncertainty and on the broader consideration that the merged entity would likely reorient its NSH R&D projects post-Transaction to support rather than challenge the Roundup franchise, and […] reorient them to avoid head-to-head competition as much as possible.

(1703) Figure 335 confirms the risks and uncertainty which the Transaction causes for the full continued development and success of Sumitomo's [PPO] chemistry in light of […]. It suggests that […], the underlying assumption being that the ability of Bayer to fully pursue both this collaboration and […] is at least uncertain.

Figure 335 – [Collaboration]

[…]

Source: Parties' response to the Statement of Objections, Annex SO.VIII.5, page 2 (yellow highlight added).

(1704) The mere fact that the Parties appear to be in some disagreement as to how these contractual provisions with Sumitomo should be interpreted is cause for legal uncertainty looking forward. This uncertainty is an additional reason to expect that the Transaction would likely lead to the discontinuation, reorientation or at least delay of the Parties' overlapping projects.

(1705) Indeed, the Parties themselves consider that "*having access to both [*[PPO] *and its own* [pipeline product] *PPO] chemistries could enable the merged entity to develop lifecycle management strategies around these herbicides*" and that "*Bayer's* [mode of action] *may help to manage the lifecycle of glyphosate*".[1079] This suggests that the merged entity would likely orient these two projects as complements rather than as substitutes as they could likely be developed in the respective hands of two independent players, which is fully in line with the Commission's concern that, post-Transaction, the [pipeline product] and [PPO] projects would no longer compete head-to-head, but be optimised as elements of the same stable.

(1706) The Commission finds that the fact that it would be for the merged entity, post-Transaction and after analysing each Party's early pipeline projects, to determine for which ones it would reduce or adapt the innovation effort does not reduce the likelihood that some highly innovative early pipeline projects would be discontinued, deferred or redirected.

(1707) In sum, it follows that it is at the very least likely that the increased cannibalisation which would result from the Transaction will decrease Bayer's future incentives to pursue overlapping pipeline projects to the same extent that the Parties have done individually pre-Transaction.

1.4.5.2. Likely effects on the continuation of current innovation efforts by two alternative NSH franchises

(1708) Bayer's pipeline projects target the same NSH spaces as Monsanto's pipeline portfolio – including new glyphosate mixtures – in particular burndown applications, where glufosinate currently appears to be of limited use in the EEA and where Bayer likely had strong incentives pre-Transaction to build a stronger portfolio.

[1079] Parties' response to the Statement of Objections, ID9941, paragraph 426.

(1709) The Commission considers in that regard that the merged entity would, post-Transaction, likely have every incentive to reorient Bayer's lines of research to avoid direct competition with Monsanto's existing portfolio.

(1710) Beyond the general assessment that the Parties have several chemical classes targeting the uses of glyphosate, the Commission may not be able to identify precisely in which specific ways these pipeline projects or lines of research would likely be discontinued, deferred or, most likely, redirected.

(1711) However, the Commission finds it probable that the pipeline projects and lines of research described in Section XI.1.4.2 are candidates for a likely reduction of innovation efforts given the closeness of innovation competition between the Parties in NSH innovation.

(1712) The fact that it would be for the merged entity, post-Transaction and after analysing each Party's pipeline projects and lines of research, to determine for which ones it would reduce the innovation effort does not reduce the likelihood that some highly innovative pipeline projects and lines of research would be discontinued, deferred or redirected.

(1713) In fact, considering the respective market positions of the Parties' portfolios – where Monsanto sells approximately EUR […] of glyphosate globally and Bayer […] of glufosinate globally – it is likely that, post-Transaction, the merged entity would support instead of contest Monsanto's legacy portfolio.

(1714) Ultimately, the Commission considers it likely that the merged entity would post-Transaction have every incentive not to pursue the development of the two independent NSH lines of research which the Parties had pre-Transaction, but would rather merge them into a single consolidated franchise supported by a single NSH innovation effort, as illustrated in Figure 336.

Figure 336 – [R&D strategy]

[…]

Source: BI-EDISC-0328945 [internal document], ID5882-1298, slide 4 (yellow highlight added).

(1715) As a result, the Commission considers that for NSH innovation, where the Parties have overlapping lines of research, the merged entity would have fewer incentives to put the same level of effort in innovation as the Parties would independently have put, but for the Transaction. This would be likely to result in lines of research being discontinued, deferred or, most likely, simply redirected.

(1716) Indeed, the Commission notes that the Parties' integration plans involve R&D synergies, with Bayer planning to in effect […], as shown in Figure 337.[1080] This is clear evidence of likely harm to innovation competition.

Figure 337 – [R&D strategy]

[…]

Source: BI-EDISC-0979026, ID6032-5408, slide 4 (yellow highlight added).

(1717) The Parties explained in essence that Figure 337 would be an early "*back-of-the-envelope*" estimate, which would not reflect any later or current plans made once

[1080] Bayer's internal document BI-EDISC-0979026, ID6032-5408, slide 4.

more "*detailed due diligence*" had been undertaken. The Commission notes that the Parties nevertheless confirm that this is an excerpt of a Bayer Board of Management presentation regarding the Transaction. Moreover, while Bayer at the time perhaps had less knowledge of Monsanto's business than it does now, Monsanto's activities in NSH, in particular its Roundup and Roundup Ready businesses and its limited […] capabilities in-house, are no secret in the industry. There are therefore no reasons to consider that these "early" plans would be wholly inaccurate.[1081]

(1718) Similarly, Figure 338 shows that Bayer already plans to review its R&D targets post-Transaction in view of its new combined portfolio.

Figure 338 – [R&D strategy]

[…]

Source: BI 33445, ID8468, [internal document].

(1719) More generally, both Bayer and Monsanto already have internal processes to prioritise their projects based on NPV analyses, which take into account any cannibalisation effect and capacity constraints. Post-Transaction, given the increase in cannibalisation associated with the overlapping lines of research as well as the foreseen cuts in the R&D organisation, the merged entity would be likely to step up the efforts to identify the lines of research and pipeline projects for which to reduce its combined innovation efforts.

(1720) The Parties explained that Bayer only establishes NPVs for molecules at least in stage 1.2 and only starts to "*[look] at cannibalisation at this stage*" (emphasis added), which is not yet the case of any of its NSH R&D projects. The Parties made a similar argument regarding Bayer's New Port database used to determine incremental sales, which would be used only from phase 2 on.[1082] The Commission notes that it is foreseen that at least some of the candidate molecules in these NSH projects […] – […] (see footnote 963) – at which point the Parties acknowledge that cannibalisation would be taken into account for Bayer's NSH R&D projects and the Transaction's likely effect on innovation competition would fully and clearly materialise. Moreover, while precise NPVs may not be already available, Bayer is aware at a general level that its NSH R&D projects would likely cannibalise sales of Monsanto's Roundup franchise to a large extent and would therefore likely adapt its research focus to limit such cannibalisation immediately post-Transaction as a part of the streamlining of its new combined portfolio (see recital (1722)).

Figure 339 – [R&D strategy]

[…]

Source: BI-EDISC-0099994 [internal document], ID5420-7994, slide 6 (yellow highlight added).

Figure 340 – [R&D strategy]

[…]

Source: BI-EDISC-0690941, ID5918-3077, slide 27 (yellow highlight added).

(1721) In fact, as shown in Figure 339 and Figure 340, Bayer appears to have specifically identified NSH R&D as an area to streamline by eliminating duplicative efforts.

1081 Parties' response to the Statement of Objections, ID9941, paragraph 454.

1082 Parties' response to the Statement of Objections, ID9941, paragraphs 460 and 463-465.

(1722) The Parties explained that "*any generation of synergies is therefore clearly subject to prior assessment and not set in stone*".[1083] The fact remains that the Parties directly confirmed that they contemplate "*synergies*" at least for LCM, which the Commission understands to mean at least some reduction of the Parties' combined LCM capabilities. Moreover, while the specific efforts to streamline would likely need to be fully assessed and decided upon only post-Transaction, the general overlap and expectation to generate synergies by streamlining duplicative efforts in NSH is already taken into account in the post-Transaction planning and the overall rationale for Bayer's purchase of Monsanto.

(1723) Moreover, internal Bayer documents show that [R&D strategy].

Figure 341 – [R&D strategy]

[…]

Source: BI 08667 [internal document], ID6632, slide 10.

(1724) In their response to the Statement of Objections, the Parties argued that (i) the Transaction would not reduce the intensity of Bayer's R&D efforts in NSH since the key driver for NSH innovation is increasing regulatory and resistance pressure, as also evidenced by the existence of these projects in spite of Bayer already owning glufosinate, and that (ii) the Commission would not have produced sufficient evidence of likely effects on innovation competition, Bayer having on the contrary recently increased its own R&D efforts in NSH.[1084]

(1725) In particular, the Parties in essence explained that the merged entity's incentives to innovate in NSH would remain post-Transaction because glyphosate is under severe regulatory and resistance pressure. There is therefore a need to innovate and strong market potential (estimated at EUR […] of sales globally per year for burndown only,[1085] far exceeding the estimated EUR […] of annual sales for Monsanto's glyphosate) for finding novel molecules to replace glyphosate, which may well no longer be a significant product once Bayer's current R&D projects reach the market. The Parties also noted that in any event novel molecules would be patent-protected and therefore earn higher margins compared with generic products such as glyphosate, thus making cannibalisation worthwhile.

(1726) The Parties also argued that the existence of Bayer's NSH R&D projects in spite of its ownership of the glufosinate NSH business would show that the merged entity's ownership of the Roundup franchise post-Transaction would not affect its incentives to fully pursue Bayer's NSH R&D projects. This would also be the case of Monsanto with [PPO] in spite of its Roundup current sales.[1086]

(1727) The Commission first notes that the Parties' appear to understand the Commission's concerns as relating to the likelihood that Bayer would reduce its overall innovation

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1083 Parties' response to the Statement of Objections, ID9941, paragraph 455.

1084 Parties' response to the Statement of Objections, ID9941, paragraphs 401-469; Parties' response to the first Letter of Facts, ID10661, paragraphs 32-40.

1085 Parties' response to the Statement of Objections, ID9941, paragraph 473; Parties' response to the first Letter of Facts, ID10661, paragraphs 23-24 and 35-36. This figure would therefore not include sales of a corresponding HT trait.

1086 Parties' response to the Statement of Objections, ID9941, paragraphs 416-417; Parties' response to the first Letter of Facts, ID10661, paragraph 39.

efforts in herbicides (including selective applications), possibly entailing that novel molecules would not be discovered.[1087]

(1728) The Parties notably appear to misunderstand the concerns of the Commission, which in their – mistaken – view would "*believe that chemistries in the same chemical class are not [sic] substitutable, and therefore only one chemical would ever be promoted from within a single class*" whereas "*Bayer has developed (in the past and more recently) several herbicides out of one mode of action or chemical class:* [pipeline products] and "*Bayer believes it to be absolute common industry practice to continue discovery in chemical classes, even if these are already marketed in the proprietary portfolio (*[pipeline products]*) because significant improvements are still possible within a class*".[1088]

(1729) The Commission never disputed that several AIs have been and will be developed by the same company in a given mode of action or even chemical class. However, it is unlikely that a company would launch two compounds from the same chemical class with the same technical profile to target the same markets at the same time. Rather, a company would either target different markets with different technical profiles or – over time – target the same markets again after several years as part of LCM. In consequence, a company presented with two similar projects on a similar timeline would likely delay, discontinue or reorient the respective projects, which is the Commission's concern in the present case.

(1730) More generally, the present Section XI.1.4.5 explains that the Commission's concern is rather that, post-Transaction, the merged entity's innovation efforts for NSH (not for selective applications) would be significantly different from those of Bayer absent the Transaction. Most notably, it is likely that the merged entity would immediately after closing orient its NSH research efforts to support the legacy Roundup franchise as much as possible instead of attempting to take as many sales as possible away from it. For instance, the merged entity could decide to only sell mixtures of glyphosate with the novel AIs currently in R&D to fight resistance and leverage its innovation into glyphosate sales, whereas Bayer could – absent the Transaction – have offered straight formulations or mixtures of the new AIs with glufosinate, in direct competition with glyphosate.

(1731) As much appears to be acknowledged by the Parties, which confirm that Bayer has an "*incentive to be the one who displaces glyphosate for burndown and Over-the-Top uses with traits*".[1089]

(1732) While this may not result in an absolute reduction of the number of new AIs eventually coming to the market, it fundamentally changes the dynamics of R&D in view of differing target uses, and – ultimately – the competitive situation once these novel products reach the market. Simply put, Bayer's R&D efforts would strengthen the leading or even dominant position of Monsanto's glyphosate franchise instead of strongly challenging it.

1087 See for instance the Parties' response to the Statement of Objections, ID9941, paragraphs 387, 404, 407, 427-428, 462, 467-469 and 582; Parties' response to the second Letter of Facts, ID10930, paragraphs 152-153.

1088 Parties' response to the Statement of Objections, ID9941, paragraphs 387, 427-428 and 582; Parties' response to the first Letter of Facts, ID10661, paragraph 39.

1089 Parties' response to the Statement of Objections, ID9941, paragraph 404.

(1733) On the Parties' argument that Bayer innovates although it today owns glufosinate, and would continue to do so post-Transaction even owning Roundup,[1090] the Commission first notes that – at a general level – there are several drivers for innovation in NSH, notably resistance, regulatory pressure and competition. In the present Section, the Commission assesses the likely impact of the Transaction on innovation competition in NSH. In that regard, the Transaction likely does not have any significant effect on the growing resistance or regulatory pressure, while the Commission considers the likely effect of the Transaction on innovation competition. For that purpose, the existence of growing regulatory and resistance pressure as one of the drivers for innovation – while duly taken into account in the present assessment as an element of the context in which the Transaction takes places – is immaterial for the Transaction-specific possible effects on innovation competition.

(1734) The Commission also notes that glufosinate is not as good a NSH as glyphosate, as evidenced notably by their very different sales globally. This is not disputed by the Parties, which have confirmed that glyphosate is considered the "perfect" NSH, used as a benchmark for all others. Accordingly, the incentives of Bayer to innovate in spite of cannibalisation of glufosinate sales are significantly higher than they would be post-Transaction with cannibalisation of the much larger Roundup sales.

(1735) Regarding the further argument that Monsanto also supports the development of new herbicides in spite of its Roundup sales,[1091] the Commission first notes that this argument is somewhat in contradiction with the Parties' claim that Monsanto is not an innovator in NSH.

(1736) Furthermore, the [PPO] collaboration shows that Monsanto does take resistance management into account and is investing and innovating to […]. While this new product could cannibalise some Roundup sales, Monsanto is likely […] to avoid such cannibalisation as much as possible. For instance, it is planning to […].

(1737) This illustration precisely embodies the Commission's concern regarding the future of Bayer's NSH R&D efforts if they were to be combined with the Roundup franchise.

(1738) In the following recitals, the Commission points out several current and future developments with which it specifically addresses the Parties' argument that the Commission would not have produced sufficient evidence of likely effects on innovation competition.

(A) Glyphosate is the current leading NSH globally and will maintain its market relevance in the relatively longer term

(1739) Figure 342, providing elements in respect of glyphosate being the "*foundation*" herbicide for burndown, confirms the undisputed fact that glyphosate is the leading NSH AI used globally today. Therefore, all NSH R&D projects – such as Bayer's

1090 Parties' response to the Statement of Objections, ID9941, paragraph 416.

1091 Parties' response to the Statement of Objections, ID9941, paragraph 417; Parties' response to the first Letter of Facts, ID10661, paragraphs 69-72. Contrary to what the Parties claimed in their response to the first Letter of Facts, the Commission does not have two contradictory theories of harm, as shown in the present Section XI.1.4.5.

[NSH lines of research 1, 2 and 3] projects – put glyphosate sales at risk, since they target the same uses.

Figure 342 – [R&D strategy]

[…]

Source: BI 33681 [internal document], page 75 (yellow highlight added).

(1740) Looking forward, Monsanto's [R&D strategy] exercise in Figure 323 above confirms the continued market relevance of glyphosate globally in the future since Monsanto plans to [R&D strategy].

(1741) Figure 406 also confirms the importance of the [R&D strategy] – for Monsanto.

(1742) In addition, Monsanto is currently working [R&D strategy], as illustrated by Figure 233 referring to [pipeline product].

(1743) Moreover, Monsanto is [R&D strategy], as illustrated in Figure 343 drawn from a November 2017 document.

Figure 343 – [R&D strategy]

[…]

Source: MI 342556 [internal document], slide 26 (yellow highlight added).

(1744) More generally, certain Monsanto internal documents confirm that [R&D strategy], as illustrated in Figure 386, Figure 387 and Figure 412, as well as in Figure 344 to Figure 352 below drawn from 2017 documents.[1092]

Figure 344 – Monsanto HT pipeline as of November 2017

[…]

Source: MI 342556 [internal document], slide 5.

Figure 345 – Monsanto corn HT pipeline (1)

[…]

Source: MI 342562 [internal document], slide 2 (yellow highlight added).

Figure 346 – Monsanto corn HT pipeline (2)

[…]

Source: MI 342561 [internal document], slide 4 (yellow highlight added).

Figure 347 – Monsanto HT pipeline

[…]

Source: MI 342561 [internal document], slide 6 (yellow highlight added).

[1092] Some of the underlying calculations used to compile these documents were provided by Monsanto in its response to RFI 116 as MI 342864 to, and in particular, MI 342868, which provide long term planned trait sales until 2057.

Figure 348 – [R&D strategy]

[…]

Source: MI 342561 [internal document], slide 23 (yellow highlight added).

Figure 349 – Monsanto corn pipeline

[…]

Source: MI 342561 [internal document], slide 26 (yellow highlight added).

Figure 350 – [R&D strategy]

[…]

Source: MI 000337552.00001 [internal document], slide 2.

Figure 351 – [R&D strategy]

[…]

Source: MI 000337552.00001 [internal document], slide 4.

Figure 352 – [R&D strategy]

[…]

Source: MI 342569 [internal document], slide 6 (yellow highlight added).

(1745) The Commission considers that the abovementioned evidence confirms the Commission's finding that Monsanto is relying on the continued market relevance of glyphosate in the longer term, globally.

(B) Direct future glyphosate sales projections

(1746) In addition to the indirect evidence already mentioned above, Figure 353 and Figure 354 – drawn from a document assessing [R&D strategy] – directly confirm Monsanto's view that [R&D strategy].[1093] Figure 353 separately confirms the importance of [pipeline products] – where both Parties are active – in approximately a decade, since the period 2027-2035 would be the [pipeline products].

Figure 353 – [R&D strategy]

[…]

Source: MI 342569 [internal document], slide 2 (yellow highlight added).

Figure 354 – [R&D strategy]

[…]

Source: MI 342569 [internal document], slide 3 (yellow highlight added).

[1093] See also Monsanto's internal document MI 000335277.00001.

(1747) Similarly, Figure 355 is drawn from […].[1094] It confirms this long term relevance of glyphosate, even indicating […].

Figure 355 – [R&D strategy]

[…]

Source: MI 342643 [internal document] tab (yellow highlight added).

(1748) Figure 356 to Figure 358 show excerpts of a […] document, likely dated from 2014, which assesses in-depth the future of glyphosate globally under different scenarios, but overall concludes […].[1095]

Figure 356 – [R&D strategy]

[…]

Source: MI 000342891.00001 [internal document], slide 21 (yellow highlight added).

Figure 357 – [R&D strategy]

[…]

Source: MI 000342891.00001 [internal document], slide 22 (yellow highlight added).

Figure 358 – [R&D strategy]

[…]

Source: MI 000342891.00001 [internal document], slide 23 (yellow highlight added).

(1749) Figure 358 appears to further confirm that "disruptive" projects such as the ones Bayer has in its pipeline have the potential to capture significant sales from Monsanto in NSH.

(1750) The long term strategic assessment illustrated in Figure 356 to Figure 358 appears to have been updated in 2017.[1096] As Figure 359 to Figure 361 show, the overall conclusions remain [R&D strategy].

Figure 359 – [R&D strategy]

[…]

Source: MI 000343161.00001 [internal document], slide 8 (yellow highlight added).

Figure 360 – [R&D strategy]

[…]

Source: MI 000343161.00001 [internal document], slide 9 (yellow highlight added).

Figure 361 – [R&D strategy]

[…]

Source: MI 000343161.00001 [internal document], slide 28 (yellow highlight added).

1094 Monsanto's response to the Commission's request for information RFI 116, ID10394, paragraph 7.

1095 See also Monsanto's internal document MI 000343115.00001.

1096 See also Monsanto's internal documents MI 000343161.00001, MI 000343162.00001, MI 000343165.00001 and MI 000343169.00001.

(1751) Finally, Figure 362 is drawn from one of [R&D strategy] (emphasis in original).[1097] It confirms this long term relevance of glyphosate, [R&D strategy].

Figure 362 – [R&D strategy]

[…]

Source: MI 342863 [internal document] tab (yellow highlight added).

(1752) The Parties argued in essence that the Commission only provides evidence of the continued relevance of glyphosate looking forward coming from Monsanto, whereas Bayer would not share Monsanto's views regarding the future of glyphosate.[1098] The Commission first notes that, in so doing, the Parties acknowledge that Monsanto's documents confirm the continued relevance of glyphosate looking forward.

(1753) Moreover, Monsanto is the company with the greatest stake in glyphosate and its future and therefore likely the one to monitor the situation most closely to take necessary action in time where needed to preserve its core business. It is also likely the company with the deepest knowledge of the AI and of developing weed resistance. The Commission therefore considers that Monsanto's views on the future of glyphosate are of particular relevance and accuracy, likely of greater relevance than Bayer's own projections made with less specific knowledge of and experience with the AI.

(1754) The Commission further considers that it is likely that, post-Transaction, Bayer would take Monsanto's expert and informed projections regarding glyphosate into account, and would not discard the competent assessments of the company it would have just bought at a high price regarding their key franchise. The Commission considers it likely for the reasons provided in the present Section that Bayer – having access to this new information after closing of the Transaction – would at least reorient its innovation efforts in NSH in light of Monsanto's glyphosate franchise.

(1755) Bayer's views and intentions are, on the one hand, particularly relevant to determine the likely future strategy and actions of the merged entity, such as whether or not it intends to research NSH. However, on the other hand, there are no reasons to believe that its internal projections of a factual situation, namely the market situation for glyphosate – which is not significantly part of its own portfolio – in twenty years, would in any way be more accurate that Monsanto's, or to think that the merged entity would not take Monsanto's expertise into account. The opposite in fact appears more likely.

(1756) This sales projection is key to determining whether Bayer's current NSH R&D efforts would target and cannibalise Monsanto's glyphosate franchise in the future, with negative consequences in terms of innovation competition on the specific research orientations to be taken immediately after closing of the Transaction, and which the evidence presented in the present Section XI.1.4.5 confirms.

1097 Monsanto's response to the Commission's request for information RFI 116, ID10394, paragraph 9.

1098 Parties' response to the first Letter of Facts, ID10661, paragraphs 44-62. The Parties also argued that Monsanto's documents would no longer be accurate and "*no longer reflect Monsanto's current thinking*" (Parties' response to the first Letter of Facts, ID10661, paragraphs 44-62). However, the Parties did not provide any specific evidence to support their argument, nor did they provide updated projections.

(1757) In the words of the Parties: "*[t]he documents […] demonstrate that* [R&D strategy]. *However, […] this is true if, and only if, Monsanto is able to successfully manage glyphosate resistance*".[1099] The Commission considers that Monsanto has likely looked into this key question in-depth before and when preparing these long term projection documents.

(1758) The above-referred to evidence confirms the Commission's finding that the Parties themselves believe in the continued market relevance of glyphosate in the longer term, or at the very least Monsanto – the owner and main stakeholder in glyphosate – does.

(C) Bayer is an active and important player in innovation for NSH

(1759) The Parties appeared to be dissatisfied with the fact that the Commission took into account their explanations that Bayer has recently significantly increased its R&D efforts in weed management.[1100] The Commission reiterates that its assessment and conclusions are based on the evidence available to it.

(1760) Figure 363 to Figure 366 describe [R&D strategy], which it views as having strong commercial potential.

Figure 363 – [R&D strategy]

[…]

Source: BI 33681 [internal document], page 9.

Figure 364 – [R&D strategy]

[…]

Source: BI 33681 [internal document], page 139 (yellow highlight added).

(1761) Figure 365, that summarises the current status of Bayer's weed control R&D allocation by R&D target (with revenue projections) and chemical class, specifically confirms Bayer's focus on the [NSH line of research 3],[1101] [NSH lines of research 1 and 2] projects to address its needs in innovation for burndown and weed management systems.

Figure 365 – [R&D strategy]

[…]

Source: BI 33681 [internal document], page 166 (yellow highlight added).

Figure 366 – Bayer prioritised R&D targets

[…]

Source: BI 33676 [internal document], slide 4 (yellow highlight added).

1099 Parties' response to the first Letter of Facts, ID10661, paragraph 51.

1100 Parties' response to the first Letter of Facts, ID10661, paragraphs 14-18.

1101 [Pipeline product].

(1762) The renewed and evidently important R&D efforts undertaken by Bayer in weed management, as resulting from the abovementioned sources, are further confirmed by the Parties: [R&D strategy].[1102]

(1763) Indeed, the Parties confirmed that [modes of action] *are the two most promising chemistries being researched for new HT systems*",[1103] thereby confirming the close and important competition between the Parties in NSH and HT System innovation since both of them are active in these MoAs (also see Figure 353, separately confirming the importance of [modes of action] – where both Parties are active – in approximately a decade).

(1764) The Parties disputed that Bayer's innovation efforts in NSH would be particularly important or "unusual".[1104] However, the evidence the Parties use to support their allegations in essence relate to innovation in herbicides generally, not NSH specifically, and therefore cannot affect the Commission's finding that Bayer is an active and important player in innovation for NSH.

(D) Bayer would likely reorient its R&D efforts in NSH post-Transaction to the detriment of innovation competition

(1765) In light of glyphosate's continued market relevance globally going forward and as explained throughout Section XI.1.4.5, Bayer would post-Transaction likely reorient, delay or possibly even discontinue certain R&D projects to support its new portfolio of products, instead of developing them to compete head-to-head with Monsanto's glyphosate franchise to capture part of its sales as it likely would have absent the Transaction.

(1766) In addition to Figure 178 and Figure 336 to Figure 340, the elements provided in Figure 367 below, summarising Bayer's key areas for attention in weed management research, further confirm the likelihood that Bayer contemplates reorienting its R&D efforts in NSH by [pipeline product]. What this […] means is not explained, but it is likely the Transaction in view of the fact that no other significant and new external factor is mentioned in the document.

Figure 367 – [R&D strategy]

[…]

Source: BI 33676 [internal document], slide 28 (yellow highlight added).

(1767) The Parties disagreed with the Commission's interpretation and claimed that the […] refers to weed resistance, which is the overall theme of the slide.[1105] The Commission however notes that – in contrast with the other comments, which all explicitly mention resistance in some way – the two comments highlighted by the Commission in Figure 367 do not refer to weed resistance. Moreover, weed resistance has been developing for years as a key concern and focus, and is a reality to which crop protection players have adapted for some time already and is not so […].

1102 Parties' response to the Statement of Objections, ID9941, paragraphs 467-468.
1103 Parties' response to the Statement of Objections, ID9941, paragraph 580.
1104 Parties' response to the first Letter of Facts, ID10661, paragraphs 14-18.
1105 Parties' response to the first Letter of Facts, ID10661, paragraph 43.

(1768) In parallel, the Parties confirmed in paragraph 404 of their response to the Statement of Objections that there is such an "*incentive to be the one who displaces glyphosate for burndown and Over-the-Top uses with traits*", which would be gone for Bayer post-Transaction.[1106]

(1769) The Transaction's likely negative effect on the level of NSH innovation would become more probable by the combination of the Parties' innovation capabilities and by the fact that this takes place in the context of already insufficient efforts in the industry, where, as shown in Figure 368, innovation in herbicides has been weak for decades.

Figure 368 – Lack of innovation in herbicides globally

[…]

Source: BI 06588 [internal document], ID5270, slide 16.

(1770) By contrast, however, it appears that Monsanto was pre-Transaction one of the most active innovators in weed management, as illustrated in Figure 369.

Figure 369 – [R&D strategy]

[…]

Source: BI 06588 [internal document], ID5270, slide 22 (yellow highlight added).

(1771) A competitor confirmed that "*Monsanto is among the leading crop protection innovators; Monsanto's crop protection pipeline has the 2nd highest investor valuation […]. Monsanto is strong in herbicides, particularly glyphosate and dicamba (with the launch of Xtend). […] Moreover, Monsanto also licenses herbicides from others, in particular in corn and soybean. It is the most innovative and risk-taking player in the industry, in-sourcing introductory technologies from third parties and developing them into new technologies and products (for example, biologicals, seed treatment, sprayable RNAi)), with a very large R&D budget. Monsanto's crop protection pipeline is also growing. Bayer is one of the big 2 players in crop protection (with Syngenta), but is overtaking Syngenta in R&D, with a lot of new technology in the pipeline or recently launched. It is particularly strong in the EU, with a remarkable pipeline. In the EU, Bayer has a strong herbicide presence and pipeline, including for specialty crops like vegetables. In Europe, glyphosate (Monsanto) and glufosinate (Bayer) are the two unescapable non-selective herbicides. They are essentially used for the same applications (i.e., when you seek to eliminate the entire weed population). Glyphosate is more widely used and cheaper (explaining Monsanto's successful business), but glufosinate ammonium is necessary when weeds develop resistance to glyphosate, and Bayer has been gradually reducing glufosinate's costs narrowing the price gap with glyphosate. After the transaction, Bayer and Monsanto would have strong combined crop protection capabilities. They would be strong on cereal herbicides, as well as corn and grapes. On mixtures, the merged entity would have the ability of hindering competitors that rely on Bayer/Monsanto's active ingredients. Bayer and Monsanto have massive R&D capabilities (particularly in seeds for Monsanto and in crop*

[1106] Parties' response to the Statement of Objections, ID9941, paragraph 404. See also the Parties' response to the Statement of Objections, ID9941, paragraph 471, where the Parties acknowledged that Monsanto is a leading herbicide player in view of its current glyphosate sales.

protection for Bayer). They are the most aggressive players in R&D and are particularly strong in both seeds and crop protection. Monsanto is considered the most innovative, creative and risk taking company in the Ag sector, while Bayer heavily invested in R&D, being able to massively launch new technologies. […] Bayer also leverages its large portfolio to create many more mixtures/segmentations than competitors, and to capture sales and market share accordingly. Monsanto tends to acquire and use other companies' crop protection discovery inventions and fully develop them, creating barriers for competitors" (emphasis added).[1107]

(1772) Overall, it appears that the merged entity would post-Transaction not have the same incentives to innovate in NSH as the Parties would have separately absent the Transaction.

(1773) This seems to be Bayer's understanding of the industry, as illustrated in Figure 370, which is an excerpt of a 2015 document assessing Bayer's possibilities to react to the contemplated purchase of Syngenta by Monsanto.

Figure 370 – [R&D strategy]

[…]

Source: BI-EDISC-119833, ID5420-27833, slide 8.

(1774) The Transaction would likely reduce Bayer's incentives to fully pursue post-Transaction NSH innovation activities to the level that the Parties separately did pre-Transaction, notably in view of the fact that it would likely reorient its efforts to support rather than contest Monsanto's existing NSH franchise.

(1775) Specifically, after the Transaction, the R&D efforts of Bayer are likely to be reoriented or at least reduced because the primary driver of its incentives to innovate in NSH (that is, the extra profits gained by Bayer in case it managed to successfully capture part of glyphosate's profits) will lead, at least partly, to the cannibalisation of the merged entity's own business. Similarly, after the Transaction, Monsanto's innovation efforts to defend its glyphosate franchise would be reduced because of the elimination of the most important innovator engaged in R&D activities to attack glyphosate.

1.4.5.3. Conclusion

(1776) In sum, because the Parties are important and close competitors in the NSH innovation space, the Transaction would likely reduce innovation competition between the Parties in view of the closeness and importance of their innovation capabilities and efforts relative to NSH.

1.4.6. A limited constraint from innovation efforts of competing players in view of high barriers to entry

(1777) In Case M.7932 – Dow/DuPont, the Commission explained the differentiated innovation capabilities by category of crop protection players. In essence, it concluded that only the global R&D-integrated crop protection players have full innovation capabilities, notably in view of the high barriers to entry in crop protection innovation. Other players have more limited capabilities, focused on

[1107] Agreed non-confidential minutes of a call with a competitor, 29 March 2017 (ID1289).

discovery, development or pure generic competition, typically with a more limited ability to register and market products.[1108]

(1778) Accordingly, the potential competitive constraint which a given player could constitute for the Parties in NSH innovation would to a large extent depend on these differentiated capabilities. In particular, strong potential competitive constraints would likely be limited to the other global R&D-integrated crop protection players (BASF, DowDuPont and ChemChina-Syngenta). Other players could only constitute a more limited competitive constraint, likely unable to compensate the reduction of competition likely to result from the Transaction, as illustrated in Figure 371.[1109]

Figure 371 – Bayer view of herbicide competitors

[…]

Source: BI-EDISC-0328945 [internal document], ID5882-1298, slide 8.

(1779) Bayer claimed during its weed management presentation of 29 September 2017 that the value of a "new glyphosate" globally creates very large incentives (USD […]) for the Parties' competitors to pursue such an R&D target, as illustrated in Figure 372.

Figure 372 – A "new glyphosate" as an attractive target for the industry

[…]

Source: Bayer's weed management presentation of 29 September 2017, ID5994, slide 17.

(1780) Nevertheless, while it is true that competitors such as FMC, Sumitomo or BASF have some incentives to invent the new glyphosate, they do not have the same incentives as Bayer or Monsanto absent the Transaction. This is because not all crop protection players would be able to monetise a new glyphosate in the same way.

(1781) In particular, the four stack developers remaining pre-Transaction – Monsanto, Bayer, DowDuPont and ChemChina-Syngenta – have much stronger incentives to come up with a new glyphosate than other players such as BASF, FMC or Sumitomo, because they are able to fully monetise that invention across all uses of NSH, including OTT uses (both with crop protection revenues and trait revenues) since they have stack development capabilities and seed businesses.

(1782) On the contrary, other players such as BASF or Sumitomo would likely only be able to recover part of the theoretical value (NPV) of a new glyphosate, with as a result some chilling effect on their incentive to develop it, since development is decided largely on the basis of NPVs.

1108 See Commission Decision in Case M.7932 – Dow/DuPont (2017), Sections V.1.5, V.8.3.3 and V.8.6.

1109 The Parties explained that "*[i]t remains a mystery to the Parties why the Commission considers Monsanto to be among these companies that are significant competitive forces in innovation competition in non-selective herbicides, given that Monsanto is not an R&D-integrated crop protection company*" (Parties' response to the Statement of Objections, ID9941, paragraph 471). The Commission notes that it identified in paragraph 1411 of the Statement of Objections the likely strongest competitive constraints to the Parties in NSH innovation. It is obvious that Monsanto is not a constraint to itself. Moreover, Monsanto is the current leading if not dominant player in NSH, which the Parties acknowledged explains its presence in Figure 371: "*Monsanto is present in the graph due to its existing glyphosate products*". As explained throughout the present Section, this leading position is a key element in the Commission's finding that the Transaction would significantly impede innovation competition for NSH.

(1783) For instance, the Monsanto internal slide in Figure 373 on Monsanto's collaboration with Sumitomo on the [PPO] shows that Monsanto [R&D strategy], confirming that rewards for innovation in NSH for other players are significantly lower than for integrated crop protection and seeds and traits players.[1110]

Figure 373 – [R&D strategy]

[…]

Source: MI 08262 [internal document], ID2330-65, slide 15.

(1784) Indeed, even if BASF or Sumitomo looked for a way to draw revenues from OTT uses in addition to burndown/TNV, they would need to find a partner to do so, and would likely have gone, pre-Transaction, to either Bayer or Monsanto, the two leaders in weed management systems.

(1785) The Parties emphasised that "*the Commission overlooks the fact that, while returns might be lower for a company who needs to collaborate with a third party (compared to the returns it would have earned otherwise), collaborations also help spreading costs as well as risks, which offsets the lower returns and incentivises greater investment*".[1111] The Commission notes that in emphasising this point, the Parties acknowledged the Commission's finding that collaborations provide smaller incentives since profits need to be shared, which they themselves made separately.[1112]

(1786) Regarding the Parties' argument that these collaborations spread costs and risk in parallel with splitting profits, the Commission notes that such collaborations would typically not significantly affect the costs and risks associated with the chemistry. Indeed, the added value of the collaboration would by definition focus on the development of corresponding HT traits and OTT formulations, not on the costs or risks associated with the chemistry as such.

(1787) This conclusion is confirmed by the example of Sumitomo, which went to Monsanto to develop an HT trait and OTT applications matching its PPO project. The […] (see recital (1560)) strengthens the conclusion that only players which are active both in crop protection and in traits and seeds would be able to fully extract the potential value of a new glyphosate.

(1788) Indeed, while Sumitomo likely hopes to generate more revenue from the [PPO] chemistry by collaborating with Monsanto notably for OTT applications, it still bears alone the risks and costs associated with […]. Accordingly, while Monsanto […] – and some collaboration between Monsanto and Sumitomo is likely to happen on these aspects to ensure that they are aligned – this does in all likelihood not significantly reduce the risks and costs associated with the chemistry for Sumitomo. In any event, Monsanto would likely have negotiated under the agreement to be compensated for any reduction of costs or risks for Sumitomo through the collaboration.

1110 The Commission responds to the Parties' argument that the Commission's conclusion would be wrong and based on an incorrect reading of the evidence (Parties' response to the Statement of Objections, ID9941, paragraph 474) in recitals (1561) to (1564).

1111 Parties' response to the Statement of Objections, ID9941, paragraph 472.

1112 See the Parties' response to the Statement of Objections, ID9941, paragraph 429.

(1789) In consequence, the Commission considers that only integrated crop protection and seeds and traits players would likely have full incentives to target a new glyphosate with their R&D efforts.

(1790) The Commission emphasises that, contrary to what the Parties implied,[1113] its conclusion is that other players would therefore not have the same full incentives and would thus constitute a more limited competitive constraint on the Parties, not that they would not be innovation competitors at all.

(1791) Moreover, the Parties closely monitor competitors' pipelines and patent activity, and test molecules patented by competitors to assess targets and efficacy. They gather this information from various sources such as investor presentations by other crop protection companies. On that basis, the Parties have a good understanding of their competitors' pipelines, which allows them to quite reliably project future sales and determine the current value of their own pipeline projects, noting that they tend to err on the side of caution.

(1792) In their white paper on non-selective herbicides, the Parties argued that several other players have NSH projects in the pipeline or, on the basis of their patent filings, are exploring the same relevant chemical classes as Bayer ([modes of action]) for NSH innovation.[1114]

(1793) However, the specific examples of other new NSH in the pipeline are limited to Dongbu FarmHannong (now LG), Dow (now DowDuPont), Belchim, AlphaBio Control and Marrone Bio Innovation.

(1794) [Collaborator].

(1795) Figure 306 to Figure 316, concerning Bayer's assessment of tiafenacil […], also confirms the limited competitive constraint constituted by other players active in NSH innovation, since Dongbu FarmHannong – one of the few competitors identified by the Parties in their submissions – […], in addition to its general limitations as an effective global competitive constraint in light of limited global development, registration and route-to-market capabilities.

(1796) Figure 316 further confirms this limited competitive constraint exercised by Dongbu FarmHannong, […], a position which would likely reduce its incentives to compete too fiercely with Monsanto currently and the merged entity post-Transaction.

(1797) The Dow product the Parties mention, halauxifen-methyl, is a selective AI. While Bayer claims that it "*can also be used in burndown applications*", it does not provide any evidence in that respect, and this potential competitive constraint seems very hypothetical.

(1798) Belchim and AlphaBio Control are mentioned as having developed new formulations of pelargonic acid, and Marrone Bio Innovations as developing a sarmentine product. These biological herbicides compete with chemical NSH. However, as biologicals, they are currently not as effective and are much more expensive than traditional chemicals. Moreover, it appears that the use of pelargonic acid in particular would be limited to only some NSH uses, not all of the uses which the Parties' current products and pipeline projects target. Finally, these companies face the same

[1113] Parties' response to the Statement of Objections, ID9941, paragraphs 475-477.

[1114] Parties' white paper on non-selective herbicides, ID5016-22, paragraphs 32-43.

limitations as Dongbu FarmHannong in constituting a full competitive constraint on companies such as Bayer.

(1799) Overall, these pipeline projects would thus constitute a limited competitive constraint likely unable to compensate the likely reduction of competition resulting from the Transaction, notably since the Parties are ultimately unable to identify a specific NSH project from strong competing players.

(1800) Similarly, the specific examples of competitors being active in the same chemical classes as Bayer are limited, for […], to BASF and Sumitomo (evidently, in addition to LG).[1115] However, no specific details are provided for BASF, and the Parties acknowledge that Sumitomo's activities are related to its collaboration with Monsanto. Sumitomo cannot therefore be considered a possible competitive constraint on the Parties.

(1801) Regarding HPPDs, the Parties mention Syngenta, BASF and DuPont (now DowDuPont), as well as several Japanese players, but do not provide more detail.

(1802) Furthermore, the Parties' own internal competitive intelligence confirms this limited competing patent activity in the chemical classes which Bayer is exploring, as illustrated in Figure 262, which is of course a positive element for these projects from Bayer's perspective.

(1803) Overall, patenting activities would thus appear to reveal a limited competitive constraint, mainly from BASF and Syngenta, likely unable to compensate the likely reduction of competition for NSH innovation resulting from the Transaction.

(1804) For instance, Figure 85 to Figure 377 summarise Bayer's view of its soy weed management pipeline and key points for attention, [R&D strategy].

Figure 374 – Bayer soy weed management pipeline

[…]

Source: BI 33676 [internal document], slide 21 (yellow highlight added).

Figure 375 – Bayer soy areas for attention

[…]

Source: BI 33676 [internal document], slide 26 (yellow highlight added).

Figure 376 – Bayer view of industry patent activity in weed control

[…]

Source: BI 33681 [internal document], page 13.

Figure 377 – Bayer view of industry weed management pipeline

[…]

Source: BI 33681 [internal document], page 14.

(1805) In particular, Figure 376 and Figure 377, describing Bayer's latest view of the industry weed management pipeline and patent activity, confirm that there are very

[1115] The Parties also mentioned FMC as having some patent activity, but did not provide any further evidence on specific projects for NSH (Parties' response to the second Letter of Facts, ID10930, paragraphs 126-127).

few, if any, NSH projects in the industry since most of the presented projects are for selective herbicides.

(1806) […].

(1807) In their response to the Statement of Objections, the Parties reiterated these examples of allegedly competing innovation efforts – without providing significant new facts. They further argued that a large number of competitors likely also innovate for NSH in view of the large revenue expectations, partly driven by growing regulatory and resistance pressure on current products, and that "*if there is a molecule that will displace glyphosate, it will be discovered whether or not the merged firm looks for it*".[1116]

(1808) First, the Commission notes that this latter statement contradicts the Parties' repeated claims that innovation "*is highly uncertain*" and that "*[i]t is notoriously difficult to develop a new active ingredient for herbicide applications. Most projects fail before they are anywhere near market launch*".[1117] Indeed, the Commission understands that research can be oriented to test and discover elements in line with specific targets, and given molecules or chemistries optimised for these targets with chemical changes or specific formulations. However, the Commission also understands that there is no certainty of success when one sets out to find a product for a given target.

(1809) Second, the Parties' argument regarding competitors' incentives is theoretical, and is no evidence that competitors are indeed pursuing such efforts.

(1810) In addition, incentives are not enough. Discovery requires large investments, and strong capabilities which cannot be created overnight. Within a business, these needs compete for funds with other departments such as sales but also other R&D projects such as LCM, and final fund allocations will vary with business models.

(1811) Indeed, relevant respondents to the Commission's investigation overall confirmed that very few, if any, players other than the Parties are active in NSH innovation.[1118]

(1812) Moreover, the Commission directly asked competitors for their R&D targets and pipeline.[1119]

1116 Parties' response to the Statement of Objections, ID9941, paragraphs 399 and 470-481. See also the Parties' response to the first Letter of Facts, ID10661, paragraphs 9-12, and the Parties' response to the second Letter of Facts, ID10930, paragraphs 126-127, where the Parties however do not raise any new arguments or evidence except for Syngenta's bicyclopyrone, which is a selective corn herbicide, not a NSH.

1117 Parties' response to the Statement of Objections, ID9941, paragraphs 404 and 415; see also paragraphs 427 and 428.

1118 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), question 5; Questionnaire to Crop Protection Competitors (Q4), question 5. The Parties argued that the non-confidential responses to these questionnaires identify eight relevant competitors of the Parties for NSH innovation (Parties' response to the Statement of Objections, ID9941, paragraph 481). The Commission however notes that the Parties' themselves – sometimes alone – were listed in spite of the clear wording of the question; that over 42% of respondents did not identify any relevant competitor; and that when competitors to the Parties were identified only three different players (Syngenta, DowDuPont and BASF) were named more than twice, Syngenta being named by respondents twice more often than DowDuPont or BASF (12 times compared with, respectively, 6 and 5 times).

1119 Commission's requests for information Q15 and Q22. This is in contrast to the information the Parties have access to (see the Parties' response to the Statement of Objections, ID9941, paragraph 480).

(1813) In sum, from all the available information, the Commission understands that very few if any other players in the industry have NSH as an R&D target or specific projects targeting NSH innovation spaces.

(1814) It follows that, in any event, no element on file would contradict the Commission's conclusion that the Transaction would likely cause a significant impediment to effective competition in relation to NSH innovation.[1120]

1.4.7. The Parties' patent analysis submitted in the response to the Statement of Objections does not undermine the Commission's analysis

(1815) In the response to the Statement of Objections, the Parties submitted a patent analysis for herbicides.

(1816) In their analysis, the Parties consider active herbicide patents published from November 2012 to November 2017. The herbicide patents cover all types of patents: active ingredients, formulations, processes, and use methods. The Commission notes that the Parties did not provide any definition of these different types of patents and did not explain which type of patents should be considered relevant for the assessment.

(1817) According to the Parties' analysis, across all types of herbicide patents, the Parties' combined share is below [20-30]% across all metrics used and the increment due to Monsanto is very small (ranging [0-5]%).[1121] The Parties also argue that DowDuPont is a particularly strong innovator in herbicides, with patent shares ranging from [10-20]% to [40-50]%. They also argue that BASF is at least as strong as Bayer pre-Transaction, with patent shares ranging [10-20]%, and that a number of important innovators, including ChemChina-Syngenta and Sumitomo, will remain after the Transaction.[1122]

(1818) The Parties also conducted an analysis for herbicide active ingredients classified by MoAs. According to the Parties' analysis:

(a) Monsanto is not active in patents for AIs in the ACCase mode of action. ChemChina-Syngenta is the leader with patent shares ranging from [30-40]% to [50-60]%, followed by Bayer, Hunan Haili Chemicals, and Sumitomo.

(b) Monsanto is not active in patents for AIs related to the HPPD mode of action. Bayer […] with patent shares in the range of [30-40]-[50-60]%, followed by ChemChina-Syngenta (with patent shares ranging from [10-20]% to [20-30]%) and BASF ([10-20]% to [20-30]%). Other innovators have patent shares [0-5]%.

(c) Monsanto is not active in patents for AIs related to the ICA mode of action.

1120 The Commission offered to the Notifying Party for its external legal advisors to have access to a data room procedure containing the confidential evidence on the basis of which the Commission's same conclusion in the Statement of Objections (paragraphs 1432-1434) was based. However, although the Notifying Party repeatedly argued that it did not have access to all the information, it ultimately decided not to avail itself of this possibility. Yet, in any event, the Commission had to make its assessment.

1121 The Parties compute patent shares based on several metrics provided by PatentSight: patent counts, total citations, total citations with a 1.1 and a 1.3 non-linear weights, external citations, technology relevance, external technology relevance, patent asset index, and external patent asset index (see Annex 1 for a description of these metrics, in particular Appendix C and Appendix D).

1122 See Annex SO.2, Section 3 on "Patent analysis in herbicides" (Table 17), dated 9 January 2018, submitted by the Parties in their response to the Statement of Objections.

(d) Neither Bayer nor Monsanto have patents for AIs related to the PPO mode of action.

(e) Neither Bayer nor Monsanto have patents for AIs related to the PSII mode of action.

(f) As regards other modes of action, Monsanto does not have any patent for AIs, while Bayer has a patent share ranging from [10-20]% to [20-30]%. ChemChina-Syngenta is also an important innovator with a patent share ranging from [20-30]% to [40-50]%, followed by DowDuPont ([5-10]% to [20-30]%), BASF ([5-10]% to [20-30]%), and a multitude of other innovators such as Japanese companies and universities for example.

(1819) Overall, the Parties argue that Monsanto cannot be seen as an innovator in herbicides due to the lack of overlaps in herbicide research. Therefore, according to the Parties, the patent analysis supports the absence of any innovation concerns in herbicides.

(1820) However, the Commission considers that the patent analysis submitted by the Parties in the response to the Statement of Objections does not undermine the Commission's innovation concerns in non-selective herbicides for the following reasons.

1.4.7.1. The Parties' patent analysis does not represent an exhaustive assessment of the innovation overlaps in non-selective herbicides between Bayer and Monsanto

(1821) First, the Commission already recognised in the Statement of Objections that Monsanto has no […] capabilities for chemistries in non-selective herbicides (see recitals (1555) and (1604)). Therefore, the Parties' patent analysis does not bring additional information, since any patent analysis for herbicides would automatically show that Monsanto does not have patents for AIs in non-selective herbicides (see recital (1818)).

(1822) Instead, the Commission's innovation concerns mainly relate to Bayer's research activities targeting Monsanto's existing glyphosate franchise (research-to-existing products overlap, see Sections XI.1.4.2.2 and XI.1.4.4.4) and Monsanto's ongoing […] activities to […] (see Sections XI.1.4.2.1 and XI.1.4.4.4). The Commission therefore considers that the Parties' analysis is not informative for the assessment of this type of innovation overlap.

(1823) Second, the Commission notes that in their own economic submission, the Parties recognised that a merger can negatively affect the level of innovation where there is an expected overlap between the merging parties' future products.[1123] This corresponds to the situation for non-selective herbicides, where Bayer's current research activities lead to expected overlaps with Monsanto's existing and future glyphosate-related herbicides. Moreover, as discussed in Sections XI.1.4.2.1 and XI.1.4.5.2, Monsanto expects in the future significant sales from its glyphosate franchise, which suggests that the expected future overlaps with Bayer would be significant. The Commission therefore considers that the Parties' argument that the alleged lack of overlaps in herbicide research between Bayer and Monsanto would fail to support any innovation concerns in the area of non-selective herbicides (see

[1123] See the Parties' submissions: "An economic framework to assess innovation concerns in mergers", dated 22 November 2017 (ID8678), "Response to the SO's framework for innovation concerns", dated 8 January 2018 (ID9955-82).

recital (1819)) is not well founded and contradicts the Parties' own economic submissions.

(1824) Third, the innovation-related concerns of the Commission in the area of non-selective herbicides also include the overlap between the PPO pipeline developed jointly by Monsanto and Sumitomo (see Sections XI.1.4.4.2 and XI.1.4.4.3) and Bayer's research activities in non-selective herbicides. The Commission considers that the fact that Monsanto does not appear in patents for the PPO MoA is not inconsistent with the Commission's innovation concerns. While the PPO-related patent(s) belong to Sumitomo (who discovered the molecule), the Commission notes that Monsanto took the […] (see for example recital (1560)). Moreover, the Commission notes that in the Parties' patent dataset Sumitomo does not even appear in the sample of patents related to the PPO mode of action.

1.4.7.2. The Parties' patent analysis suffers from important methodological issues:

(1825) First, the Parties include in their analysis patents related to both selective and non-selective herbicides. This leads to findings that are inconsistent with other available pieces of evidence. According to the Parties, DowDuPont would be the number one innovator in herbicides (see recital (1817)), and on that basis the Parties seem to suggest that DowDuPont would be a better innovator than Bayer in the discovery of non-selective herbicides. However, the Commission notes that this is in contradiction with other findings of the Parties' analysis mentioned in recital (1818), showing the absence of DowDuPont in patents related to the three MoAs which are the most likely to bring a replacement molecule for glyphosate ([modes of action]). More generally, as discussed in recital (1797), […], hence not a competitive constraint for Monsanto's glyphosate-related products.[1124]

(1826) Moreover, this approach to the patent analysis (namely, not distinguishing between patents for NSH and for selective herbicides) is less understandable when it appears that Bayer would have in principle been capable of presenting a disaggregated analysis for non-selective herbicide patents only. […]. In the response to the Commission's request for information RFI 96, Bayer mentioned that it reviews internally the patents of interest in herbicides to extract information on the target weeds and on the selectivity of the molecules patented: […].[1125] This seems also confirmed by another internal document of Bayer consisting of the minutes of the annual review meeting on competitor observation ([…]).[1126] This evidence suggests that the Parties were capable of refining their patent analysis by focusing on the relevant patents only, that is exclusively those related to non-selective herbicides.

(1827) Second, the Parties consider only patents published after November 2012. The Commission considers that this time restriction does not allow drawing robust conclusions because focussing on such a limited time span in the context of R&D cycles that are as long as 10-15 years incurs the risk of neglecting important

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1124 The Commission also notes that the patent analysis in Case M.7932 – Dow/DuPont focused essentially on patents for AIs with some selective applications (i.e. for selective herbicides). See Commission Decision in Case M.7932 – Dow/DuPont (2017). See also Sections 3.4.2.3 and 3.4.2.4 of Annex 1 to the Commission Decision in Case M.7932 – Dow/DuPont (2017).

1125 See the Parties' response to the Commission's request for information RFI 96, paragraph 10.

1126 Bayer internal document BI32603, [internal document], dated 23 June 2017. [Extract from internal document].

innovation by companies who have still research activities related to non-selective herbicides.

(a) For example, the Commission found a patent published by Monsanto in 2007, which is related to both its dicamba and glyphosate herbicides, and is therefore relevant for the assessment. The Commission notes that this patent receives 224 citations.[1127] In comparison, the best quality patent in the Parties' analysis belongs to DowDuPont and receives 39 citations. While the patent of Monsanto will have a tendency to receive more citations than the patents included in the Parties' analysis because it has been published earlier (2007), the Commission considers that this patent still provides an important illustration of the incompleteness of the Parties' patent analysis.

(b) Another example concerns Sumitomo. It is not disputed by the Parties that Sumitomo has discovered a molecule with a PPO mode of action, for which Monsanto took the lead in the development and registration of OTT formulations (see for example recital (1560)). However, in the Parties' analysis, Sumitomo does not have patents related to the PPO mode of action, which is in contradiction with the qualitative evidence.[1128] The Commission notes that this PPO molecule developed jointly by Sumitomo and Monsanto forms an integral part of the innovation concerns raised by the Commission in the area of non-selective herbicides (see Section XI.1.4.4.3).

(1828) On the basis of the above, the Commission considers that the Parties' patent analysis suffers from important methodological issues that do not allow drawing robust conclusions.

(1829) In their economic submissions, the Parties also criticise the Commission for not having conducted a patent analysis for herbicides. In the Commission's request for information RFI 96, the Commission asked Bayer to describe the patent data related to herbicides that it uses internally, the data source, the time period covered, and to provide the data related to herbicides that Bayer disposes of.[1129] In its response, Bayer provided two types of data:

(a) 492 Microsoft Word documents, containing chemistry abstracts delivered during the period between February 2008 and 3 November 2017 (enclosed as Bayer Internal Documents #32640 to 33131); and

(b) 252 Microsoft Excel workbooks, containing chemistry and biotech abstracts delivered during the period between the end of November 2012 and 3 November 2017 (enclosed as Bayer Internal Documents #33132 to 33383).

(1830) When reviewing the data submitted by Bayer, the Commission considered that extracting the data from the 492 word files submitted was difficult to perform during the time frame of the merger investigation, and that the data submitted in the 252 Excel files suffered from the methodological issues discussed in recitals (1825)-(1827) (i.e. no indication of the selective versus non-selective nature

1127 See Monsanto's patent USRE45048. The number of citations received was extracted from PatentSight on 01/02/2018. This patent was also mentioned in Annex 1 to the Statement of Objections, footnote 69.

1128 See for example paragraph 423 of the Parties response to the Statement of Objections, where the Parties mention that "*Sumitomo owns the chemistry and the relevant patents*".

1129 See the Commission's request for information RFI 96, question 1.

of the herbicide, limited time span of data available). This is why the Commission did not perform a patent analysis for herbicides in the Statement of Objections.

1.4.7.3. The Parties' patent analysis indicates that Bayer is the main competitive threat to the existing glyphosate franchise of Monsanto

(1831) The Commission notes that when considering AI patents related to the three modes of action which are the most likely to bring a replacement candidate for glyphosate […], Bayer […] with a patent share ranging from [30-40]% to [40-50]% (based on the Parties' methodology to calculate patent shares provided in the response to the Statement of Objections), followed by ChemChina-Syngenta ([10-20]% to [20-30]%), BASF ([10-20]% to [20-30]%), and Kyoyu ([0-5]% to [10-20]%).

(1832) While these patent shares need to be interpreted carefully given the methodological issues discussed in Section 1.4.7.2, the Commission notes the following:

(a) Bayer is active in research for AIs in non-selective herbicides through its [NSH line of research 2] line of research, which belongs to the […] mode of action (see for example recital (1573)). When focussing on AI patents related to the […] mode of action, […].[1130]

(b) As discussed in recitals (1794)-(1796), Kyoyu, as a Japanese company, is unlikely to represent a significant competitive constraint on global R&D integrated players such as Bayer in view of its limited development, registration and access to market capabilities globally.

(c) As regards BASF and ChemChina-Syngenta, as discussed in recitals (1803), (1812) and (1813), the Commission has already assessed their innovation targets, and the Commission concluded that there was no element on file that contradicted the Commission's conclusion that the Transaction would likely cause a significant impediment to effective competition in relation to NSH innovation.

(1833) Therefore, the Commission considers that even the Parties' analysis, while incomplete, supports (if taken at face value) innovation concerns related to the overlaps between the research activities of Bayer and Monsanto's existing glyphosate franchise. This is because it shows that: (i) Bayer has important research capabilities and activities to develop a replacement molecule to Monsanto's glyphosate (in particular due to its important research activities in the […] mode of action), and (ii) without prejudice to considerations made in recital (1832), even if one were to consider other companies active in research for the three modes of action which are the most likely to bring a replacement candidate to glyphosate, Bayer would still be the main innovator, significantly ahead of a limited number of other companies.

1.4.8. Conclusion

(1834) For the reasons set out above and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a

[1130] See Table 19 of the Parties' submission "Response to the Statement of Objections' patent analysis", dated 9 January 2018 (ID9955-83).

significant impediment to effective competition in relation to NSH innovation by eliminating an important and close competitive constraint.[1131]

1.5. Competitive assessment in actual competition and innovation for herbicide tolerance systems: non-coordinated effects on product and price competition and on innovation competition

1.5.1. Introduction

(1835) As illustrated above, weed management systems combine non-selective herbicides (typically, although not exclusively) with crops tolerant to these herbicides, either through genetic modification of such crops ("GM Systems") or, more rarely, through the use of natively tolerant, i.e. non-genetically modified, crops ("'Non-GM Systems").[1132] GM Systems and Non-GM Systems are referred together as "HT Systems". By using GM Systems, growers are able to use NSH (and also other – selective – herbicides, depending on the specific trait or stack) on crops which would normally be killed or at least severely injured by those herbicides. Weed management systems are an important tool in modern agriculture as they allow growers to use a combination of NSH, which normally are effective on a broad range of weeds, and selective herbicide products to address their weed control needs.

(1836) As explained in Section XI.1.4.6 and Section X.1.7.3, barriers to entry are high in NSH and HT traits. Barriers to entry are even higher in HT Systems because creating and selling an HT System requires one to simultaneously have in its portfolio of products or cooperations (i) HT traits, (ii) the corresponding germplasm to introgress these traits into commercially viable crop varieties, and (iii) the corresponding herbicide to sell.[1133]

(1837) As discussed in greater detail below, the Parties are the two main developers of weed management systems worldwide and, within each organisation, GM and non-GM traits, on the one hand, and herbicides suited for integration in the Parties' existing weed management systems, on the other, are generally developed in parallel taking into account their future joint use in weed management systems.

(1838) In practice, HT Systems – mainly GM Systems – have had very significant commercial success since Monsanto's launch of Roundup-Ready crops in the 1990s, with the notable exception of the EEA, where GM HT traits have been refused approval for cultivation. Non-GM Systems have also been developed – including in the EEA – but remain limited to only a few crop/weed needs, with limited overall commercial success. BASF's Clearfield tolerance to the imazamox AI is the main example of such a Non-GM System.

1131 In its comments to the Statement of Objections, ABL agreed with the Commission's conclusion, in particular in light of the importance of rivalry in innovation for crop protection products (ABL comments on the Statement of Objections, ID10094, Section 2.3).

1132 The Commission considers that, for the reasons explained in Section [X.1.3], it has jurisdiction to assess the likely effects of the Transaction on weed management systems.

1133 The explicit mention of cooperations confirms that the Parties' allegation that the Commission would have disregarded collaborations (Parties' response to the Statement of Objections, ID9941, paragraph 574) is inaccurate.

1.5.2. Product market definition

1.5.2.1. Commission precedents

(1839) There are no precedents defining a product market for HT Systems, or any combination of traits and crop protection.

1.5.2.2. Notifying Party views

(1840) Even though the activities of the Parties in that area were to a limited degree described in the Form CO,[1134] the Notifying Party did not take a position on the existence of a product market for HT Systems in the Form CO.

(1841) In their response to the Article 6(1)(c) Decision, the Parties in essence emphasised that systems can be understood either in a narrow sense as a pair of an HT trait with the respective herbicide or in a broader sense to include many other practices used in weed management (crop rotation, non-chemical weed control, etc.).[1135]

(1842) In their response to the Statement of Objections, the Parties in essence argued that the Commission disregarded the principles of product market definition and would not have sufficiently evidenced the existence of HT Systems as a relevant product market.[1136]

(1843) In particular, the Parties in essence argued that the Commission, first, would have "*depart[ed] from its established practice of including substitutable products in the same relevant market, and define instead a market on the basis of complements (i.e., herbicides and herbicide-tolerant crops, which are clearly complements rather than substitutes)*" and, second, would not have used the necessary "*small but significant (5-10%) non-transitory increase in price*" (so-called "SSNIP") test to exclude that the combination of non-GM crops with a set of herbicides could significantly constrain HT Systems.[1137]

(1844) On the first point, the Commission notes that – while herbicides and the corresponding HT crops are clearly complements, as emphasised by the Parties – competing HT Systems composed of both herbicides and the corresponding HT traits (in crops) – which is the relevant product market defined by the Commission – are clear substitutes, as illustrated by the evidence presented below.

(1845) On the second point, the Commission notes that the SSNIP test is only one possible tool to define relevant product markets, not the only or even a necessary one. Moreover, in several crops (such as soy) and markets, non-GM crops are no longer significantly available.

(1846) Regarding the existence of an innovation space for HT Systems, the Parties in essence argued that "*the development of a herbicide and of the relevant HT trait does not need to be carried out at the same company*" and "*research into herbicides and HT traits does not need to proceed as a 'system', but it can be carried out independently by different companies*".[1138]

1134 Form CO, parts 9 and 14.

1135 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 427-428.

1136 Parties' response to the Statement of Objections, ID9941, paragraphs 492-509.

1137 Parties' response to the Statement of Objections, ID9941, paragraphs 497-501.

1138 Parties' response to the Statement of Objections, ID9941, paragraphs 502-509.

(1847) The Commission notes that the fact that research into each of the two components of HT Systems – namely herbicides and HT traits – can be done by different players separately from the research on the other has no bearing on the existence of research on HT Systems combining these two elements – and the corresponding innovation spaces – within one company or via collaborations.

1.5.2.3. Commission assessment

(1848) The Parties and their main rivals compete by promoting and offering HT Systems to customers, either by using common brand names (for instance, Monsanto's declinations of Roundup-Ready seeds are promoted along Roundup branded glyphosate, as illustrated in Figure 378), or by making that link apparent via promotion (for instance, Bayer makes clear in its advertising and online description of the Liberty-Link system that it is to be used with its own brands of glufosinate, namely Liberty). The Commission considers that this would be an indication of system to system competition.

Figure 378 – Monsanto's promotion of the Roundup Ready Xtend system

[…]

Source: MI 342594 [internal document], ID9461, slide 2.

(1849) The fact that there is competition between Bayer and Monsanto in HT Systems was confirmed by a majority of respondents to the market investigation.[1139]

(1850) In addition, this appears from the Parties' own internal documents, as illustrated in Figure 380 and Figure 397.

(1851) However, HT Systems are not sold to customers in one package. Indeed, growers would normally purchase first the seeds carrying HT traits and later on in the season the corresponding herbicides as necessary. While these two purchasing decisions are somewhat separate, the purchase of the seeds (and the HT traits they carry) limits the choice of herbicides that can be applied over-the-top, meaning for instance that weed management for crops tolerant to glufosinate and not to glyphosate will require the application of glufosinate and not glyphosate, and *vice versa*.

(1852) Taking into account the fact that the individual components of an HT System are sold separately to growers, the product market definition of each such component also informs the market definition for HT Systems. Therefore, the above conclusions as to the product market definition regarding NSH on the one hand (see Section XI.1.2.1.4) and those regarding HT traits on the other hand (see Section X.1.4.9) are relevant for HT Systems.

(1853) It follows for the Commission that, first, much like traits and to some extent herbicides, HT Systems are crop specific. Second, it could be envisaged that HT Systems may be further segmented based on the AI to which they make a crop tolerant, or more broadly on the basis of the spectrum of weeds controlled by that AI. However, HT Systems generally rely on the use of stacked HT traits and on multiple

[1139] Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), question 111, Questionnaire to Crop Protection competitors (Q4), question 54.1, and Questionnaire to Row crop Competitors (Q5), question 125: "*The Commission understands that both Bayer (LL HT and Liberty/ Basta herbicide) and Monsanto (RR traits and RoundUp herbicides) offer 'systems', combining HT traits and corresponding herbicides for weed management in various crops (e.g. corn, soybean, cotton, … canola etc.) Do Bayer's and Monsanto's systems compete?*" A majority of respondents confirmed.

herbicides offered in straight formulations or mixtures to control weeds and fight growing resistance in weeds. Moreover, competition among HT Systems takes place not only with reference to the spectrum of weeds targeted, but also to their effectiveness and their cost more than the identity of their individual components. Therefore, a distinction among HT Systems solely based on the respective AIs and corresponding traits would not be appropriate.

(1854) As regards innovation for HT Systems, the Parties' internal documents indicate that they aim to develop HT traits and the corresponding herbicides across as many crops as possible to fully leverage their R&D investment considering that innovation investments and efforts are relatively limited and time consuming.

1.5.2.4. Conclusion

(1855) On the basis of the Parties' views and the investigation's results, the Commission considers that all HT Systems for a given crop compete in a differentiated relevant product market and that the corresponding innovation spaces includes innovation in HT Systems both across crops (especially at early research stages) as well as for each relevant crop (such as soy, cotton, corn, OSR/canola, rice, wheat).

1.5.3. Geographic market definition

1.5.3.1. Commission precedents

(1856) There are no precedents defining a geographic market for HT Systems, or any combination of traits and crop protection.

1.5.3.2. Notifying Party views

(1857) In their response to the Article 6(1)(c) Decision, the Parties in essence argued that the Commission is inconsistent in its approach to the geographic market for systems and, most importantly, that HT Systems would not be relevant for the EEA because transgenic crops have not gained public acceptance and commercial success there.[1140]

(1858) In their response to the Statement of Objections, the Parties in essence argued that the Commission disregarded the principles of geographic market definition and did not adduce sufficient evidence to establish that HT System markets are global, in particular because HT Systems would not be relevant for the EEA, as the Commission would have confirmed in its Dow/DuPont Decision.[1141] The Commission would allegedly not have established that conditions of competition in HT Systems are sufficiently homogeneous across the globe, notably in terms of regulatory constraints.[1142] The Parties concluded that "*[i]t is inconceivable that the geographic market for a product could include a significant territory in which use for cultivation of the product is largely prohibited*".[1143]

(1859) The Commission notes that these arguments largely relate to traits and mirror those put forward by the Parties to question the Commission's jurisdiction to assess the markets for traits. The Commission therefore refers to its explanations thereon (see

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1140 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 429-431.

1141 Parties' response to the Statement of Objections, ID9941, paragraphs 510-541. The Commission notes that, although GM crops are authorised for cultivation only in a few EEA countries, they are accordingly not "*prohibited from sale in the EEA*", contrary to what the Parties claim (Parties' response to the Statement of Objections, ID9941, paragraphs 512 and 524, and footnote 306).

1142 Parties' response to the Statement of Objections, ID9941, paragraphs 514-521.

1143 Parties' response to the Statement of Objections, ID9941, paragraph 528.

Section X.1.3), where the Commission provides further explanations. Moreover, the Commission notes that several HT traits are under approval in the EEA, and it is possible that public acceptance would be stronger and regulatory burdens lighter looking forward with regard to Non-GM Systems.[1144]

(1860) On the Parties' argument that the Commission would have discounted or ignored evidence not supporting its predetermined conclusion, the Commission confirms that, overall, its conclusion is supported by the evidence on its file.

1.5.3.3. Commission assessment

(1861) Similarly to what is explained in Section XI.1.5.2 for the product market definition, the conclusions reached regarding NSH on the one hand (see Section XI.1.2.2) and HT traits or trait stacks on the other hand (see Section X.1.5.4) are relevant for HT Systems.

(1862) In HT Systems, the key commercial driver and first commercial sale is trait stacks, which are sold upstream to seed players on the basis of a global value assessment which takes into account not only the sales of HT crops but also the possibilities for downstream OTT uses of herbicides globally (where specific herbicide registrations may vary in different countries).

(1863) It follows that the geographic market definition for HT Systems is determined by the geographic market definition for trait stacks and is therefore global. Specific national registrations for herbicides used OTT will – as a second step, itself already valued in the negotiations regarding single trait or trait stack sales – only affect monetisation possibilities using OTT herbicides, on a country-by-country basis.

(1864) As an illustration, Figure 379 shows that the key driver of downstream consumption of the corresponding herbicide is penetration of the trait, which largely depends on the extent of its licensing to third party breeders. Interestingly, Monsanto […]. The slide is part of […].

Figure 379 – […]

[…]

Source: MI 342583 [internal document], ID9470, slide 5.

(1865) Moreover, as explained in Section XI.1.2.2.3, some elements of NSH competition are determined at a global level.

(1866) In a similar way, innovation is typically done with a global focus in mind, both for NSH and for HT traits, and innovation spaces for HT Systems would therefore likely be worldwide.[1145]

1.5.3.4. Conclusion

(1867) The Commission considers that, since the key determinative and initial commercial event for HT Systems is the sale of HT single traits or trait stacks – which occurs globally – the relevant geographic market for HT Systems is accordingly worldwide.

1144 See Sections X.1.7.5.7.

1145 The Parties argued that "*without any evidence supporting the assertion that innovation is, in fact, also* "done with a global focus in mind,*" it cannot be concluded that the relevant geographic market is global in scope*" (Parties' response to the Statement of Objections, ID9941, paragraph 541). The Commission has provided ample evidence to support its conclusion (see Sections X.1.7 and XI.1.4.1).

The Commission similarly considers that the relevant geographic scope of the innovation spaces for HT Systems is worldwide.

1.5.4. Actual competition

1.5.4.1. The Transaction brings together the two leading HT Systems

(1868) As explained in Sections X.1.6 and X.1.7 regarding HT traits and in Section XI.1.2 regarding NSH, the Parties have the leading HT traits and NSH portfolios.[1146]

(1869) Indeed, in 2016 the Parties' combined shares at the worldwide level for HT traits amounted to [90-100]% in soy, [90-100]% in OSR, and [80-90]% in cotton (see Table 154). The Parties faced no to limited competition from the other players active in HT traits.

Table 154 – Shares in HT trait value to originators (2016)

Crop	Originator	Trait value (kEUR)	Share
Soy	Monsanto	[…]	[90-100]%
	Bayer	[…]	[5-10]%
Cotton	Monsanto	[…]	[60-70]%
	Bayer	[…]	[20-30]%
	Dow/DuPont	[…]	[10-20]%
OSR	Bayer	[…]	[50-60]%
	Monsanto	[…]	[40-60]%

Source: Parties' response to the Commission's request for information RFI 31, Annex 31.6 [MAST database].

[1146] Monsanto's internal document MI 000228115.00001 [internal document], ID6152-12025.

(1870) Moreover, when looking at the use of NSH over-the-top in Table 155, the Parties estimate that they hold a combined share at the worldwide level in excess of [50-60]% for all major broad acre crops, with the sole exception of OSR where they hold a combined share of at least [40-50]% for each of glyphosate and glufosinate, thereby confirming their leading if not dominant positions in NSH used OTT.[1147]

Table 155 – Shares in NSH used over-the-top (2016)

Crop	AI	Company	Sales (kEUR)	Share
Maize	Glufosinate	Bayer	[…]	[80-90]%
	Glyphosate	Bayer	[…]	[0-5]%
	Glyphosate	Monsanto	[…]	[50-60]%
Cotton	Glufosinate	Bayer	[…]	[90-100]%
	Glyphosate	Monsanto	[…]	[70-80]%
OSR	Glufosinate	Bayer	[…]	[90-100]%
	Glyphosate	Bayer	[…]	[0-5]%
	Glyphosate	Monsanto	[…]	[40-50]%
Soy	Glufosinate	Bayer	[…]	[90-100]%
	Glyphosate	Bayer	[…]	[0-5]%
	Glyphosate	Monsanto	[…]	[50-60]%

Source: Parties' response to the Commission's request for information RFI 106, Annex 106.2.

(1871) It follows that the Parties have the two most successful HT Systems currently available in the market. Moreover, as is illustrated in Figure 380, the Parties currently have the two HT Systems that cover the broadest spectrum of weeds and that are best placed to treat resistant weeds.

Figure 380 – Bayer and Monsanto's HT Systems cover the broadest spectrum

[…]

Source: MI 228115, ID6152-012025, slide 15.

[1147] Parties' response to the Commission's request for information RFI 106, Annex 106.2.

(1872) From Figure 381, it is apparent that HT System competitors of the Parties are largely limited to ChemChina-Syngenta and DowDuPont, with the possible addition of BASF in light of its herbicide and trait capabilities, although it does not have its own seed business. This is confirmed by other internal documents, which largely assess competition from DowDuPont and ChemChina-Syngenta only. In particular, BASF's more limited capabilities compared to Monsanto, Bayer, ChemChina-Syngenta and DowDuPont are apparent from Figure 381 and Figure 382.

Figure 381 – […]

[…]

Source: MI 08242 [internal document], ID2330-45, slide 19.

Figure 382 – BASF's own assessment of its more limited capabilities in HT Systems

[…]

Source: BASF presentation to the Commission on 2 October 2017, ID8268, slide 12.

(1873) Moreover, the Parties have confirmed that until 2017 their HT Systems were essentially the only two on the market since only tolerance to glyphosate and to glufosinate was available, with only significantly weaker competitors.[1148] This is confirmed by the share data presented above.

(1874) The likely impact on competition for HT Systems in the main broad acre crops is discussed below.

(A) Soy

(1875) In soy, as explained in Sections X.1.6.3.1 and X.1.6.4.1, the Parties are the two leading HT trait players, and the Transaction would likely give rise to non-coordinated effects.

(1876) Moreover, the Parties are the leading NSH players globally, with strong positions in the two foundational AIs used globally in HT Systems: glyphosate and glufosinate.

(1877) Furthermore, competitors appear to constitute only a limited and emerging competitive constraint on the Parties.

(B) Cotton

(1878) In cotton, as explained in Sections X.1.6.3.2 and X.1.6.4.2, the Parties are the two leading HT trait players, and the Transaction would likely give rise to non-coordinated effects.

(1879) Moreover, the Parties are the leading NSH players globally, with leading positions in the two foundational AIs used globally in HT Systems: glyphosate and glufosinate.

(1880) Furthermore, competitors appear to constitute only a limited and emerging competitive constraint on the Parties.

[1148] Parties' response to the Commission's request for information RFI 106, paragraph 11. The Parties erroneously claimed that the Commission would have overlooked in the Statement of Objections that the Parties also explained that "*there are currently several other HT technologies such as Xtend (dicamba), Enlist (2,4-D) and Balance GT (isoxaflutole)*" (Parties' response to the Statement of Objections, ID9941, paragraph 573). Indeed, the Commission notes that its conclusions in Section X of the Statement of Objections fully take these technologies into account. The Commission also notes that the Parties' statement confirms that DowDuPont (with the Enlist technology) would currently be the only challenger to Monsanto's Xtend and Bayer's/MS Technology's Balance GT stacks.

(C) OSR

(1881) In OSR, as explained in Sections X.1.6.3.3 and X.1.6.4.3, the Parties are the two leading HT trait players, and the Transaction would likely give rise to non-coordinated effects.

(1882) Moreover, the Parties are the leading NSH players globally, with strong positions in the two foundational AIs used globally in HT Systems: glyphosate and glufosinate.

(1883) Furthermore, competitors appear to constitute only a limited and emerging competitive constraint on the Parties.

1.5.4.2. Notifying Party views

(1884) The Notifying Party did not make any specific arguments on existing competition in HT Systems.

1.5.4.3. Conclusion

(1885) For the reasons set out above and on the basis of the data made available during the investigation, the Commission considers that it is not appropriate to reach a separate conclusion on the impact of the Transaction on actual competition in the relevant markets for HT Systems because this impact mirrors the one already assessed in Section X.1.6 on traits. In particular, there are a number of overlaps of close competing products in soybean, cotton, and OSR, with often limited alternatives from competitors.

1.5.5. Innovation competition: the Transaction brings together the two leading innovators in HT Systems

1.5.5.1. Innovation in HT pairs combining an HT trait with the corresponding herbicide

(1886) Herbicide research is even more difficult and time consuming than HT research. Figure 383 illustrates the total estimated costs for the development of a new chemical product (USD […]), amounting to almost double the total estimated development cost of a new trait (USD […]). Consequently, many of the new HT pairs are based on older chemistry in spite of the fact that pairs based on new chemistry are more valuable in light of broader patent protection and lower likelihood of weed resistance.

(1887) Moreover, herbicide research appears to be the first step in the development of HT Systems, which explains that some HT trait projects may be placed on-hold until a suitable herbicide is identified. Integrated players combining crop protection and seeds and traits capabilities in-house are thus able to better synchronise the development of HT Systems by aligning R&D efforts on both traits and herbicides.

(1888) In their response to the Statement of Objections, the Parties argued that "*HT traits projects typically start only after a herbicide has been identified, be it an existing AI or a new project (usually at least at the stage of a development candidate for the chemistry ([…])). The suggestion that a party would start an HT trait project, and then put it on hold until a suitable herbicide is identified, beggars belief in the context of a real-world R&D organisation, even if it makes intuitive sense to a neophyte. Finally, the Parties would again observe that the development of HT traits always follows the confirmation of a viable chemistry. It makes no sense to develop mutants in a particular gene and then start wondering to which herbicides these could give resistance to, let alone develop such traits without there being a*

corresponding herbicide to which a particular trait could give resistance to" (emphasis added).[1149]

(1889) In contrast with these statements, Figure 394 evidences that work on […], thereby confirming the Commission's conclusion that integrated players combining crop protection and seeds and traits capabilities in-house are able to better synchronise research.

Figure 383 – Comparison of development costs for chemistry and traits by Phillips McDougall

[…]

Source: BI-EDISC-0578735, ID005609-74451, slide 8.

Figure 384 – Factors affecting agrochemical R&D expenditure

[…]

Source: BI-EDISC-0578735, ID005609-74451, slide 8.

1.5.5.2. Innovation in HT Systems combining trait stacks and the corresponding herbicides

(1890) Innovation in HT Systems is cumulative and path-dependent.

(1891) First, innovators work on HT pairs, which ideally complement the other existing HT trait layers (namely mainly glyphosate) or fill the resistance gaps of current layers of the stack and help to prevent the emergence of further resistance by using several MoAs.

(1892) Second, since the need is to complement existing HT Systems, a given player's innovation trajectory is also path dependent, in the sense that there are typically only a limited number of possible avenues to explore for this complement. This explains why both Monsanto and Bayer work on the same chemistries ([…]) for the new complementary emerging levels of their respective HT Systems.

(1893) Third, innovation in stacks becomes increasingly complex and challenging the deeper stacks become because innovators need to either create the more technically sophisticated vector stacks or introgress into crops various events successfully and in a stable way. It follows that the barriers to entry for new HT System innovators become ever higher the deeper the stacks of the market leaders become.

1.5.5.3. Reminder of the definition of innovation spaces for HT Systems

(1894) As explained in Section XI.1.4.1 for NSH innovation, *mutatis mutandis*, in order to assess innovation competition in HT Systems, the Commission looks at the corresponding innovation spaces for HT Systems, which are typically broader than the actual downstream markets. As illustrated by Figure 385, the Parties appear to consider innovation in HT Systems across crops initially, with efforts being gradually tailored to specific crops.

Figure 385 – HT Systems key imperatives

[…]

Source: MI 000228115.00001, ID6152-12025, slide 39.

[1149] Parties' response to the Statement of Objections, ID9941, paragraphs 490-491.

(1895) Similarly, innovation spaces typically have a wide geographic scope. Indeed, HT System innovation projects – much like AI R&D projects – typically do not have a narrow geographic scope, but rather focus on global development for all potentially addressable markets.

(1896) In light of precedents and the views of the Notifying Party, and taking into account the results of the investigation, the Commission considers that the relevant spaces to assess HT System innovation are R&D targeting the development of HT Systems, either across crops or by crop, worldwide.

1.5.5.4. Activities of the Parties and their competitors

(1897) As described in Sections X.1.6.3, X.1.6.4 and XI.1.4.4, both Bayer and Monsanto are leading innovators in developing novel traits and trait stacks, as well as the corresponding herbicidal formulations (including mixtures).

(1898) The Parties have innovation for HT pairs to be integrated in their HT Systems as a clear R&D priority, and several specific projects running, as shown for instance in Figure 386.

(A) Monsanto

(1899) Monsanto is currently developing […]. Monsanto's […] efforts appeared to focus pre-Transaction on […].

Figure 386 – […]

[…]

Source: MI 08242 [internal document], ID2330-45, slide 17.

Figure 387 – Monsanto [R&D planning]

[…]

Source: MI 000038684.00001 [internal document], ID5441-23702, slide 23.

(1900) As illustrated in Figure 385 and Figure 388, when assessing […], Monsanto considered […] AIs and HT projects for inclusion in its HT […] and Sumitomo's PPOs. Monsanto's choice then fell on Sumitomo's PPO, […].

Figure 388 – Monsanto [R&D planning]

[…]

Source: MI 000228115.00001, ID6152-12025, slide 20.

(1901) This is an indication that […] and Sumitomo's and BASF's PPO R&D projects are to some extent comparable and likely alternatives, […]. This choice between projects with different MoAs is generally confirmed by Bayer's internal document in Figure 389, […]

Figure 389 – [R&D planning]

[…]

Source: BI 08521 [internal document], ID5734, pages 23-24 (yellow highlight added).

(1902) Finally, as explained in Section X.1.7.5.7, Monsanto is already working on […], having secured the requisite IP.

(1903) In their response to the Statement of Objections, the Parties disagreed that Monsanto would be developing a […] Non-GM System for wheat and therefore that there would be any overlap in that innovation space.[1150] The Commission notes that Monsanto appears to be considering an […] Non-GM System for wheat […], which would even more directly overlap with Bayer's […] efforts […].

(B) Bayer

(1904) Bayer is currently developing more complete next generation HT Systems by creating new HT […], as illustrated in Figure 390 to Figure 393.

Figure 390 – [R&D planning]

[…]

Source: BI 08521 [internal document], ID5734, page 22 (yellow highlight added).

Figure 391 – [R&D planning]

[…]

Source: BI 08521 [internal document], ID5734, page 36 (yellow highlight added).

Figure 392 – [R&D planning]

[…]

Source: BI 08521 [internal document], ID5734, page 51 (yellow highlight added).

Figure 393 – [R&D planning]

[…]

Source: BI 08521 [internal document], ID5734, page 56 (yellow highlight added).

(1905) Finally, Bayer is […].

(1906) Figure 394 confirms […]. This contradicts the Parties' statements that "*HT traits projects typically start only after a herbicide has been identified, be it an existing AI or a new project (usually at least at the stage of a development candidate for the chemistry ([…])). The suggestion that a party would start an HT trait project, and then put it on hold until a suitable herbicide is identified, beggars belief in the context of a real-world R&D organisation, even if it makes intuitive sense to a neophyte*" (emphasis added) and that […].[1151]

Figure 394 – [R&D planning]

[…]

Source: BI 33681 [internal document], page 42 (yellow highlight added).

(C) The Parties' collaborations with competitors

(1907) In addition to their in-house capabilities, both Bayer and Monsanto have entered into collaborations with competitors to complete their leading HT Systems with additional chemistries and corresponding HT traits.

[1150] Parties' response to the Statement of Objections, ID9941, paragraph 390.

[1151] Parties' response to the Statement of Objections, ID9941, paragraphs 490 and 595-596.

(1908) Monsanto, on the one hand, collaborated with BASF to develop a dicamba tolerance trait, which it recently launched in soy. It is currently collaborating with Sumitomo to develop a PPO tolerance trait […].

Figure 395 – Monsanto's collaboration with Sumitomo [R&D planning]

[…]

Source: MI 08262 [internal document], ID2330-65, slide 16.

Figure 396 – [R&D planning]

[…]

Source: MI 02374 [internal document], ID5536-4, slide 2.

(1909) However, as shown in Figure 396, Monsanto notes that the [extract from internal document; R&D planning] is a [extract from internal document; R&D planning]. Therefore it appears that, while Monsanto has so far collaborated with competitors to bring upgraded HT Systems to market, it considers that […].[1152]

(1910) Bayer, on the other hand, […].[1153] […] (see Section X.1.6.4).

(D) Competitors

(1911) Regarding competitors, as detailed in Section X.1.7, a number of players are active in trait research, where barriers to entry are already high. However, the number of competitors in HT System innovation is in fact more limited in view of the even higher barriers to entry. Indeed, creating and selling an HT System requires one to have, in addition to HT traits, (i) the corresponding germplasm to introgress these traits into commercially viable crop varieties, and (ii) the corresponding herbicide to sell. In fact, having access to germplasm/stacks provides an increased incentive to develop HT pairs of herbicides with the corresponding trait, since they enable better monetisation.

(1912) Accordingly, it seems that only a small number of competitors have innovation capabilities to develop competing HT Systems, as illustrated in Figure 381 and Figure 382. Such players appear to be limited to ChemChina-Syngenta, DowDuPont, and possibly – although to a more limited extent due to its lack of germplasm – BASF.

(1913) In particular, as highlighted in footnote 924, trait developers are usually in a better position than pure crop protection players to commercialise chemistry associated with traited seeds because many jurisdictions have specific regulatory requirements for registering chemistries to be used over HT crops, whereby access to the

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1152 The Parties claimed that the Commission erred in concluding that this risk is a disincentive to innovation in HT Systems (Parties' response to the Statement of Objections, ID9941, paragraph 578). The Commission disagrees and refers to its assessment of the more limited competitive constraint constituted by collaborations – notably in view of lower incentives due to a more limited ability to fully appropriate profits – compared with integrated efforts in Section XI.1.4.6, which applies *mutatis mutandis*.

1153 The Parties explained that Bayer is not […] but only […] (Parties' response to the Statement of Objections, ID9941, paragraph 590). The Commission clarifies the extent of Bayer's innovation efforts in […] for HT Systems – as well as the relation with […] – in recital (1962) and Figure 414.

corresponding traits is typically needed to generate the necessary field testing data.[1154]

1.5.5.5. Notifying Party views[1155]

(1914) In their response to the Article 6(1)(c) Decision, the Parties in essence argued that, contrary to the Commission's claims, HT traits and herbicides – although interdependent by effect of the technical link – are in fact not developed in parallel. Rather, HT development would begin only once an herbicide reaches a certain level of progress, and "*all current HT traits in the market were developed* after *the introduction of the respective herbicides*"[1156] (emphasis in original).

(1915) Accordingly, there would be no grounds for the Commission's conclusion that the Transaction would reduce the Parties' incentives to collaborate. In particular, regarding PPOs, the Parties claim that […][1157] and that […] such that […].

(1916) In their white paper on non-selective herbicides, the Parties further developed – in addition to the arguments relating to NSH innovation,[1158] which are relevant for HT Systems – the arguments that (i) the Parties' R&D efforts in HT Systems in wheat do not overlap because […]; (ii) any possible market launch for either Party is hypothetical notably in view of the low likelihood of public acceptance of GM Systems; (iii) several other players are (capable of) developing Non-GM Systems for wheat.[1159]

(1917) Accordingly, the Parties concluded that the Transaction would not have any effects on innovation competition in HT Systems for wheat in the EU.

(1918) In their response to the Statement of Objections, the Parties in essence further argued that: (i) Monsanto is not an innovator in HT Systems because it is an innovator in traits but not in NSH;[1160] (ii) the Transaction would not have any effect because the Transaction would not raise concerns in either HT traits or NSH, especially in the EEA where HT Systems would not be relevant; and (iii) the offered Commitments would solve any concerns.[1161]

(1919) Regarding the specific argument that Monsanto is not active in the […] of new AIs, it must be emphasised that, when looking at innovation for HT Systems, this alleged shortcoming is even more inaccurate than for NSH innovation.

(1920) Innovation in HT Systems is not merely innovation in herbicides. Rather, it entails specific capabilities to create a system enabling the use of given herbicides over given crops, typically by developing particular (mainly GM) traits. In those capabilities, Monsanto is a clearly leading player as the creator of GM Systems, the

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1154 Parties' response to the Commission's request for information RFI 86, question 13.

1155 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 432-437; Parties' white paper on non-selective herbicides, ID5016-22, paragraphs 6-10 and 52-66.

1156 The Commission notes that this is typically due to the fact that the technology used to develop these GM Systems was historically only perfected (long) after the chemistries used in HT Systems were themselves developed and launched.

1157 Bayer's internal documents however show that it […] (see Section XI.1.4.2.2).

1158 See Section XI.1.4.3.

1159 Contrary to these claims, it appears that both Parties have or are considering Non-GM projects for wheat, in which few other players are active (see Section X.1.7.5.7).

1160 On the Parties' allegation that Monsanto would not be an innovator in NSH, the Commission refers to its assessment in Section XI.1.4.4.2(A).

1161 Parties' response to the Statement of Objections, ID9941, paragraphs 487-611.

holder of a very large germplasm pool in which to introgress traits and the original developer of the leading NSH used OTT. In fact, this leading position is illustrated by the fact that companies such as Sumitomo go to Monsanto when they want to collaborate to develop HT Systems and maximise revenue.

1.5.5.6. The Parties are important and close competitors in innovation for HT Systems with overlapping lines of research and early pipeline products and existing products

(A) The Parties' past innovation in HT Systems has led to close product competition today

(A.i) Monsanto's innovation in HT Systems

(1921) The Commission understands that Monsanto was the first company to launch a GM System in the 1990s, based on glyphosate (Roundup). This enabled Monsanto to build a dominant position in the seeds and traits business, as explained in Section X.1.8.

(1922) Over the years, Monsanto developed and brought to market improved systems, adding additional AIs to help fight growing resistance to glyphosate, for instance with Roundup-Ready 2 Xtend (adding dicamba). As discussed above, Monsanto is currently planning to further develop its HT System […]. Moreover, Monsanto is in the process of developing […].

(A.ii) Bayer's innovation in HT Systems

(1923) The Commission understands that Bayer launched its first GM System based on its glufosinate NSH, LibertyLink, in 2009. With it, Bayer has secured the position of leading challenger to Monsanto's dominance, as explained in Section XI.1.5.4.1.

(1924) […].

(A.iii) Competitors

(1925) As detailed in Section XI.1.5.4.1, the Commission understands that competition in existing HT Systems has only emerged in the last year and is still limited.

(1926) In the absence of a comprehensive presentation of the Parties' competitive landscape in HT Systems in the Form CO, the Commission has mapped competition in Table 156 based on third party reports and the Parties' internal documents. It shows the presence of the Parties and their competitors in HT Systems.

Table 156 – HT System competitors by crop

	Companies							
Crop	Bayer	Monsanto	DowDuPont Pioneer	ChemChina-Syngenta	BASF	Others	Change in the number of competitors as a result of the Transaction	Parties' combined value market share of HT traits at WW level in 2016
Soybean	X	X	Negligible				2 to 1	[90-100]%
Maize	X	X	X	X	X		5 to 4	[60-70]%
Cotton	X	X	X	-			3 to 2	[80-90]%
Canola/OSR	X	X			X		3 to 2	[90-100]%

Source: Commission analysis of the Parties' internal documents and the Parties' response to the Commission's request for information RFI 31, Annex 31.6 (Bayer MAST database excerpt).

(1927) Based on Table 156, it appears that only a limited number of competitors exist and are able to compete with HT Systems outside the Parties: DowDuPont, ChemChina-Syngenta and, to a more limited extent, BASF. In some crops (soybean), after the Transaction, the relevant market would become a monopoly or almost a monopoly (canola/OSR). In others, a duopoly or an oligopolistic structure with a maximum of four players would be established at the global level.

(1928) The competitive landscape is even more concentrated when looking at the Parties' combined shares in one of the two components of HT Systems: HT traits at the crop level worldwide, as reported in the right hand column of Table 156.

(1929) In addition, as shown in Table 144 and Table 145, the Parties' combined shares for agricultural NSH are high in a number of geographies and in the EEA overall.

(A.iv) The Parties' existing HT Systems are close competitors

(1930) The Commission notes that, before the Transaction, rivalry between the Parties has been an important source of competition on the relevant markets for HT Systems.

Figure 397 – [R&D planning]

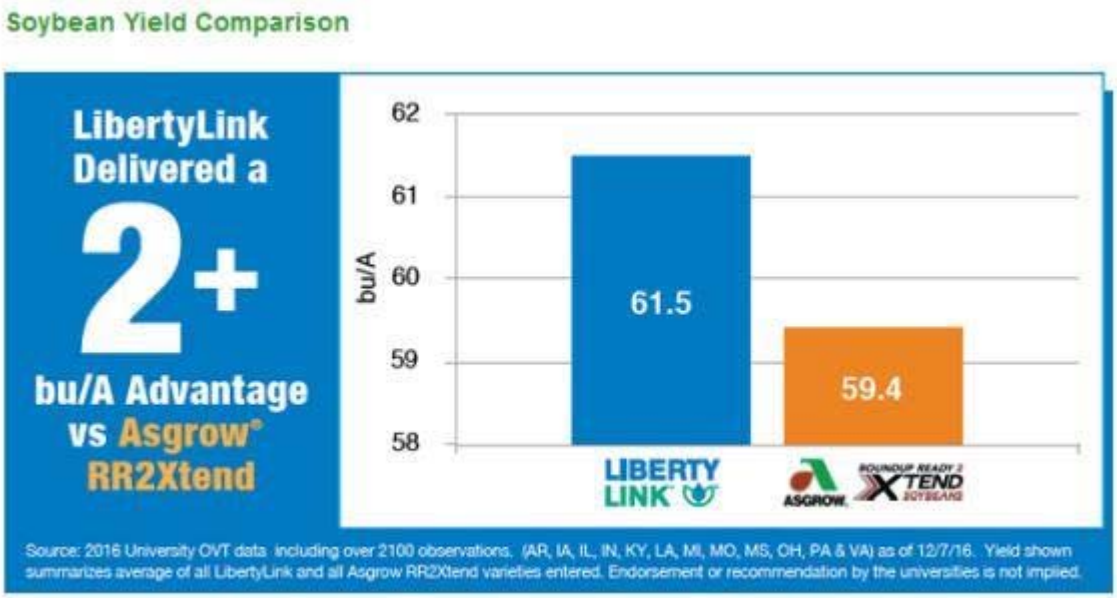
[…]

Source: MI 02374 [internal document], ID5536-4, slide 6.

(1931) Indeed, as can be seen from Figure 397, Monsanto sees Bayer as one of […] it is facing in HT Systems (glufosinate tolerance is Bayer's proprietary Liberty-Link HT System).

(1932) Conversely, Bayer sees Monsanto as its main competitor for HT Systems: on its public website to promote its Liberty-Link HT System, Bayer exclusively compares it to Monsanto's systems (and does not even refer to other existing systems from DowDuPont or ChemChina-Syngenta). It describes its Liberty-Link system as an alternative for growers facing resistance to glyphosate.

Figure 398 – Excerpts of Bayer's Liberty-Link promotional website (1)



Source: *https://www.cropscience.bayer.us/products/traits//libertylink-advantage.*
Note: *Asgrow, Roundup-Ready2 Yield and Roundup-Ready 2 Xtend are trademarks of Monsanto.*

Figure 399 – Excerpts of Bayer's Liberty-Link promotional website (2)

Soybean Herbicide Trait System Comparison

	LibertyLink®	Roundup Ready 2 Yield®	Roundup Ready 2 Xtend®
System Yield Performance	**PROVEN** across resistant and non-resistant acres	**PROVEN IF** planted on non-resistant acres	**UNPROVEN** System in commercial environment
Weed Control	**CONTROLS BROADLEAF AND GRASSES** • Excellent, broad spectrum control • No known resistance in row crop	Controls grasses and non-resistant broadleaves • 90M+ resistant acres • 16 glyphosate resistant weeds confirmed in US, several weeds pending	Controls broadleaves **ONLY, NO** grass control • 2 confirmed dicamba resistant weeds
Convenience and Peace-of-Mind	**SIMPLE TO USE, LOW-RISK** and non-volatile chemistry	Increasing **COMPLEXITY** due to resistant weeds • Cross-resistant Site of Action (SOA) is growing • Limited effective post control options • PPO effectiveness is decreasing	**COMPLEX**, volatile chemistry and **MORE RISK** of off target movement • 110-220' buffer restrictions • No spray if forecasted rain in 24 hours • Restrictive wind speeds during application • Sensitive crop damage and yield loss • Unknown approval of tank mixes • Mandated nozzle

Source: *https://www.cropscience.bayer.us/products/traits/libertylink/libertylink-advantage*.

Figure 400 – Excerpts of Bayer's Liberty-Link promotional website (3)

LibertyLink, The Simply Better Solution

	LibertyLink®	Asgrow® RR2Xtend®
Seed Price	$57	$71
Herbicide Cost	$45	$47
• **Residual**	$15	$15
• **Early/Mid Post** (Liberty vs Xtendimax + Roundup Powermax)	$15	$16
• **Mid/Late Post** (Liberty vs Xtendimax + Roundup Powermax)	$15	$16
Additional Application Costs	**$0**	$20
• **Dicamba Applicator Liability Premium** (2 applications @ $3 per application)	$0	$6
• **Additional Application Costs due to tankmix restriction** (2 applications @ $7 per application)	$0	$14
Additional Xtend Risk Cost • Insurance Liability • Tank Cleanout Concerns • Sensitive Crop Yield Loss	NA	
Additional Xtend Complexity Cost • Buffer Management • 24 hr Rain Restriction • Tank Mixes	NA	
TOTAL SYSTEM COST DIFFERENCE		**$36+** Additional Risk & Complexity + 2+ bu/A Yield Drag

Source: *https://www.cropscience.bayer.us/products/traits/libertylink/libertylink-advantage.*

(1933) Results of the market investigation indicate that the Parties are each other's closest competitors in HT Systems.[1162] One respondent noted: "*[t]he very broad systems of weed control provided by glyphosate or glufosinate in the post-application (to the weed) segment provide a unique weed control foundation. Other HT systems are being introduced to patch gaps that have emerged from emerging weed resistance (e.g. Dow's Enlist Weed Control system combines the herbicide 2,4-D (Enlist Duo) with corresponding 2,4-D-resistant traits. Monsanto's Xtend program combines the herbicide Dicamba with the corresponding Dicamba-tolerant traits (Xtend). These*

[1162] Questionnaire to Seeds, Traits, Crop Protection Competitors (Q1), question 111.2, question 112. Questionnaire to Crop Protection competitors (Q4), question 54.1; Questionnaire to Row crop Competitors (Q5), question 125.

two broad-leaf specific add-on HT traits were specifically introduced to bring added control to broadleaf weeds that are becoming resistant to glyphosate (see also answer to question 76). Note: glufosinate is also able to control glyphosate resistant broad-leaf weeds. There are currently no HT systems in the major row crops (e.g. corn, soy, cotton, canola) that can compete with these foundational HT systems."[1163]

(1934) This very strong product and price competition today is obviously evidence of past competing innovation efforts into the same HT System spaces. Indeed, both Parties developed competing HT Systems in the past, which were launched on the market and grew to become the two largest – and in fact almost only – HT Systems globally today.

(1935) The fact that there are virtually no significant competing products to the Parties' today further illustrates the importance and closeness of innovation competition between Bayer and Monsanto for HT Systems in the past.

(B) Ability to develop and bring HT Systems to the market as an indication of the relevance of innovation efforts

(1936) The Commission considers that the fact that the Parties today have the two foundational and leading HT Systems proves the particular relevance of their innovation efforts and capabilities in that innovation space. Indeed, Bayer appears to be the one of only two competitors to Monsanto which had the capabilities to develop HT Systems based on a foundational NSH to create a significant alternative to Monsanto's original and leading system.

(1937) In that respect, several internal documents of Bayer show […].

(1938) First, Bayer's research in traits is integrated with its research for crop protection, called […].[1164] […].[1165] […].[1166]

(1939) Second, as regards the ([…]) herbicide project […] Bayer mentions the following R&D target: […].[1167] […].[1168] […][1169] […].[1170]

(1940) Third, in another document discussing potential licensing projects, […].[1171]

(1941) Fourth, when developing its [R&D strategy].[1172]

(1942) Fifth, when analysing the strength of its competitors, Monsanto considers as a threat […].[1173]

(1943) Finally, it appears from Figure 401 and Figure 402 that, looking forward, Bayer expects to […].[1174] This would likely give it a competitive edge looking forward for

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1163 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), ID2783, question 111.2.1.

1164 Bayer's presentation of 21 November 2017, ID8619, slide 13.

1165 Bayer's internal document BI-EDISC-0216165, ID5893-45207, slide 42.

1166 Bayer's internal document BI-EDISC-0203039 [internal document], ID5893-32081, slide 47.

1167 Bayer's internal document BI 01281 [internal document], ID451-1443, slides 8-11.

1168 Bayer's internal document BI 01281 [internal document], ID451-1443, slide 13.

1169 Bayer's internal document BI-EDISC-0548272 [internal document], ID5609-43988, slide 38.

1170 Bayer's internal document BI-EDISC-0548272 [internal document], ID5609-43988, slide 47.

1171 Bayer's internal document BI 03125 [internal document], ID2298-28, slide 24.

1172 Bayer's internal document BI 03735 [internal document], ID4592-64, slide 4.

1173 Monsanto's internal document MI 000227784 [internal document], ID6152-10770, slide 26. For the Commission's explanations on the Parties' claim regarding the limited evidentiary value of this document (Parties' response to the Statement of Objections, ID9941, paragraphs 568-569), see recital (1672).

Non-GM HT Systems compared with competitors which have a weaker position currently in HT Systems.

Figure 401 – [R&D planning]

[…]

Source: BI 33445, ID8468, [internal document] (yellow highlight added).

Figure 402 – [R&D planning]

[…]

Source: BI 33445, ID8468, [internal document] (yellow highlight added).

(1944) On the basis of the above considerations, the Commission concludes that Bayer has strong R&D capabilities to develop HT Systems […], which seems to be a deliberate strategy.

(1945) As regards Monsanto, the Commission notes that it is pursuing a similar strategy to […]. This is illustrated in Figure 403: […].

(1946) Monsanto mentions its interest in strengthening its position in chemistries from the glyphosate chemistry today (RR products) […] in the long term to complete its portfolio:

(a) […];

(b) […];

(c) […].

Figure 403 – [R&D planning]

[…]

Source: MI 02374 [internal document], ID5536-4, slide 3.

(1947) The Parties argued that the statement in Figure 403 […] would be "*purely aspirational*" and that "*no* […] *herbicide chemistry is currently in Monsanto's R&D portfolio*".[1175] The Commission notes that Monsanto does have at least one […] herbicide in its R&D portfolio: the [PPO].

(1948) In another document, when discussing the […], in the crop protection item Monsanto mentions […].[1176]

(1949) The Parties argued that Monsanto is not an innovator in HT Systems (or, assumedly, that there should not be any concern regarding HT System innovation in view of the number of alternative players), "*either because Monsanto cannot be considered as an innovator in HT systems (due to its lack of R&D capabilities in new non-selective*

1174 The Parties claimed that the Commission erred in reaching this conclusion, in essence because current HT Systems rely on genes from other organisms (so-called "transgenesis"), which would necessarily be GM (Parties' response to the Statement of Objections, ID9941, paragraph 591). The Commission welcomes the Parties' clarifications. Nevertheless, it is possible that gene-editing technologies could enable Bayer to directly modify native genes in plants in light of the knowledge gained in GM Systems rather than introduce foreign genes, thereby not leading to transgenesis.

1175 Parties' response to the Statement of Objections, ID9941, paragraph 552.

1176 Monsanto's internal document MI 02374 [internal document], ID5536-4, slide 5.

herbicidal active ingredients) or because there is a considerable number of additional players competing in this sector".[1177]

(1950) The Commission refers to Section XI.1.4.4 regarding Monsanto's innovation in NSH. Regarding the Parties' second claim that if Monsanto were considered an innovator in HT Systems this would mean that there should not be any concern regarding HT System innovation because then there would also be a number of alternative players, the Commission notes that the fact that Monsanto is an innovator in NSH in spite of limited […] capabilities does not entail that there would be a large number of other players in HT System innovation. Indeed, Monsanto has strong and specific capabilities in the development of OTT formulations, as well as a strong commercial seed footprint, which not all players have and in particular set it apart from pure HT trait developers. The Parties acknowledged that "*Monsanto has […] developed improved formulations of existing herbicidal active ingredients*" and that "*Monsanto does develop new formulations for existing active ingredients in order to* […]".[1178]

(1951) On the basis of the above, the Commission concludes that Monsanto is pursuing a similar strategy as Bayer to develop both HT traits and the related chemistries, with a strategy to […].

(C) The Parties currently have similar R&D efforts in HT Systems

(1952) As described in Section XI.1.5.5.4, both Bayer and Monsanto engage in HT System innovation. Specifically, both companies appear to be developing in parallel a portfolio of HT Systems each based on their respective foundational herbicides, glufosinate and glyphosate. Indeed, from initially one tolerance trait, these systems have gradually grown to include at least one other AI/MoA, and are on track to incorporate more. In fact, both Parties appear to currently be working on the incorporation of […] tolerance into their HT Systems, as for instance illustrated in Figure 409 regarding Monsanto.

Figure 404 – [R&D planning]

[..]

Source: MI 000228115.00001, ID6152-12025, slide 75.

(1953) The strategy appears to be to protect and expand each franchise as much as possible to compete more effectively against the other, fight resistance and generic competition, as well as to provide improved products to growers. This parallel sequence is illustrated in Figure 409 below.

(1954) In particular, Monsanto's strategy, illustrated in Figure 405 and Figure 406, […].[1179]

Figure 405 – Future strategy for Roundup Ready

[…]

Source: MI 08242 [internal document], ID2330-45, slide 4.

[1177] Parties' response to the Statement of Objections, ID9941, paragraphs 544-547 and 555-559.
[1178] Parties' response to the Statement of Objections, ID9941, paragraphs 549-550.
[1179] Monsanto's internal document MI 08242 [internal document], ID2330-45.

Figure 406 – Key drivers of weed management strategy

[…]

Source: MI 000228115.00001, ID6152-12025, slide 8.

(1955) Figure 407 presents Monsanto's internal calculation of the contribution to the gross margin of the […] stack. The table reproduced in Figure 407 shows that […]. The opportunity cost of developing future traits within HT Systems is therefore determined to a large extent by the capacity of the firm to capture the profits of the related chemistry, which emphasises the fact that HT Systems are conceived as such from the beginning, with a direct impact on decisions to pursue given projects in chemistry and traits.

Figure 407 – […]

[…]

Source: MI 08263 [internal document], ID2330-66, slide 4.

(1956) Looking forward, there are indications that Bayer and Monsanto are the two leading and most active innovators in HT Systems, as illustrated in Figure 408 and Figure 409. Indeed, Bayer and Monsanto are the only two companies working at the same time on new HT Systems for soy, canola and cotton, where the other players only target some of these crops.

Figure 408 – Bayer slide on pipeline HT traits

[…]

Source: BI 01094, slide 18.

Figure 409 – Global soy trait platforms through 2025

[…]

Source: BI 00433 [internal document], ID451-543, slide 41.

Figure 410 – Bayer view of soy HT competitive landscape

[…]

Source: BI 00433 [internal document], ID451-543, slide 42.

Figure 411 – Monsanto HT pipeline

[…]

Source: MI 08242 [internal document], ID2330-45, slide 15.

Figure 412 – […]

[…]

Source: MI 08242 [internal document], ID2330-45, slide 17.

(1957) Furthermore, as illustrated in Figure 410 to Figure 412, Monsanto has the largest pipeline of HT Systems (at HT trait level, supported by new formulations, as shown in Figure 412) and only considers […] as having emerging potentially competing systems.

(1958) In sum, the Parties currently have similar R&D efforts and capabilities to develop HT Systems.

(1959) The Parties claimed in essence that they could not reasonably be considered competitors in HT System innovation in light of their highly differentiated activities and business models in that segment.[1180] The Commission notes that the evidence presented in the present Section demonstrates that the Parties are competitors in HT System innovation in spite of somewhat differentiated capabilities and business models.

(D) The Parties currently have overlapping and close R&D projects in HT Systems

(1960) In addition to their general overlap in HT System innovation, the Parties have directly overlapping lines of research in HT Systems. The most prominent example is their overlapping projects to develop novel HT Systems based on […] herbicides and the corresponding tolerance traits, as well as their parallel efforts on […] tolerance. These overlaps show great closeness in their current innovation efforts and capabilities since they are based on the same MoAs, with comparable herbicidal spectrum and other characteristics (such as systematicity), and a similar timing to market.

(1961) The Commission finds that Figure 289 and Figure 413, […], in terms of both NSH innovation but also weed management system innovation given Monsanto's trait capabilities.

Figure 413 – [R&D planning]

[…]

Source: BI 33681 [internal document] page 96 (yellow highlight added).

(1962) Moreover, it is apparent from Figure 414 that […].

Figure 414 – [R&D planning]

[…]

Source: BI 33681 [internal document], page 109 (yellow highlight added).

(1963) In their response to the Statement of Objections, the Parties stated that "*Bayer is not developing its own herbicide tolerant trait to be paired with its* […] *allowing it to be applied Over-the-Top*".[1181] Figure 414 demonstrates that this statement is obviously not correct.

(1964) More generally, […],[1182] […].[1183]

(1965) […].[1184]

(1966) Therefore, Bayer is developing in parallel its NSH pipeline and the corresponding traits.

1180 Parties' response to the Statement of Objections, ID9941, paragraphs 555-561.

1181 Parties' response to the Statement of Objections, ID9941, paragraph 398.

1182 Bayer's internal document BI-EDISC-1129453 [internal document], ID7496-35046.

1183 Bayer's weed management presentation of 29 September 2017, ID5994, slide 4.

1184 Bayer's internal document BI-EDISC-1129453 [internal document], ID7496-35046. In spite of the Parties' claims to the contrary (Parties' response to the Statement of Objections, ID9941, paragraphs 384-386 and 588), the latest evidence confirms the conclusions of paragraph 1321 of the Statement of Objections as to […].

(1967) More generally, […], which could either fully compete with Monsanto's Roundup-Ready franchise on a standalone basis or compete with it as a significant add-on HT pair to Bayer's Liberty-Link franchise, the leading challenger to Roundup-Ready.

(1968) The key competitive target for these Bayer efforts is the glyphosate business. […].[1185]

Figure 415 – Future trends in HT crops

[…]

Source: BI 00433 [internal document], ID451-543, slide 33 (yellow highlight added).

(1969) Monsanto's HT System is built around glyphosate and faces the challenge of developing resistance. Monsanto's strategy revolves around relying on herbicides having multiple modes of action. A key partner for glyphosate is dicamba, a selective herbicide that has a different MoA than glyphosate but a more limited spectrum. When discussing these issues internally, Monsanto indicates that […].[1186] In order to achieve a better management of resistance, Monsanto notably intends to rely on […].[1187]

(1970) Moreover, Monsanto's strategy confirms the future ([…]) prominence of the […] and […] MoAs that Bayer is working on, and on which it is itself working. The rejuvenation of Monsanto's franchise is expected to bring significant incremental revenues, in particular in chemistry.[1188]

Figure 416 – [R&D planning]

[…]

Source: MI 08263 [internal document], ID2330-66, slide 4.

(1971) Bayer and Monsanto are therefore largely looking at the same MoAs to expand and rejuvenate their respective franchises. Moreover, Monsanto, when looking for a partner to bring new AIs to its franchise, considered as alternatives the Sumitomo PPO that it is now developing and Bayer's […], thus further evidencing the closeness of the Parties' respective efforts.[1189] More recently, it appears that Monsanto considered switching its work on […], likely in view of the Transaction.[1190]

Figure 417 – [R&D planning]

[…]

Source: MI 08263 [internal document], ID2330-66, slide 5.

Figure 418 – [R&D planning]

[…]

Source: MI 000228115.00001, ID6152-12025, slide 21.

1185 Bayer's internal document BI 08665.

1186 Monsanto's internal document MI 08242 [internal document], ID2330-45.

1187 Monsanto's internal document MI 08242 [internal document], ID2330-45.

1188 Monsanto's internal document MI 08263 [internal document], ID2330-66.

1189 Monsanto's internal document MI 08263 [internal document], ID2330-66.

1190 The Parties denied that this would have been the case, but failed to produce specific evidence in support of their explanation (see Parties' response to the Statement of Objections, ID9941, paragraphs 600-601).

(1972) Finally, as described in Section XI.1.5.5.4, it appears that both Parties have innovative projects to develop Non-GM Systems, in particular for wheat, which would be highly relevant to the EEA where GM Systems have thus far not been successful.[1191]

(1973) This would particularly be the case in light of Bayer's objective to […], illustrated in Figure 401 and Figure 402.

(1974) While the actual deployment of some HT pairs or Systems may be relatively far in the future, intensive work is ongoing to test various technologies including field testing.[1192]

(1975) The Parties argued that they would not overlap in innovation for HT Systems, in essence because […].[1193] The Commission notes that the evidence presented in the present Section demonstrates that the Parties do overlap in innovation for HT Systems, being both active in research for HT traits and herbicides. The Parties themselves acknowledged that Bayer is active both in herbicide research and in HT research: "*Bayer, who [is] developing both novel chemistries and HT traits for those chemistries*".[1194]

(1976) The Commission also notes that irrespectively of the modalities via which each of Bayer and Monsanto currently engages in R&D activities for HT Systems, there is compelling evidence that Bayer's research activities are specifically targeted at cannibalising the existing position of Monsanto's glyphosate and glyphosate-tolerance franchise. Bayer's projects related to the discovery and development of HT Systems are targeted to directly compete with Monsanto's Roundup Ready franchise on a standalone basis or as a significant add-on HT pair to Bayer's Liberty Link franchise, the leading challenger to Roundup Ready.

(1977) In sum, Bayer's current R&D efforts in HT Systems are one of only very few attempts to develop HT Systems that are alternative to Monsanto and as independent as possible from Monsanto in terms of foundational HT traits. In addition, the Parties both have directly overlapping and close lines of research to develop HT pairs in the same chemical MoAs, which makes them close competitors in innovation to further develop their respective existing HT Systems.

1.5.5.7. The Transaction would likely reduce innovation competition between the Parties as to their close and important innovation efforts and capabilities in HT Systems

(1978) As explained in Section V.3, according to paragraph 38 of the Horizontal Merger Guidelines "*effective competition may be significantly impeded by a merger between two important innovators, for instance between two companies with 'pipeline' products related to a specific product market*".[1195]

(1979) Moreover, in line with paragraph 28 of the Horizontal Merger Guidelines, the higher the substitutability between the Parties' products, the more likely it is that the Parties would reduce innovation post-Transaction.

1191 Monsanto's internal document MI 7690, ID1594-108; Bayer's internal document BI-EDISC-1129453 [internal document], ID7496-35046.

1192 Monsanto's internal document MI 000228115.00001, ID6152-12025.

1193 Parties' response to the Statement of Objections, ID9941, paragraphs 506-508.

1194 Parties' response to the Statement of Objections, ID9941, paragraph 544.

1195 Horizontal Merger Guidelines, paragraph 38.

(1980) This can be the case if the early pipeline product (or line of research) of one of the merging parties was likely to capture significant revenues from the actual or potential competing product of the other merging party (be it another early pipeline product – or line of research – or products currently marketed). This adverse externality is internalised post-merger – from the perspective of each innovator, the expected loss of profits on the products of the other merging firm adds to the opportunity cost of innovating – making it more likely that post-Transaction an early pipeline product (or line of research) is discontinued, deferred or redirected (particularly in the presence of significant development and commercialisation costs).

(1981) Consumers may also ultimately be harmed in this case by both the loss of product quality and variety and the reduced intensity of future product market competition in the markets where the discontinued/deferred/redirected early pipeline product would potentially have been introduced but for the Transaction. This effect applies both in the short-term, notably in relation to existing early pipeline products and current lines of research, and over time, in relation to future R&D efforts.

(1982) In the absence of a comprehensive presentation of innovation in HT Systems in the Form CO, the Commission has mapped competitors' presence with innovation and possible pipelines in Table 157, based on third party reports and the Parties' internal documents.

Table 157 – Parties' and competitors' known innovation in HT Systems per crop

	Competitors						
Crop	Bayer	Monsanto	Dow/DuPont Pioneer	Syngenta	BASF	Others	Change in the number of innovators as a result of the Transaction
Soybean	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Cotton	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Canola / OSR	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Wheat	[…]	[…]	[…]	[…]	[…]	[…]	[…]

Source: Commission analysis of the Parties' internal documents.

Figure 419 – [R&D planning]

[…]

Source: MI 09080 [internal document] ID4527-16, slide 38.

Figure 420 – [R&D planning]

[…]

Source: BI-EDISC-0177792 [internal document], ID5893-6834, page 52.

(1983) As explained in Section XI.1.5.5.7, it is clear that the Parties have close and important overlapping HT System innovation projects competing with each other. The Commission would consider it likely that the Transaction would reduce competition in innovation in this space.

(1984) Indeed, already today and in some crops, the Transaction would establish an oligopolistic structure with a maximum of four players at the global level, in some cases even a duopoly. This indicates that customers would have limited options to switch in case of a price increase.

(1985) Moreover, at this stage, the Commission finds that Monsanto is the leading innovator in HT Systems, and that Bayer, with the advent of its glufosinate-based HT System, is pre-Transaction the only real threat to Monsanto's position. Bayer is one of only very few players attempting to develop HT Systems that are alternative to Monsanto and as independent as possible from Monsanto in terms of foundational traits.

(1986) Looking forward, both appear to have similar development strategies to reinforce their respective franchises, in direct competition with each other. They have a number of specific projects to do so, some of which on the exact same MoAs.

(1987) For instance, both Parties are actively working on […] tolerance and on […] tolerance, as detailed in Section XI.1.5.5.6.

(1988) Indeed, paragraph 580 of the Parties' response to the Statement of Objections confirmed that "[…] *and* […] *are the two most promising chemistries being researched for new HT systems*", thereby confirming the close and important competition between the Parties in NSH and HT System innovation since both of them are active in these MoAs (also see Figure 353, separately confirming the importance of […] and […] – where both Parties are active – in approximately a decade).

(1989) Similarly, following the announcement of the Transaction, Monsanto appears to have considered reorienting its work […]. Although there are indications that such reorientation has been discontinued, this consideration shows the closeness of the Parties in their HT System projects and the likely reduction of innovation in HT Systems which the Transaction would cause.

Figure 421 – [R&D planning]

[…]

Source: MI 000228115.00001, ID6152-12025, slide 23.

Figure 422 – [R&D planning]

[…]

Source: MI 000228115.00001, ID6152-12025, slide 32.

(1990) In fact, when looking for a partner to develop its new layers ([…]) in its HT Systems, Monsanto identified only three suitable efforts: […], which each presented different strong and weak points.[1196] This again confirms the likely effects of the Transaction on HT System innovation competition.

Figure 423 – [R&D planning]

[…]

Source: MI 000228115.00001, ID6152-12025, slide 34.

(1991) The likelihood that the Transaction would have effects on HT System innovation is further clearly established by Monsanto's internal view that the launch of new HT Systems would affect its own competitive position, as illustrated in Figure 424 and Figure 425.[1197]

Figure 424 – Cotton HT Systems competition

[…]

Source: MI 000228115.00001, ID6152-12025, slide 50.

Figure 425 – Canola HT Systems competition

[…]

Source: MI 000228115.00001, ID6152-12025, slide 51.

(1992) The Commission therefore considers that, post-Transaction, the merged entity would likely discontinue, redirect or reorient at least some of these innovation efforts and capabilities, to the detriment of innovation competition between the Parties and between the Parties and their competitors.

(1993) Indeed, when looking at overlaps in HT Systems, Bayer expects to have to make decisions in relation to which pipeline projects to take forward.[1198] Moreover, when looking at synergy documents, Bayer for instance intends to assess overlaps in traits and chemistry and expects to […], as shown in Figure 426.

Figure 426 – [R&D planning]

[…]

Source: BI-EDISC-0099994 [internal document], ID5420-7994, slide 6.

(1994) Such loss of innovation competition would be particularly relevant in the EEA, because the Parties are increasingly working on novel technologies (notably gene editing technologies such as […]) specifically targeted at the EEA. For instance, […], and Monsanto […].

(1995) Although these technologies appear to be relatively widely available, applying them to HT Systems requires expertise where the Parties appear to be particularly well placed. Indeed, in light of the Parties' broad development and route to market capabilities, as well as their current leading positions in HT Systems globally, it is likely that they would be leaders in the development of HT crops using gene editing,

[1196] Monsanto's internal document MI 000228115.00001, ID6152-12025.
[1197] Monsanto's internal document MI 000228115.00001, ID6152-12025.
[1198] Bayer's internal document BI-EDISC-0099994 [internal document], ID5420-7994.

with competition of the same degree from only DowDuPont and possibly ChemChina-Syngenta.

(1996) Figure 427 to Figure 430 illustrate […].

Figure 427 – [R&D planning]

[…]

Source: BI 08662 [internal document], ID6627, slide 4.

Figure 428 – [R&D planning]

[…]

Source: BI 08521 [internal document], ID5734, pages 2-3 (yellow highlight added).

Figure 429 – [R&D planning]

[…]

Source: BI 08521 [internal document], ID5734, page 8 (yellow highlight added).

Figure 430 – [R&D planning]

[…]

Source: BI 08521 [internal document], ID5734, page 14 (yellow highlight added).

(1997) Moreover, Figure 431 to Figure 432 show that Monsanto is developing non-GM HT traits and is targeting several similar chemistries to the ones Bayer is targeting ([…]).

(1998) In their response to the Statement of Objections, the Parties in essence argued that these documents would only be "*high-level concepts valuations*" or "*a high-level assessment of opportunities that Monsanto might, in the future, decide to pursue*", not current actual research projects.[1199] However, the Commission notes that – while the concepts described in the documents are high-level, this is likely because they describe research targets. The evidence presented by the Commission in Section X.1.7.5.7 confirms that Monsanto has made detailed valuations for acquiring the […] to use in non-GM research, which it is for instance already using for projects in corn. The Parties themselves confirmed that Monsanto […], although […].[1200]

Figure 431 – [R&D planning]

[…]

Source: MI 08346 [internal document], ID2330-149, slide 3.

Figure 432 – [R&D planning]

[…]

Source: MI 7690 [internal document], ID1594-108, slide 17.

(1999) Moreover, because these technologies are much cheaper and versatile than older GM technologies, they would likely enable at least some legacy GM Systems to be quickly adapted into novel HT Systems which would be accepted in the EEA, as illustrated in Figure 401 and Figure 402.

1199 Parties' response to the Statement of Objections, ID9941, paragraphs 563-565.

1200 Parties' response to the Statement of Objections, ID9941, paragraph 585.

(2000) It is therefore possible that gene editing technologies would be accepted in the EEA and finally enable a large array of HT Systems (including rejuvenated GM Systems) to come to the EEA, where GM Systems have not been accepted until now.

(2001) The specific effects likely to arise from the Transaction on HT System innovation can be summarised as follows.

(A) The Transaction would lead to the elimination of Monsanto's crop protection – including herbicides – development organisation and Bayer's trait R&D organisation

(2002) As discussed above in Section XI.1.4.5.2, the Transaction would lead to the elimination of Monsanto's crop protection, including herbicides, development organisation and Bayer's trait R&D organisation.

(2003) As a result of that elimination, there would overall be one less organisation active in innovation for HT Systems. The effect of this elimination on innovation competition would be particularly serious as it would affect the two most successful innovators for HT Systems and take place in an area that is already very concentrated and in which barriers to entry are particularly high.

(2004) Accordingly, the Transaction would likely reduce innovation competition in HT Systems by the elimination of certain Parties' R&D organisations.

(B) The Transaction would likely eliminate innovation to expand one of two competing foundational HT Systems

(2005) As explained in Section XI.1.5.5.6, Bayer's current efforts aim at growing Bayer's share of HT Systems globally to the detriment of Monsanto, the current global leading player.

(2006) To do so, as detailed in Section XI.1.5.5.4 and illustrated in Figure 390 to Figure 393 and Figure 410, […].

(2007) It is likely that post-Transaction the merged entity would discontinue, delay or reorient the efforts to […], which directly competes with Monsanto's glyphosate HT System.

(2008) Accordingly, the Transaction would likely eliminate innovation efforts to expand one of two competing foundational HT Systems.

(C) The Transaction would likely eliminate innovation for competing HT pairs (for integration into HT Systems)

(2009) Both Bayer and Monsanto are developing a number of HT pairs, with promising potential for integration into HT Systems, as detailed in Section XI.1.5.5.4 and illustrated in Figure 386 and Figure 387, Figure 390 to Figure 393 and Figure 410.

(2010) It is likely that post-Transaction the merged entity would discontinue, delay or reorient some of these overlapping efforts.

(2011) Accordingly, the Transaction would likely eliminate innovation efforts for competing HT pairs (for integration into HT Systems).

(D) The Transaction would likely eliminate innovation for the creation of novel and competing foundational HT trait/herbicide pairs

(2012) As detailed in Section XI.1.5.5.4 and illustrated in Figure 390 to Figure 393 and Figure 410, […].

(2013) It is likely that post-Transaction the merged entity would discontinue, delay or reorient Bayer's efforts […].

(2014) Accordingly, the Transaction would likely reduce innovation efforts on novel and competing foundational HT trait/herbicide pairs.

1.5.6. A limited constraint from innovation efforts of competitors in view of high barriers to entry

(2015) The high barriers to entry in each of the components of an HT System have already been described above in Section XI.1.4.6 for non-selective herbicides and in Section X.1.7.3 for traits. For these reasons, entry of a new competitor in HT Systems is unlikely, and unlikely to be timely and sufficient to deter or defeat any potential anticompetitive effects of the Transaction.

(2016) In particular, it appears that players with similar capabilities as the merged entity would be limited to the global R&D-integrated crop protection and seeds and traits players DowDuPont and ChemChina-Syngenta.[1201] In many crops, these two players have significantly weaker positions than the Parties combined, and would likely not be able to compensate for the loss of competition caused by the Transaction in HT System innovation.

(2017) Moreover, although other non-integrated players could come together to develop HT Systems, it is likely that these players would be less competitive than the Parties and the other two global R&D-integrated crop protection and seeds and traits players. In fact, the Parties themselves have on numerous occasions insisted with investors that an important rationale of the Transaction was to enable the merged entity to develop HT Systems in a more efficient and competitive, integrated way, as illustrated in the Joint Investor Conference Call of 14 September 2016.[1202]

(2018) By contrast, in their white paper on non-selective herbicides, the Parties explained that BASF is the only company to have launched a Non-GM System for wheat (Clearfield), and that Limagrain (in collaboration with Colorado State University and Albaugh, providing tolerance to quizalofop) is working on a Non-GM System for wheat for launch in 2018. Moreover, Bayer believes that "*any of the other major companies that are active in developing hybrid wheat (e.g., Dow/DuPont, Syngenta, KWS) have the ability, either alone or in collaboration with public research, to successfully develop non-transgenic herbicide tolerance systems, in light of their capabilities in both herbicide research and breeding/trait development. As Limagrain has demonstrated, breeding companies active in wheat are also able to collaborate with smaller trait research organisations working in wheat in order to develop and bring to market a herbicide tolerance system for this crop*".[1203]

(2019) However, these considerations are limited to Non-GM Systems for wheat and do not obfuscate the fact that the Transaction would combine the very strong integrated capabilities of the Parties in HT System innovation.

1201 The Parties erroneously claimed that the Commission would have excluded DowDuPont and Syngenta in its conclusions in the Statement of Objections (Parties' response to the Statement of Objections, ID9941, paragraph 570), which is incorrect as shown in the present recital (also paragraph 1599 of the Statement of Objections).

1202 A transcript of the Joint Investor Conference Call is available on Bayer's investor website.

1203 Parties' white paper on non-selective herbicides, ID5016-22, paragraphs 64-66.

(2020) Moreover, similarly to what is explained in more detail in Section X.1.7 regarding innovation in HT traits, competing innovation efforts in HT Systems appear to be few, as illustrated in Section XI.1.5.5.4 and Figure 433.

Figure 433 – Bayer view of HT pipeline

[…]

Source: BI-EDISC-1136642 [internal document], ID7496-42235, page 164.

(2021) Furthermore, these competing efforts seem to target the development of new HT pairs to be added to the Parties' existing foundational HT Systems – much like the Parties' own innovation efforts – rather than developing fully independent and competing HT Systems. The resulting competitive constraint on the Parties consequently appears to be lesser.

(2022) The Commission therefore considers it unlikely that competitors would be able to compensate for the loss of innovation competition in HT Systems that is likely to result from the Transaction.

1.5.7. The Parties' patent analysis submitted in the response to the Statement of Objections does not undermine the Commission's analysis

(2023) In the Statement of Objections, the Commission also presented some results based on its patent analysis related to traits, where the Commission found that both Bayer and Monsanto (followed by DowDuPont) were particularly active to develop inventions in crop protection which have a direct link to HT traits. In its analysis, the Commission considered patents belonging both to the agrochemical and biotech areas and citing HT trait patents, and found that: [30-40]% of these citations are made by Bayer, [20-30]% by Monsanto and [10-20]% by DowDuPont. The Commission considered that these findings were consistent with its view that Bayer and Monsanto (as well as DowDuPont) are important innovators for HT Systems.[1204]

(2024) In the response to the Statement of Objections, the Parties presented a number of comments to the Commission's analysis:

(a) The Commission identifies the sample of patents by identifying agrochemical patents citing HT trait patents. The Parties consider that this approach is inconsistent with the way research is conducted in HT Systems, where the innovation process starts with the research of an herbicide, which is then followed by research into traits that provide tolerance to that herbicide (and thus the HT trait patents should cite that herbicide's patent).[1205]

(b) Among the patents related both to the agrochemical and biotech areas, the Commission should have considered only patents related to herbicides (instead of patents related to the agrochemical sector more broadly). Moreover, the Commission should have also considered all herbicide patents, and not only the ones related to herbicides as well to the biotech sector.

1204 See Section XI.1.5.5.6(C) of the Statement of Objections.

1205 See for example paragraphs 490-491 of the Parties' response to the Statement of Objections. See also paragraph 3.29 of the Parties' submission entitle "Patent analysis in weed management systems", dated 9 January 2018 (ID9955-83).

(c) The Commission should have first identified herbicide patents related to HT traits (i.e. citing HT trait patents), and in a second step measured the importance of these patents using a forward citation analysis.

(2025) In the response to the Statement of Objections, the Parties also submitted a patent analysis for weed management systems (based on the herbicide patent dataset described in Section XI.1.4.7).

(2026) According to the Parties' analysis:

(a) Once the methodological issues discussed in recital (2024)(b) are resolved, Monsanto does not appear as an innovator in herbicide patents related to HT traits, and the main companies that appear as innovators are DowDuPont (with a [40-50]% share of citations), Bayer (with a [30-40]% share of citations) and BASF (with a [10-20]% share of citations). Monsanto has only a [5-10]% share of citations, ChemChina-Syngenta [0-5]%, FMC [0-5]%, Sumitomo [0-5]% and other firms [0-5]%.

(b) When carrying a forward-citation analysis on the herbicide patents identified by the Parties as being related to HT traits (see recital (2024)(c)), the Parties find that Monsanto has a [0-5]% patent share, while DowDuPont appears as the main innovator (with a patent share ranging from [50-60]% to [90-100]%), followed by BASF (with a patent share ranging from [0-5]% to [20-30]%), Bayer (with a patent share ranging from [0-5]% to [10-20]%), ChemChina-Syngenta (with a patent share ranging from [0-5]% to [0-5]%), FMC (with a patent share [0-5]%) and some other companies (with a patent share [0-5]%).[1206]

(c) For the three companies identified in recital (2026)(a) as innovators for herbicide patents citing HT trait patents, many of the citations are related to the HT trait of other companies: for Bayer, across the […] HT trait patents cited by its herbicide patents, [60-70]% refers to HT trait patents owned by other firms; for DowDuPont, across the […] HT trait patents cited by its herbicide patents, [80-90]% refer to HT trait patents owned by other firms; for BASF, across the […] HT trait patents cited by its herbicide patents, [80-90]% refer to HT trait patents owned by other firms. On that basis, the Parties consider that players try to link their herbicide projects to trait projects of other players, and therefore consider that there is no product market for HT Systems, and "non-integrated" players can also complete on HT Systems even if they do not have research in both traits and herbicides.

(2027) The Commission considers that its innovation-related concerns in the area of weed management systems are robust to the Parties' critiques to the Commission's patent analysis and to the Parties' patent analysis for the following reasons.

(2028) First, the Commission agrees with the Parties' argument that innovation in HT Systems starts from a herbicide (either an existing herbicide or an herbicide already in discovery or development), and then proceeds in a second stage with the research into traits that provide resistance to that herbicide (see recital (2024)(a)). In relation to this point, the Commission notes that the weakness of its patent analysis of HT

[1206] The Parties report patent share based on several methodologies. (See for example Appendix C and Appendix D of Annex 1, for the methodologies used by the Parties in their patent submissions related to traits.)

Systems carried out in the Statement of Objections, which does not capture this important feature of how research works for HT Systems, also affects the Parties' own patent analysis for HT Systems. This is because the Parties' patent analysis is based on the same starting point as the Commission's analysis in the Statement of Objections, meaning that it also starts by identifying herbicide patents citing HT trait patents, instead of identifying HT trait patents that cite herbicide patents. Therefore, both analyses suffer from the very same limitation in this respect.

(2029) Second, given that the Parties' patent analysis for weed management systems is based on the herbicide patent dataset described in Section XI.1.4.7, the Commission considers that the Parties' patent analysis suffers from the same methodological issues described in Section XI.1.4.7.2. For example, by restricting the analysis to herbicide patents published after 2012, the Parties do not consider an important patent of Monsanto that receives […] citations which is related to both Monsanto's glyphosate and dicamba chemistries (see recital (1827)(a)). As discussed in recitals (1969) and (1971), Monsanto's HT System is built around the glyphosate and dicamba chemistries.

(2030) Moreover, in their herbicide patent dataset, the Parties do not consider patents of Sumitomo on the PPO chemistry (see recital (1827)(b)), while the collaboration with Sumitomo to further develop Sumitomo's molecule related to the PPO chemistry is critical for Monsanto's innovation strategy in HT Systems (see recital (1960)).

(2031) Therefore, the Commission considers that the methodological issues discussed in recitals (2029)-(2030), in particular that the data used does not allow to take into account key patents related to Monsanto's innovation in HT Systems, make the Parties' patent analysis unreliable for the purpose of assessing innovation concerns for HT Systems.

(2032) Third, as discussed in recitals (1911) and (1920), innovation in HT Systems is not merely innovation in herbicides. It also entails specific capabilities to create a system enabling the use of given herbicides over given crops, typically by developing particular (mainly GM) traits, and specific capabilities to introgress traits into commercially viable crop varieties. In those capabilities, Monsanto is a leading player as the creator of GM Systems, and the holder of a very large germplasm pool that is used as the basis for the introgression of traits.

(2033) This is why the Commission considered in its patent analysis for weed management systems carried out in the Statement of Objection the category of agrochemical patents related to the biotech area (see recital (2024)(a)), instead of only herbicide patents. The Commission recognises that considering the category of agrochemical patents related to the biotech area may be too broad, but the focus of the Parties on herbicide patents appears too narrow to assess the innovation strength of companies involved in research for HT Systems. The Commission notes that this weakness of the Parties' patent analysis is likely to affect in particular the assessment of Monsanto's innovative strength for HT Systems.[1207]

(2034) Therefore, the Commission considers that the methodological issue discussed in recitals (2032)-(2033) makes the Parties' patent analysis unreliable to assess the

[1207] As discussed in the patent analysis carried out by the Commission in the Statement of Objections (Section XI.1.5.5.6.C, paragraph 1543.a), Monsanto owns several citing patents related to the development of soybean varieties.

innovation concerns for HT Systems, since the data used does not allow in particular to take into account key capabilities related to Monsanto for innovation in HT Systems.

(2035) Fourth, as regards the findings from the Parties' analysis discussed in recital (2026)(c), and without prejudice to the issues discussed in recitals (2027)-(2034), the Commission considers that this is not inconsistent with the product market definition for HT Systems. In particular, the Commission agrees that research into herbicides and HT traits can be carried out independently by different companies, but the Commission considers that innovation in HT Systems as such requires a certain level of coordination between research for HT traits and research for herbicides (see Section XI.1.5.5).

(2036) On the basis of the above (see recitals (2027)-(2034)), the Commission considers that neither the Commission's patent analysis on weed management systems carried out in the Statement of Objections, nor the Parties' patent analysis on weed management systems carried out in the response to the Statement of Objections, are reliable to assess the innovation strengths of companies involved in innovation for HT Systems.

(2037) The Commission nevertheless considers that its innovation-related concerns in the area of weed management systems are robust in light of the evidence presented in Sections XI.1.5.1-1.5.6.

1.5.8. Conclusion

(2038) For the reasons set out above and on the basis of the data made available during the investigation, the Commission considers that the Transaction would likely cause a significant impediment to effective competition in relation to innovation in HT Systems because it finds it likely that post-Transaction the merged entity would eliminate important competitive constraints leading to harm to innovation competition.

2. SEED TREATMENT

2.1. Introduction

(2039) Seed treatment is the treatment (or dressing) of seeds with specific formulations to protect them in the early stages of their development. Seed treatment therefore targets seed- or soil-borne diseases and soil-dwelling or early season insects, as well as nematodes. Seeds are dressed before they are planted. Seed treatment products are used for all major row crops such as cereals, corn, oilseeds rape ("OSR"), sunflower or sugar beet.

(2040) Seed treatment formulations can consist of different combinations of fungicides, nematicides, insecticides, but not of herbicides because these are agents for weed control. Although seed treatment formulations are mostly based on the same active ingredients which are also used for the formulation of nematicides, insecticides and fungicides for foliar/soil crop protection, they contain additional specific inert ingredients such as additives, polymers, anti-freezing agents, dyes or pigments, in order to ensure that the dressed seeds are marked as such or the seed dressing sticks to the seeds.

(2041) As for other crop protection products, in order to commercialise seed treatments in the EEA, producers need first an EU-wide authorisation for the commercialisation of their active ingredients (so-called "Annex II listing"; but most commonly known as

"Annex I listing")[1208] and, having obtained that, country-specific authorisations for the final products.[1209] Restrictions on specific active ingredients, which involve the loss of country-specific authorisations can temporarily be suspended through derogations awarded by Member States, although these derogations are limited to the relevant Member State and are typically limited to one season. Conversely, when the prohibition target the active ingredient and involves the loss of the Article II listing, Member States have no power to suspend the prohibition.[1210]

(2042) In the EEA, seed treatment producers sell their products mainly to seed companies but also – to a limited extent – to wholesalers, dealers/co-operatives or directly to large growers.[1211]

(2043) Bayer's global seed treatment sales amounted to EUR […] in 2015: EUR […] for corn fungicidal seed treatment; EUR […] for corn insecticidal seed treatment; EUR […] for OSR fungicidal seed treatment; EUR […] for OSR insecticidal seed treatment.[1212]

(2044) Monsanto's global sales amounted to EUR […] in 2015: EUR […] for corn fungicidal seed treatment; EUR […] for corn insecticidal seed treatment; EUR […] for OSR fungicidal seed treatment; EUR […] for OSR insecticidal seed treatment. Monsanto is no longer active in seed treatment in the EEA.[1213]

2.2. Market Definition

2.2.1. Product market definition

2.2.1.1. Commission precedents

(2045) In previous cases[1214], the Commission considered that seed treatment constitutes a separate product market rather than a particular type of application of crop protection products because they target different pests, and the customers and distribution channels are not identical as they are generally sold to seed companies whereas other crop protection products are sold to distributors and are applied by growers.

(2046) Seed treatment is further divided by crop and by indication (in those precedents, insecticides and fungicides).

(2047) Concerning the downstream market, the Commission has referred in previous decisions to the existence of a separate product market for treated seeds, but did not ultimately reach a conclusion on the market definition of treated seeds.[1215]

1208 Article 4 Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC, OJ L 309, 24.11.2009, p. 1 ("Regulation 1107").

1209 Articles 28 et seq Regulation 1107.

1210 Articles 53 et seq Regulation 1107.

1211 Form CO, part 3, paragraph 401.

1212 Parties' response to the Commission's request for information RFI 30, [Annex 30.1A], ID4108.

1213 Parties' response to the Commission's request for information RFI 30, [Annex 30.1A], ID4108.

1214 Commission Decisions in Case M.2547 – Bayer/Aventis Crop Science (2002), recitals 810-823; Case M.1806 – AstraZeneca/Novartis (2000), recital 77; Case M.3465 – Syngenta CP/Advanta (2004), recital 28; Case M.5675 – Syngenta/Monsanto's Sunflower Seed Business (2010), recitals 102-109; Case M.6141 – CNAC/Koor Industries/Makhteshim Agan Industries (2011), recitals 25 and 31; Case M.7962 – ChemChina/Syngenta (2017), recital 143.

1215 Commission Decisions in Case M.6296 – Triton/Compo (2012), recital 11 – 12.

2.2.1.2. Notifying Party views

(2048) The Notifying Party agrees with Commission precedents for the segmentation of seed treatment by crop and indication.[1216] However, the Notifying Party ultimately claims that the market definition can be left open in the absence of concerns under any plausible market definition.[1217]

(2049) As regards insecticides, contrary to previous Commission decisions, the Notifying Party submits that insecticidal seed treatments are substitutable with in-furrow granular insecticides. From a demand-side perspective, in furrow granular insecticides would be regarded by growers as alternatives to seeds treated with insecticidal seed treatments.[1218] In-furrow granular insecticides would also be equally, if not more effective than insecticidal seed treatments currently available on the market.[1219] Further, the Notifying Party argues that the substitutability of in-furrow granular insecticides and insecticidal seed treatments is evidenced by the way in which demand shifted in connection with certain restrictions on the use of the neonicotinoid seed treatments in 2013, see below recital (2148), since a significant portion of the demand shifted to the use of untreated seeds and in-furrow granular insecticides.[1220]

(2050) On the other hand, the Notifying Party maintains that in-furrow granules would not be substitutable for fungicidal seed treatments because there are no alternatives to fungicidal seed treatments to protect corn seeds from soil borne diseases.[1221]

(2051) Finally, concerning the downstream product market, the Notifying Party considers that the relevant market includes also untreated seeds because untreated seeds represent an alternative to treated seeds, especially in combination with in-furrow granules.[1222]

2.2.1.3. Commission assessment

(2052) In light of previous precedents,[1223] the Commission is of the view that seed treatments should be divided by crop and indication and that nematicidal seed treatments constitute an additional segment to fungicidal and insecticidal seed treatments.

(2053) As regards nematicidal seed treatment, it is clear from various internal documents of the Parties that nematode control is targeted separately from other insects. Moreover, these internal documents indicate that they consider seed treatment to be a separate market from soil applications.[1224] Further, the Parties' internal documents also show

1216 Form CO, part 3, paragraphs 64 – 65.
1217 Form CO, part 3, paragraphs 70 – 84.
1218 Form CO, part 3, paragraph 72.
1219 Form CO, part 3, paragraph 73.
1220 Form CO, part 3, paragraphs 74 et seq.
1221 Form CO, part 3, paragraph 135; see also Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 203 et seq.
1222 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 212.
1223 Commission Decisions in Case M.2547 – Bayer/Aventis Crop Science (2002), recitals 810-823; Case M.1806 – AstraZeneca/Novartis (2000), recital 77; Case M.3465 – Syngenta CP/Advanta (2004), recital 28; Case M.5675 – Syngenta/Monsanto's Sunflower Seed Business (2010), recitals 102-109; Case M.6141 – CNAC/Koor Industries/Makhteshim Agan Industries (2011), recitals 25 and 31; Case M.7962 – ChemChina/Syngenta (2017), recital 143; Case M.7932 – Dow/DuPont (2017), recital 1642.
1224 See for example MI 28346.00001 [internal document], ID5441-8124, slide 5.

that biological (biopesticide) and chemical seed treatments compete.[1225] On that basis, the Commission does not consider it appropriate to further segment the nematicide seed treatment market into biological (biopesticide) and chemical nematicidal seed treatments.

(2054) As regards insecticidal seed treatment, the Commission takes the view, in line with its precedents which considered the issue, that in-furrow granules are not substitutable with insecticidal seed treatments. In particular, in-furrow granules are sold to distributors and used by growers, whereas seed treatments are in the vast majority of cases sold to and used by seed companies. The insecticidal seed treatment product market is further segmented on a crop/pest basis.

(2055) However, for the purpose of this decision, it can be left open whether the product market includes both insecticidal seed treatments and in-furrow granular insecticides since the Transaction does not give rise to concerns about its compatibility with the internal market under any plausible market definition.

(2056) As regards fungicidal seed treatment, the Commission takes the view, in line with its precedents which considered the issue, that the relevant product market to retain is the fungicidal seed treatment market, further segmented on a crop/disease basis.

(2057) Moreover, the Commission considers, in line with its precedents[1226], that treated seeds constitute a separate market. This is because demand comes from seed players, which do not ask for seed treatment if they do not sell treated seeds. For instance, row crop competitors explained that "*[i]t is sufficient to look at treated seed only since there otherwise is no connection with the seeds and the way it is handled and sold*" and that "*[t]he segment should be defined solely as treated seeds. Choices and consolidation in the seed treatment space will only impact farmers who use treated seed so the market segment should be analyzed from only treated seeds*".[1227]

(2058) However, for the purpose of this decision, it can be left open whether the product market includes also untreated seeds since the Transaction does not give rise to concerns about its compatibility with the internal market under any plausible market definition.

2.2.1.4. Conclusion

(2059) As regards nematicidal seed treatment, the Commission considers that the relevant product market to retain for the competitive analysis is seed treatment for nematode control on a crop by crop basis.

(2060) As regards insecticidal seed treatment, for the purpose of this decision, it can be left open whether the product market includes both insecticidal seed treatments and in-furrow granular insecticides since the Transaction does not give rise to concerns about its compatibility with the internal market under any plausible market definition. The insecticidal seed treatment product market is further segmented on a crop/pest basis.

(2061) As regards fungicidal seed treatment, the Commission considers that the relevant product market to retain is the fungicidal seed treatment market, further segmented on a crop/disease basis.

1225 See BI 10283 "BCS-CT12839", ID6944-80, slide 71.

1226 Commission Decisions in Case M.6296 – Triton/Compo (2012), recital 11-12.

1227 Response of a competitor to Questionnaire to Row Crop Competitors (Q5), question 105.1. (ID3527).

(2062) As regards the downstream market to the seed treatment market, for the purpose of this decision, it can be left open whether the downstream product market includes also untreated seeds since the Transaction does not give rise to concerns about its compatibility with the internal market under any plausible market definition.

2.2.2. Geographic market definition

2.2.2.1. Commission precedents

(2063) In previous cases, the Commission considered that the relevant geographic market for seeds[1228] and seed treatment[1229] is national in scope.

2.2.2.2. Notifying Party views

(2064) The Notifying Party argues that there are arguments in favour of defining seed treatment markets as EEA-wide (such as the fact that seed companies purchase seed treatment in order to treat seeds and subsequently ship these across different national markets), but on the other hand, other arguments in favour of defining seed treatment markets as national (such as the fact that there is still a two-step regulatory process, namely EEA-wide and national, for the regulatory approval of seed treatment products). Ultimately, the Notifying Party argues that the geographic market definition for seed treatment can be left open.[1230]

2.2.2.3. Commission assessment and Conclusion

(2065) For similar reasons explained in Section XI.1.2.1.4 and as supported by the Commission's latest precedent, the Commission considers for the purposes of this Transaction, that seed treatment product markets are national in geographic scope.[1231]

2.3. Horizontal Assessment on Nematicidal seed treatment

2.3.1. Introduction

(2066) Nematicides are agrochemicals that control nematodes. Nematodes are microscopic roundworms that live in many habitats and often exceed a million individuals per square metre. Their diversity of life cycles and their presence at various trophic levels point to an important role in many ecosystems. They are often found as parasites in plants, animals, insects and birds or any living organism from which they can derive nutrition. They are found in nearly all climates and soil types.

(2067) Nematodes can cause severe economic damage to crops. For example, Monsanto notes that they cause […].[1232] They secure themselves to the plant tissue and suck nutrition from the plant, which therefore negatively affects plant yield.[1233] Crops

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1228 Commission Decisions in Case M.6296 – Triton/Compo (2012), recital 15-18; Case M.5675 – Syngenta/Monsanto's sunflower seed business, recital 131; Case M.3465 – Syngenta CP/Advanta, recital 26.

1229 Commission Decisions in Case M.2547 – Bayer/Aventis Crop Science (2002), recital 27; Case M.1806 – AstraZeneca/Novartis (2000), recitals 79-99; Case M.3465 – Syngenta CP/Advanta (2004), recital 30; Case M.5675 – Syngenta/Monsanto's Sunflower Seed Business (2010), recitals 139-140; Case M.6141 – CNAC/Koor Industries/Makhteshim Agan Industries (2011), recital 39; Case M.7962 – ChemChina/Syngenta (2017), recital 174.

1230 Form CO, part 3, paragraphs 85 – 100.

1231 Commission Decision in Case M.7962 – ChemChina/Syngenta (2017), recital 174.

1232 MI 302941 [internal document], ID6742-51, slide 4.

1233 MI 40702.0001 [internal document], ID5441-34385, slide 3.

infected by nematodes, if consumed by humans, can lead to severe gastrointestinal problems. Nematodes are not easily visible and thus are easily transmitted.

(2068) Since most nematodes live in the soil, they represent one of the most difficult pest problems to identify and control. It has been estimated that some 10% of world crop production is lost as a result of plant nematode damage.[1234] Because nematodes have the ability to shut down all their metabolic activities, they are tough pests to handle if they infect a crop. They can remain indefinitely dormant and will not succumb to normal pest control measures. According to Monsanto's internal document, […].[1235]

(2069) There are two main modes of application to control nematodes: either via the soil or in the form of seed treatment. While nematicides in broad acre crops are largely targeted with seed treatment, fruit and vegetable crops are mainly targeted through soil application.[1236]

2.3.2. Market definition

2.3.2.1. Product market definition

(2070) As explained in Section XI.2.2.1.4, the Commission considers that the relevant product market to retain for the competitive assessment is seed treatment for nematode control on a crop by crop basis.

2.3.2.2. Geographic market definition

(2071) As explained in Section XI.2.2.2, the Commission considers that the geographic scope of seed treatment markets is national.

2.3.3. Activities of the Parties in the EEA

2.3.3.1. Bayer

(2072) While Bayer is a strong player regarding fungicidal and insecticidal seed treatment in Europe, Bayer currently does not sell any nematicidal seed treatments in the EEA. […].[1237] […].[1238]

[1234] MI 40702.00001 [internal document], ID5441-34385, slide 3.
[1235] MI 40702.00001 [internal document], ID5441-34385, slide 3.
[1236] BI-EDISC-0509811 [internal document], ID5609-5527, page 9.
[1237] Form CO, part 3, paragraph 49.
[1238] BI 19366 [internal document], ID7329-8670, slide 15.

(2073) Bayer also has a number of products in its pipeline. A full list of Bayer's nematicidal seed treatment products (both currently sold and in the pipeline) are set out below.

Table 158 – Bayer's products and pipeline nematicidal seed treatments

Product	Type	Target crop(s)	New MoA (y/n)	Global launch	EEA launch	Global peak sales (EUR million)	EEA peak sales (EUR million)
PONCHO / VOTiVO	insecticide / biological nematode protection, yield enhancement	corn, soybean, cotton	n	yes[1239]	N/A	[…][1240]	[…]
[…]	[…][1241]	[…][1242]	[…]	[…]	[…]	[…]	[…][1243]
[…]	[…]	[…][1244]	[…]	[…]	[…]	[…][1245]	[…][1246]
[…]	[…]	[…]	[…]	[…]	[…][1247]	[…]	[…][1248]
[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
[…]	[…]	[…]	[…]	[…][1249]	[…][1250]	[…]	[…]
[…]	[…]	[…]	[…]	[…][1251]*	[…]	[…]*	[…]
PONCHO / VOTiVO 2.0	insecticide, biological nematode protection, yield enhancement	corn	y	2017	N/A	[…]	[…]

Source: Parties' response to the Commission's request for information RFI 103; BI 19366 [internal document], ID7329-8670, slide 15; BI-EDISC0152507 [internal document], ID5608-14893, slide 16; BI 18992 [internal document], ID7329-8296, slide 4; Form CO, part 3, table 3.1; Form CO, part 3, paragraph 481, table 3.112.[1252]

1239 Quote: "*Launched in US - UKA - SAF - NZ – MEX;* […]"; Parties' response to the Commission's request for information RFI 103.

1240 BI-EDISC-0473382 [internal document], ID5424-2873, slide 141.

1241 BI 19366 [internal document], ID7329-8670, slide 9.

1242 BI 19366 [internal document], ID7329-8670, slide 7.

1243 BI 19366 [internal document], ID7329-8670, slide 15.

1244 BI-EDISC-0152507 [internal document], ID5608-14893, slide 16.

1245 BI 18992 [internal document], ID7329-8296, slide 4.

1246 BI 18992 [internal document], ID7329-8296, slide 4.

1247 Form CO, part 3, paragraph 481 and table 3.112.

1248 […]. See BI 19366 [internal document], ID7329-8670, slide 15.

1249 Quote: "US launched - NZ launched - CAN launched – […]", Parties' response to the Commission's request for information RFI 103, [Annex 103.1], ID8894.

1250 Form CO, part 3, table 3.1.

1251 […].

1252 The Commission notes that there were significant discrepancies between information provided: (a) in the Form CO; (b) Responses to the Commission's requests for information (for instance RFI 103); and in the Parties' own internal documents. Therefore, this table has been prepared taking into account a number of different sources.

2.3.3.2. Monsanto

(2074) Monsanto divested its chemical seed treatment in the EEA to Mitsui on 1 February 2017[1253] and does not therefore currently sell any chemical seed treatment in the EEA. However, it has one chemical nematicidal seed treatment product in the pipeline called NemaStrike. A full list of Monsanto's nematicidal seed treatment products (both currently sold and in the pipeline) are set out below.

Table 159 – Monsanto's pipeline seed treatments

Product	Type	Target crop(s)	New MoA (Y/N)	Global launch	EEA launch	Global peak sales (USD million)	EEA peak sales (USD million)
[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]

Source: Form CO, part 3, tables 3.110-3.112; Parties' response to the Commission's request for information RFI 20, Annex 2.5.9; Parties' response to the Commission's request for information RFI 33, Annex 33.3; Parties' response to the Commission's request for information RFI 103.

2.3.4. Competitive assessment in nematicidal seed treatment: non-coordinated effects on potential product and price competition

2.3.4.1. Notifying Party arguments

(2075) The Notifying Party submits that the Transaction would not raise any concerns in nematicidal seed treatment in the EEA, because there is currently no expectation that the Parties' activities in this area will overlap in the EEA.[1254] In particular, the Notifying Party argues that Monsanto has no concrete plans to launch NemaStrike in the EEA, […][1255] and the Commission has overstated the likelihood of NemaStrike being launched in the EEA.[1256] It is too speculative to identify competition concerns, on the basis that the earliest possible EEA launch date for NemaStrike is […].[1257]

(2076) Further, the Notifying Party submits that even if there were to be an overlap in the EEA between Votivo and NemaStrike, the two products would not compete because they have entirely different modes of action. In particular, NemaStrike acts directly on the nematode, whereas Votivo does not directly kill the nematode, but rather protects the plant roots in order to prevent nematodes from attacking the plant. NemaStrike is therefore much more effective than Votivo and Votivo would therefore only be used in situations with moderate nematode pressure or because there was no other effective chemical solution (due to the fact that many nematicides have been banned in the EEA for regulatory reasons).[1258] In addition, post-Transaction, Bayer would have the incentive to keep both products, due to the

1253 Form CO, part 3, paragraphs 14 – 16.
1254 Form CO, part 3, paragraph 7.
1255 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 237.
1256 Parties' response to the Statement of Objections, ID9941, paragraphs 640 – 643.
1257 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 237.
1258 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 239 and Parties' response to the Statement of Objections, ID9940, paragraph 645.

desirability of having two different modes of action in the portfolio, to combat resistance.[1259]

(2077) The Notifying Party also submits that Bayer's nematicide pipeline products […][1260] and further, that they are not likely to compete with NemaStrike in the future.[1261]

(2078) Finally, the Notifying Party notes that there are numerous competitors who are developing nematicidal microbes.[1262]

2.3.4.2. Commission assessment

(A) The Parties are each planning to launch important nematicidal seed treatment products

(2079) According to information provided by the Parties, there are currently no nematicidal seed treatments sold in the EEA and therefore no market share information is available.[1263]

(2080) Regarding the global market size of nematicidal seed treatment, Monsanto estimates the current global nematicidal seed treatment market to be roughly around USD […] in 2014 as illustrated in Figure 434 below. The nematicide market potential as a whole is estimated roughly around USD […] and Monsanto's targeted market share, on a global basis, is [80-90]%.[1264]

Figure 434 – Global Nematicide Overview

[…]

Source: MI 13397.00001 [internal document], ID5672-4741, slide 3.

(2081) Both Parties are planning to launch nematicidal seed treatments in the EEA in the near future.

(A.i) Bayer

(2082) Bayer has a nematicidal seed treatment product in its pipeline called Votivo, which is a biological seed treatment. […].[1265] The active ingredient in Votivo is *bacillus firmus*. Votivo has however already been very successfully sold in the US since 2011, together with an insecticide, under the product name "Poncho/Votivo".[1266] Bayer perceives its product Poncho/Votivo as a market leading product in the US. For example, Bayer notes that the product has grown to become "*the most trusted and the most utilized seed treatment in the USA*"[1267], which is applied yearly on over 45 million acres of corn and which provides efficacy against major corn pests.[1268]

1259 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 239.
1260 Parties' response to the Statement of Objections, ID9941, paragraph 629–639.
1261 Parties' response to the Statement of Objections, ID9941, paragraphs 631, 636–638.
1262 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 240 and Parties' response to the Statement of Objections, ID9941, paragraphs 646 – 650.
1263 Parties' response to the Commission's request for information RFI 30, ID3909, question 1.
1264 MI 13397.00001 [internal document], ID5672-4741, slide 3.
1265 Form CO, part 3, paragraph 49. Further information regarding registration plans are available at: BI 19366 [internal document], ID7329-8670, slide 9.
1266 Form CO, part 3, paragraph 28 and Table 3.1.
1267 BI 08500 [internal document], ID5432-12, slide 11.
1268 BI 08500 [internal document], ID5432-12, slide 11.

Poncho/Votivo itself is now being enhanced by the addition of TWO.O in the USA, which has been introduced in August 2017.[1269]

(2083) *Bacillus firmus* has two major functions as an active ingredient: first, it protects against nematodes by perforating the outer-layer of the nematode egg and by minimizing the attractiveness of the roots for nematodes and second by strengthening the plant as such.[1270]

Figure 435 – [R&D planning]

[…]

Source: BI 19366 [internal document], ID7329-8670, slide 27.

(2084) […].[1271] […].[1272] […].[1273] This is also in line with the approach to market in the US, where Votivo is bundled with Poncho (an insecticide). […].[1274]

(2085) […][1275] […].[1276] […].[1277] […].

(2086) […].[1278] […].[1279]

(2087) […].[1280]

Figure 436 – [R&D planning]

[…]

Source: BI 19366 [internal document], ID7329-8670, slide 15.

(A.ii) Monsanto

(2088) Monsanto's pipeline product is NemaStrike, a chemical seed treatment with the active ingredient Tioxazafen. Other names of the product are MON 102100,

1269 Bayer's response to the Commission's request for information RFI 80, [Annex 80.38: "Bacillus firmus-Votivo backgr"], ID7776, page 2.

1270 BI 19366 [internal document], ID7329-8670, slide 30.

1271 BI 19366 [internal document], ID7329-8670, slide 9.

1272 BI 19366 [internal document], ID7329-8670, slide 7.

1273 Bayer's response to the Commission's request for information RFI 80, [Annex 80.38: "Bacillus firmus-Votivo backgr."], ID7776, page 2.

1274 […] (see Bayer's response to the Commission's request for information RFI 80, [Annex RFI 80.38 "Bacillus firmus-Votivo backgr."], ID7776, page 2). For Votivo, see BI 19609 [internal document], ID7506-55, slide 95.

1275 BI 19366 [internal document], ID7329-8670, slide 86.

1276 BI 19365 [internal document], ID7329-8669, slide 7.

1277 Bayer's response to the Commission's request for information RFI 80, [Annex 80.38: "Bacillus firmus-Votivo backgr"], ID7776, page 2.

1278 BI 19366 [internal document], ID7329-8670, slide 15. Contrary to the Notifying Party's arguments (see Parties' response to the Statement of Objections, ID9941, paragraph 622), the Commission considers that this figure, which is taken from a key contemporaneous internal strategy document and prepared in September 2017, can be considered as a valid estimate of peak sales, contrary to the significantly significantly modified projections of EUR […] provided in a RFI response to the Commission merely two months later.

1279 BI 19366 [internal document], ID7329-8670, slide 14.

1280 BI 19366 [internal document], ID7329-8670, slides 49–50, 76.

MON 102133, DC 1822 (Divergence Nematicide).[1281] The product concept is described as […].[1282]

(2089) Importantly, according to Monsanto's internal documents, NemaStrike is an […].[1283] NemaStrike provides effective yield protection against the pest; it stays in the root zone, where nematodes attack; it provides broad spectrum control and it delivers consistent yield protection performance for corn, soybeans and cotton.[1284]

(2090) As demonstrated in Figure 437 below, NemaStrike is a key part of Monsanto's seed applied solution strategy and strategic decisions in NemaStrike deployment will influence overall seed applied solution strategy. Monsanto anticipates that […], NemaStrike will constitute [40-50]% of gross product in seed applied solutions. Monsanto anticipates the largest opportunities in […].[1285] Monsanto has high expectations for NemaStrike: EEA peak sales for NemaStrike are estimated at USD […].[1286]

Figure 437 – [R&D planning]

[...]

Source: MI 302941 [internal document], ID6742-51, slide 9.

(2091) NemaStrike will be offered as part of Acceleron Seed Applied Solutions.[1287] Acceleron Seed Applied Solutions are integrated solutions merging biological products and chemical-based ingredients: a key part of this strategy is protection of the crop for higher yield potential.[1288]

(2092) Further, Monsanto is considering the expansion of NemaStrike also in […], where it could be used as a seed treatment on […].[1289]

(2093) As regards the EEA launch, while certain Monsanto internal documents indicate the launch date of NemaStrike in the EEA is […] as can be seen in Figure 438 below, the Commission notes that […], see above recital (2041). Monsanto has also conducted a […] in order to prepare a filing compatible with the European regulatory requirements. […]. Moreover, Monsanto has conducted […] in Europe on […] and will initiate […] in Europe on these crops in […]. Further, Monsanto will extend the registration to include […] after Annex I is completed. […] are also planned […].[1290]

Figure 438 – [R&D planning]

[…]

Source: MI 13575.00001 [internal document], ID5441-366, slide 6.

1281 Monsanto's response to the Commission's request for information RFI 80, question 3, MI 306015 [internal document], ID7365-254, slide 3.

1282 Monsanto's response to the Commission's request for information RFI 80, question 3, MI 306015 [internal document], ID7365-254, slide 2.

1283 MI 302941 [internal document], ID6742-51, slide 47.

1284 MI 302941 [internal document], ID6742-51, slide 37.

1285 MI 30918.00001 [internal document], ID5441-11811, slide 4.

1286 Monsanto's response to the Commission's request for information RFI 103, ID8945, question 1.

1287 BI-EDISC-0095268 [internal document], ID5420-3268, page 1.

1288 MI 330728 [internal document], ID7980-6, slide 13.

1289 MI 302942 [internal document], ID6837-44, slide 10.

1290 Monsanto's response to the Commission's request for information RFI 103, ID8945, question 4.

(2094) The Parties claim that the field trials to determine the efficacy of NemaStrike in the EEA are in the planning stages and until field trials and regulatory studies are conducted, there can be no assessment by Monsanto of whether this product is likely to achieve authorisation in the EEA.[1291] However, contrary to the Parties' assertions, the internal documents show that […].[1292] The intention of these trials is to define the minimum effective rate[1293] which is an important milestone for eventual regulatory approval in the EU. The Commission therefore considers that the purpose of the field trials is therefore also to fulfil EU requirements and rather than merely to determine the efficacy of NemaStrike.

(2095) The below slide (Figure 439) of an internal Monsanto document shows that […]. The Commission considers that Monsanto would soon thereafter introduce the product on the EU market as the product launch is typically prepared in parallel to the regulatory process.

Figure 439 – [R&D planning]

[…]

Source: MI 342548 [internal document], ID8983-32, slide 7.

(2096) In addition, contrary to the Parties' arguments that the Commission has overstated the likelihood of NemaStrike being launched in the EEA,[1294] while Monsanto still has to conduct additional studies to complete European registration requirements, the Commission notes that Monsanto has recently acknowledged that NemaStrike has a […] and that […].[1295]

(2097) Furthermore, NemaStrike is currently in the process of being launched and commercialized in the US in 2017. In light of the product's expected commercial success and regulatory approval in the US, the Commission is of the view that Monsanto's plans to introduce NemaStrike in the EEA are clear and it is highly likely that the product will comply with the European regulatory process. Further, the Commission is of the view that it is very likely that NemaStrike will be commercially successful in Europe, on the basis of Monsanto's own internal EEA projections.[1296]

(2098) The Commission was informed by the Parties that Monsanto is voluntarily pausing the commercialization of NemaStrike in the US, due to limited cases of skin irritation, including rashes that appeared to be associated with the handling and application of this seed treatment product. Monsanto will however continue the Ground Breakers program this spring.[1297] Moreover, (i) the pause was voluntarily taken, (ii) skin irritation was caused because of improper handling and application of the product and (iii) the pause is anticipated only for a couple of months. To

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1291 Form CO, part 3, paragraph 34, Parties' response to the Statement of Objections, ID9941, paragraphs 640–643 and Parties' response to the first Letter of Facts, ID10945 paragraph 106.

1292 MI 07694 [internal document], ID1594-112, slide 35.

1293 MI 07694 [internal document], ID1594-112, slide 35.

1294 Parties' response to the Statement of Objections, ID9941, paragraphs 640-643, and Parties' response to the first Letter of Facts, ID10661, paragraph 106.

1295 Draft Form RM, Part 6: Nematicides, submitted on 15 January 2018, ID10096, paragraph 53.

1296 MI 302941 [internal document], ID6742-51, slide 8.

1297 Parties' email to the Commission of 2 November 2017 "M.8084 Bayer-Monsanto: Nemastrike planned US launch paused", ID7948, and the attachment of the same email "ISSUE ALERT Monsanto Pauses Commercialization of NemaStrikeTM", ID7949, pages 1-3.

summarize, the above development does not affect the Commission's assessment and conclusion that NemaStrike is very likely to be launched successfully in the EEA.

2.3.4.3. The Transaction brings together two important and close potential competitors on nematicidal seed treatment

(A) NemaStrike and Votivo are competing products with both nematicide control and yield enhancement properties

(2099) […].[1298] […].[1299] […].

Figure 440 – [R&D planning]

[…]

Source: BI 08500 [internal document], ID5432-12, slide 6.

(2100) Moreover, the Commission considers that a nematicidal product which is also positioned as a yield enhancement product, overlaps in product scope with other nematicidal products. In internal documents, […].[1300] It is so because nematicidal products indirectly also enhance yield as they target a pest, nematodes, that affects yield negatively. […].[1301] As set out in recitals (2089) and (2091), NemaStrike is also positioned as a yield enhancement product.

(2101) […] there is currently only limited nematodes awareness by farmers. Nematode monitoring in the EEA has only been introduced in the 2016 growing season.[1302] […].

(B) NemaStrike and Votivo are both targeting the same crop, […]

(2102) […]. Monsanto notes in one internal document that […].[1303] […].[1304]

(C) Bayer and Monsanto both refer to direct competition between Votivo and NemaStrike

(2103) While NemaStrike and Votivo target nematodes in different ways (NemaStrike is a chemical product that kills nematodes, whereas Votivo protects roots from nematode attacks), it is clear from the Parties' internal documents that the Parties consider the two products to compete. The Commission notes that since NemaStrike is only currently being launched, while Bayer's Votivo has already been launched, there are more detailed Monsanto's internal documents in which NemaStrike is benchmarked against Votivo, than *vice versa*.

1298 Bayer's response to the Commission's request for information RFI 103, ID8945, question 3.

1299 EU Pesticides Database, see link http://ec.europa.eu/food/plant/pesticides/eu-pesticides-database/public/?event=activesubstance.detail&language=EN&selectedID=2248.

1300 BI 19366 [internal document], ID7329-8670, slide 11.

1301 BI 19366 [internal document], ID7329-8670, slide 42.

1302 BI 19366 [internal document], ID7329-8670, slide 12.

1303 MI 302941 [internal document], ID6742-51, slide 50.

1304 BI 19366 [internal document], ID7329-8670, slide 7.

(C.i) NemaStrike targets Votivo

(2104) The fact that Votivo and NemaStrike are direct competitors is evidenced in numerous internal documents of the Parties. This is evident for example from Monsanto's internal documents in which NemaStrike is benchmarking against Votivo, see for example Figure 441.

Figure 441

[…]

Source: MI 37900.00001 [internal document], ID5441-22494, slide 56.

(2105) NemaStrike is considered by Monsanto to be a substitute to Votivo, at least in the US, which is one of the first markets in which NemaStrike is being launched. By way of example, while Monsanto is currently using Votivo in its seed treatment portfolio, […].[1305]

(2106) Moreover, there are technical reasons which suggest that Votivo and NemaStrike are not complementary products. First, Monsanto's internal documents imply that […].[1306] […].[1307]

(2107) From the Parties' internal documents it is also evident, that the Parties closely monitor competitors' products and pipelines and test competitors' molecules to assess efficacy, including eachothers' respective products and pipelines. On that basis, the Parties have a good understanding of their competitors' pipelines, which allows them to project future sales and determine the current value of their own pipeline projects. In this regard, Monsanto compares NemaStrike efficacy with […].[1308]

Figure 442

[…]

Source: Monsanto's response to the Commission's request for information RFI 80, question 3, MI 306015 [internal document], ID7365-254, slide 11.

(C.ii) Bayer is also concerned about the competitive impact of NemaStrike

(2108) Equally, as evident from Figure 443, Bayer is concerned about the competitive impact of NemaStrike on Votivo. Bayer was informed of Monsanto's decision regarding the replacement of the Votivo component in the current Acceleron Standard and Acceleron Elite packages, […].

Figure 443

[…]

Source: BI 03628 [internal document], ID4158-138, slide 10.

(2109) […].[1309] […].

[1305] MI 25537.00001 [internal document], ID5441-3945, slide 3.
[1306] MI 35443.00001 [internal document], ID5441-19068, slide 6.
[1307] BI-EDISC-0153473 [internal document], ID5608-15859, slide 8.
[1308] MI 33706.00001 [internal document], ID5441-16354, slide 32.
[1309] BCS-MON-03620728 Email from […] to […] on 21 July 2016 at 11.14.

(2110) […].[1310] […].[1311] Contrary to the Parties' arguments, the Commission considers that these documents can be relied on as evidence of closeness of competition between the active ingredients, even if they may only be referring to competitive interaction in the US (which is in any event not clear from the face of the document).[1312]

(2111) […].[1313]

(2112) The Commission notes that Bayer is aware of the overlap between Votivo and NemaStrike. From Bayer's internal document which represents Bayer's and Monsanto's pipeline overview in corn, see Figure 444 and Figure 445, it is evident that there are overlaps between Votivo and NemaStrike.

Figure 444

[…]

Source: BI-EDISC0574567 [internal document], ID5609-70283, slide 7.

Figure 445

[…]

Source: BI-EDISC0574567 [internal document], ID5609-70283, slide 10.

(D) […]

(2113) Besides Votivo, Bayer has at least […] products in the pipeline that are […]. Both are products with […] active ingredients, one of them is […], a […] product, and the other is […], a […] product.

(D.i) […]

(2114) The Commission takes note that according to Bayer's internal documents, the pipeline for nematicides is limited. Bayer considers its main competitor candidates to be […] (for seed treatment) and […] (for soil application only).[1314]

(2115) […].[1315] […].[1316] […].[1317]

(2116) However, despite the Notifying Party's assertion that […] is not being planned for […],[1318] internal documents suggest that […] is a potential application for the future. For example, this is demonstrated by internal documents which include the requirement for […] to be able […].[1319] From Bayer's internal document it is evident that one of the next important steps in developing […] is to compete with […].[1320] Of these […] products, […].

1310 BCS-MON-04797701 Email from […] to […] on 4 September 2015 at 13.25.

1311 BCS-MON-04910666 Email from […] to […] and others on 3 September 2015 at 11.34.

1312 Parties' response to the first Letter of Facts, ID10661, paragraphs 103 – 104.

1313 BI-EDISC-0153473 [internal document], ID5608-15859, slide 3.

1314 Quote: […]; BI-EDISC-0141615 [internal document], ID5609-5527, page 9.

1315 BI-EDISC-0141615 [internal document], ID5609-5527, page 11.

1316 BI-EDISC-0141615 [internal document], ID5609-5527, page 9.

1317 Bayer's response to the Commission's request for information RFI 103, [Annex 103.1], ID8894.

1318 Bayer's response to the Commission's request for information RFI 103, [Annex 103.1]. ID8894.

1319 BI 10431 [internal document], ID6944-228, slide 15; similar also BI-EDISC-0152507 [internal document], ID5608-14893, slide 17.

1320 BI-EDISC-0152507 [internal document], ID5608-14893, slide 3.

(2117) […].[1321] […].[1322] […].[1323] […].[1324]

Figure 446

[…]

Source: BI 03577 [internal document], ID5608-014893, slide 30.

(2118) In addition, in a Bayer internal document, Bayer notes that, […].[1325] The Commission concludes that this provides evidence that there is a clear overlap in scope between […].

(D.ii) […]

(2119) […].[1326] […].[1327]

(2120) […].[1328] […].[1329] […].[1330] […].

(2121) […].[1331] […].

(2122) […],[1332] […].[1333]

(2123) […].[1334] […].[1335] […].[1336]

(2124) […].[1337] […].[1338]

Figure 447

[…]

Source: BI-EDISC0152507 [internal document], ID5608-14893, slide 18.

(2125) In view of the above, the Commission considers that the Parties are important and close competitors in markets for nematicidal seed treatment in at least corn and cereals across the EEA.

(E) Post-merger, Bayer intends to […]

(2126) The market investigation indicates that Bayer has plans to […] in case the Transaction would be consummated.

1321 BI-EDISC-0152507 [internal document], ID5608-14893, slide 27.
1322 BI-EDISC-0152507 [internal document], ID5608-14893, slides 27 – 28.
1323 BI-EDISC-0509811 [internal document], ID5609-5527, page 10.
1324 Parties' response to the first Letter of Facts, ID10661, paragraph 107.
1325 BCS-MON-04797701 [internal document].
1326 BI 10432 [internal document], ID6944-229, slide 3.
1327 BI-EDISC-0698378 [internal document], ID5918-10514, slide 5.
1328 BI 10432 [internal document], ID6944-229, slide 17.
1329 BI-EDISC-0152507 [internal document], ID5608-14893, slide 29.
1330 BI 10432 [internal document], ID6944-229, slide 38.
1331 BCS-MON-03620728 [internal document].
1332 Parties' response to the Statement of Objections, ID9941, paragraph 639.
1333 BI 10432 [internal document], ID6944-229, slide 17.
1334 BI 10456 [internal document], ID6947-13, slide 5.
1335 MI 302941 [internal document], ID6742-51, slide 9.
1336 BI 10456 [internal document], ID6947-13, slide 5.
1337 […].
1338 BI 10431 [internal document], ID6944-228, slide 11.

(2127) First, Bayer's internal documents show that the pipelines between Bayer and Monsanto on nematicidal seed treatment overlap and that both NemaStrike and Votivo are seen as close competitors which is also illustrated in Figure 448 below.

(2128) Figure 448 below further shows that Bayer […].

Figure 448 – [R&D planning]

[…]

Source: BI-EDISC1159116 [internal document], ID7496-64709, slide 42.

(2129) Moreover, the synergy documents related to the current transaction show that […]. This is illustrated in detail in Figure 449.

Figure 449 – [R&D planning]

[…]

Source: BI-EDISC0153473 [internal document], ID5608-15859, slide 2.

(2130) The plan to […] is further corroborated by another Bayer document which is shown in Figure 450.

Figure 450 – [R&D planning]

[…]

Source: BI-EDISC0153473 [internal document], ID5608-15859, slide 8.

(2131) In addition, in a Bayer internal document, […].[1339] […].[1340] The Commission considers that this evidence shows that there is a clear overlap between NemaStrike and Bayer's own nematicide pipeline products and that further, there were not sufficient resources to bring both NemaStrike, and the Bayer pipeline products to market. The Commission therefore relies on this evidence to support its conclusion, as illustrated by other internal documents cited in this Section XI.2.3.4.3, that Bayer […].

(2132) […]. Evidence on the Commission's file also points towards Bayer reducing or stopping this product in light of bringing these two products under the same portfolio. […].[1341]

2.3.4.4. Limited competitive constraints from competitors

(2133) The Notifying Party argues that there are numerous companies that are in the process of developing nematicidal microbes.[1342] The Commission accordingly investigated the competitive landscape as part of its market investigation. First, the Commission asked companies involved in R&D in the field of crop protection for information regarding their discovery and development pipeline in chemical and biological crop protection and crop enhancement.[1343] Second, the Commission, on the basis of a detailed Bayer internal document which identified all of the main, large and smaller biologicals players, asked these companies for information regarding their discovery

1339 BCS-MON-04910666 Email from […] to […] and […] on 3 September 2015 at 11.34.

1340 BCS-MON-04797701 Email from […] to […] on 4 September 2015 at 13.25.

1341 BI-EDISC-0026593 Email from […] to […] on 3 September 2015, subject: […], ID5412-26593.

1342 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 240.

1343 Competitors' responses to the Commission's request for information to competitors on Crop Protection Pipeline RFI Q15.

and development pipeline in biologicals.[1344] Finally, the Commission reviewed the Parties' own internal documents.

(A) Evidence in Parties' own internal documents

(A.i) Bayer's documents

(2134) As already mentioned at Section XI.2.3.4.3, it is clear that on the basis of internal documents, both Bayer and Monsanto regard each other as their closest competitor in nematicidal seed treatment. Further, an internal document from Bayer, providing a very detailed overview of the future landscape for nematode control, also shows that the main upcoming competitors for Bayer's nematicide products, highlighted in red, […].[1345] Regarding Oxamyl and Abamectin which are classified as established products, the Commission notes that Abamectin is currently only approved in Italy and is registered only on vegetable crops.[1346] Oxamyl is not used as a seed treatment in the EEA.

Figure 451 – [R&D planning]

[…]

Source: BI 10283 [internal document], ID6944-80, slide 71.

(2135) On the basis of the internal document above in Figure 451, according to Bayer, the only other main competing seed treatment product other than NemaStrike is Clariva. However, Bayer in a more recent pipeline analysis document notes that ChemChina-Syngenta's Clariva has low impact on its target market. Bayer is familiar with the efficacy of this product on the basis that it was launched in the US in 2014 already. The product is described as a biological nematicide for soybean cyst nematodes.[1347] This evidence appears to contradict the argument submitted by the Notifying Party that Clariva can be considered a competitor product to Votivo.[1348]

(2136) Other products mentioned by the Notifying Party as competing products include Marrone's Majestene and Valent's Ditera. However, Bayer in a recent pipeline analysis document notes that both products also have a low impact on their target markets. Similarly to Clariva, both products have already been launched in the US (Majestene 2016, Ditera 2006). Bayer is therefore familiar with the efficacy of these products.[1349]

(2137) The Notifying Party also mentions products by FMC.[1350] However, it is clear from Bayer's internal documents, that Bayer does not perceive FMC as a major competitor. By way of example, a recent internal document merely lists but does not

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1344 Competitors' responses to the Commission's request for information to biologicals competitors RFI Q21.

1345 BI 10283 [internal document], ID6944-80, slide 73.

1346 Regarding Abamectin see Commission Decision in Case M.7932 – Dow/DuPont (2017), recital 1602. Abamectin is registered as a nematicide only for the following vegetable crops: tomato, squash and eggplant.

1347 BI-EDISC-0170032 [internal document], ID5608-32418, slide 149.

1348 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 240 and Table 2.

1349 BI-EDISC-0170032 [internal document], ID5608-32418, slide 145.

1350 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 240 and Table 2, and Parties' response to Statement of Objections, ID9941, paragraph 650.

go on to further describe the FMC product as it does for some other competitor products such as NemaStrike.[1351]

(A.ii) Monsanto's documents

(2138) Monsanto's internal documents suggest that regarding nematicides only […] (see Figure 452 below). As already discussed in recital (2134), however, […].

Figure 452 – [R&D planning]

[…]

Source: MI 000019759.00001 [internal document], ID5441-1689, slide 16.

(2139) Another internal document of Monsanto as illustrated in Figure 453 further shows that the main competitor to NemaStrike is Votivo, looking at a number of metrics including target crop, toxicity and method of application. Therefore while the slide states that NemaStrike […] the actual analysis below in that slide and the internal documents in Figure 453 and Figure 454 show that the competitive field is much narrower than the statement suggests.

Figure 453 – [R&D planning]

[…]

Source: MI 28346.00001 [internal document], ID5441-8124, slide 5.

(2140) Another slide of Monsanto (Figure 454 below) suggests that the competitive landscape is even more restricted. […].

Figure 454 – [R&D planning]

[…]

Source: MI 000037900.00001 [internal document], ID5441-22494, slide 35.

(B) Evidence from the market investigation

(2141) Only few players appear to have projects to discover and develop new nematicidal seed treatments.[1352] The Commission therefore considers that it is unlikely that competitors would constitute a significant competitive constraint able to compensate the likely non-coordinated effects of the Transaction for nematicidal seed treatment.

(2142) BASF has very recently submitted a nematicidal seed treatment for the major row crops for registration in the US.[1353] It is based on a combination of a microorganism and a biochemical and is targeted to guarantee nematode protection to help increase yield potential. On the basis of the information on the Commission's file, the Parties do not appear to regard this product as a competitive threat.

(2143) Overall the main competitors that are active in nematicidal seed treatment are either currently not targeting corn or it is unclear whether or when the respective products will be launched in the EEA. There are some competitors active in nematicidal seed treatment that have launched or are about to launch products in the EEA which are considerably smaller than the Parties and which lack the capabilities as well as scale

1351 BI-EDISC-0170032 [internal document], ID5608-32418, slide 16.

1352 Competitors' responses to the Commission's request for information to competitors on Crop Protection Pipeline RFI Q15 and Competitors' responses to the Commission's request for information to biological competitors RFI Q21.

1353 http://www.agro.basf.us/.

and scope of the larger players. Contrary to the Parties' arguments that these players can be considered to be a significant competitive threat,[1354] they appear not to be taken into account by either Bayer or Monsanto in their internal documents when they assess their main competitive threats in nematicidal seed treatment (for corn), as shown in the previous slides.

(2144) Nothing in the Commission's investigation would therefore put in doubt its conclusion that the Transaction is likely to have non-coordinated effects on product and price competition in the EEA national markets for nematicidal seed treatments.

2.3.4.5. Conclusion

(2145) Both Bayer and Monsanto are planning to launch nematicidal seed treatment products in Europe. For the reasons set out above and on the basis of the data made available during the investigation, the Commission considers, in relation to potential competition, that the Transaction would likely cause a significant impediment to effective competition in relation to nematicidal seed treatment in at least corn and cereals, in all EEA member states where these crops are grown, because it is likely that it would eliminate an important competitive constraint and result in non-coordinated effects on product and price competition.

2.4. Vertical assessment on Insecticidal and Fungicidal Seed Treatment

2.4.1. Introduction

(2146) Insecticidal and fungicidal seed treatments are products that, similar to other insecticides and fungicides discussed below under Sections XI.3 and XI.4 are used on different crops to control a variety of pests and diseases. They are in particular used to ensure uniform stand establishment by protecting against seed-borne and soil-borne pathogens and insects (for instance rootworm and wireworm). Fungicidal seed treatment is seen as almost essential for corn, so much so that virtually all corn seeds are treated.

(2147) In the markets for seed treatments, the need for periodical renewal of product authorisations (see above under recital (2041)) is a source of uncertainty. More specifically, the insecticidal seed treatment market has been affected by abrupt regulatory changes and, in recent years, numerous products have been withdrawn from markets due to regulatory restrictions at the national or EEA levels.

[1354] Parties' response to the Statement of Objections, ID9941, paragraph 649.

(2148) Most prominently, neonicotinoids[1355] came under increasing scrutiny over their environmental impact. Five neonicotinoid insecticides are approved as active substances in the EU for use in plant protection products, namely clothianidin, imidacloprid, thiamethoxam, acetamiprid and thiacloprid. In 2013, the Commission adopted a regulation (EU) No 485/2013,[1356] restricting the use of seed treatment and soil treatment plant protection products containing three of the neonicotinoids, namely clothianidin, thiamethoxam or imidacloprid, for crops attractive to bees and for cereals ecluding those used in greenhouses and for winter cereals. As virtually all insecticidal seed treatments on the market were based on these active ingredients and were to be withdrawn, sales for insecticidal seed treatments in corn and OSR decreased significantly as indicated by Table 160.[1357]

Table 160 – Evolution of total sales of seed treatment in EEA

Sales in thousand euros/Year	2013	2014	2015	2016
Corn insecticidal seed treatment market size EEA	[…]	[…]	[…]	[…]
OSR insecticidal seed treatment market size EEA	[…]	[…]	[…]	[…]

Source: Parties' response to the Commission's request for information RFI 30, Annex 30.1A.

(2149) As regards the two remaining neonicotinoides, acetamiprid has recently been renewed until 28 February 2033.[1358] Thiacloprid is a candidate for substitution, based on its endocrine disrupting properties, see below recital (2217).

2.4.2. Activities of the Parties in the EEA

(2150) As regards the Parties' activities, Bayer is a strong player regarding fungicidal and insecticidal seed treatment in the EEA, particularly for corn and OSR, while Monsanto is no longer active in seed treatment in the EEA nor has any fungicidal or insecticidal pipeline project. Hence, there is no overlap between the Parties in the EEA with regard to insecticidal and fungicidal seed treatment.

(2151) However, the Transaction gives rise to a vertical relationship between the *upstream* markets for seed treatment, where Bayer is active, namely insecticidal and fungicidal seed treatment for corn and OSR, and the *downstream* markets for (treated) seeds, where Monsanto is active and Bayer is marginally present as a new entrant for OSR seeds.

(2152) A more detailed description of the Parties' activities in the *upstream* and *downstream* markets is set out below.

[1355] Neonicotinoids are active substances used in plant protection products that affect the central nervous system of insects, leading to eventual paralysis and death.

[1356] OJ L 139, 25.5.2013, p. 12.

[1357] https://ec.europa.eu/food/plant/pesticides/approval_active_substances/approval_renewal/neonicotinoids_en.

[1358] https://www.efsa.europa.eu/en/efsajournal/pub/4610.

2.4.2.1. Bayer

(A) Seed Treatment Market (*upstream*)

(2153) In the EEA, Bayer sales in 2015 amounted to EUR […] for corn insecticidal seed treatment; EUR […] for OSR insecticidal seed treatment; EUR […] for corn fungicidal seed treatment; EUR […] for OSR fungicidal seed treatment. The largest sales globally for these products occurred in France and Germany.[1359]

(A.i) Insecticidal Seed Treatment

(2154) Until recently, Bayer had a broad portfolio of insecticidal seed treatments for corn under the brands "Poncho", "Gaucho" and "Escocet".[1360] However, these products were discontinued in the EEA after the Commission imposed a restriction on the use of three neonicotinoids in 2013 (see above recital (2148)). Bayer also had insecticidal seed treatments ("Elado", "Modesto" and "Chinook") authorised in various countries across the EEA for OSR, that were also caught by the Commission's restriction on neonicotinoids. These products are still authorised only under limited derogations in Denmark, Estonia, Finland, Hungary, Latvia, Lithuania and Romania.[1361]

(2155) Currently, Bayer is present on the market mainly with two insecticidal seed treatments, Mesurol (methiocarb) and Sonido (thiacloprid).

(2156) Mesurol (methiocarb) is a broad spectrum insecticide belonging to the carbamate chemical class. It is registered for use on several crops, including corn and OSR. However, the use on OSR is authorised in Croatia only. It was also authorised for OSR in France until 2015; now, only OSR seeds marked for export can be treated with Mesurol in France, so long as the seeds are exported to countries where Mesurol is authorised for use as a seed treatment on OSR, namely Croatia.[1362]

(2157) Sonido (thiacloprid) is an insecticidal seed treatment of the neonicotinoid class targeting wireworm. It is authorised for use on corn in several Member States.[1363]

(2158) Looking forward, […].[1364] […].

(A.ii) Fungicidal Seed Treatment

(2159) In fungicidal seed treatments, Bayer's portfolio includes only one product, Feuver (prothioconazole), targeting a rather uncommon disease (head smut) present in Spain, France, Romania and Bulgaria, and authorized in those countries.

(2160) In addition, Bayer resells a thiram-based generic product purchased from a third party, namely Agrichem, in Austria and the United Kingdom. Thiram is an off-patent active ingredient for use on both corn and OSR, targeting several diseases and with an animal repellent effect.[1365]

(2161) Looking forward, […] Scenic Gold (fluoxastrobin+fluopicolide) […] as a replacement of the mixed insecticidal-fungicidal seed treatments "Elado plus" and

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1359 Parties' response to the Commission's request for information RFI 30, [Annex 30.1A], ID4108.
1360 Form CO, part 3, paragraphs 57.
1361 Form CO, part 3, paragraph 336.
1362 Form CO, part 3, paragraph 336.
1363 Form CO, part 3, paragraph 54.
1364 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 215.
1365 Form CO, part 3, paragraphs 130−132.

"Modesto plus" that were discontinued due to the prohibition on the neonicotinoids. […].

(B) Seed (Treated) Market (downstream)

(2162) Bayer is a new entrant in the commercialisation of OSR (treated) seeds (EEA 2016 sales: EUR […]). Bayer's largest OSR sales occurred in […] and […]. Bayer does not sell corn seeds.

2.4.2.2. Monsanto

(A) Insecticidal and Fungicidal Seed Treatment Market (upstream)

(2163) Monsanto does not have any insecticidal or fungicidal seed treatment sales in the EEA.[1366] As indicated in recital (2074), Monsanto divested its chemical seed treatment in the EEA to Mitsui on 1 February 2017.

(2164) […].

(B) Seed (Treated) Market (downstream)

(2165) Monsanto is active in the *downstream market*, with sales of OSR seeds (EEA 2016 sales: EUR […]) and corn seeds (EEA 2016 sales: EUR […] for all corn seeds, of which EUR […] for corn seeds treated with an insecticidal and fungicidal seed treatment). Monsanto's largest sales have been recorded for OSR in […]; and for corn in […].[1367] Monsanto commercialises both treated and untreated seeds.

2.4.3. Competitive assessment in insecticidal and fungicidal seed treatment in corn and OSR

(2166) In light of the market investigation and the evidence available to it, the Commission considers that the vertical relationship between the Parties' activities in the upstream seed treatment market and the downstream seed (treated) market with regard to insecticidal and fungicidal seed treatment for (treated) corn and (treated) OSR seeds would not lead to a significant impediment to effective competition for the reasons explained below.

2.4.3.1. Market structure and affected markets

(2167) The market shares in the *upstream* seed treatment markets and the *downstream* (treated) seed markets are presented below.

(A) Upstream: Parties' Market Shares in Seed Treatment

(2168) As indicated in recital (2163), Monsanto is not active in the upstream market.

[1366] Monsanto also had a seed treatment product approved for use in the EEA, labelled Latitude, divested its Latitude business to Mitsui. The sale was completed on 1 February 2017, Form CO, part 3, paragraph 7.

[1367] Parties' response to the Commission's request for information RFI 30, [Annex 30.2], ID3910.

(A.i) Corn

Table 161 – Corn insecticidal seed treatments

Country	Market size (EUR million)	Share (%)							
		Bayer	Monsanto	*Combined*	ChemChina -Syngenta	DowDuPont	BASF	FMC	Others
Austria*	[…]	[90-100]	[0-5]	***[90-100]***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
Belgium	[…]	[90-100]	[0-5]	***[90-100]***	[5-10]	[0-5]	[0-5]	[0-5]	[0-5]
Croatia	[…]	[90-100]	[0-5]	***[90-100]***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
Czech Republic	[…]	[90-100]	[0-5]	***[90-100]***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
France	[…]	[80-90]	[0-5]	***[80-90]***	[10-20]	[0-5]	[0-5]	[0-5]	[0-5]
Germany	[…]	[90-100]	[0-5]	***[90-100]***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
Hungary	[…]	[30-40]	[0-5]	***[30-40]***	[20-30]	[0-5]	[0-5]	[0-5]	[30-40]
Italy	[…]	[50-60]	[0-5]	***[50-60]***	[40-50]	[0-5]	[0-5]	[0-5]	[0-5]
The Netherlands	[…]	[90-100]	[0-5]	***[90-100]***	[5-10]	[0-5]	[0-5]	[0-5]	[0-5]
Poland	[…]	[90-100]	[0-5]	***[90-100]***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
Slovenia	[…]	[90-100]	[0-5]	***[90-100]***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
Spain	[…]	[90-100]	[0-5]	***[90-100]***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
United Kingdom	[…]	[90-100]	[0-5]	***[90-100]***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
EEA	***[…]***	***[80-90]***	***[0-5]***	***[80-90]***	***[10-20]***	***[0-5]***	***[0-5]***	***[0-5]***	***[5-10]***
Global*	***[…]***	***[40-50]***	***[0-5]***	***[40-50]***	***[30-40]***	***[0-5]***	***[0-5]***	***[0-5]***	***[10-20]***

Source: Parties' response to the Commission's request for information RFI 30, Annex 30.1A. Parties' estimate, see Form CO, Annex 10.6.

*Notes: * 2016 data unavailable or no sales recorded in 2016: data for the latest prior period – typically 2015 – is provided instead.*

Table 162 – Corn fungicidal seed treatments

Country	Market size (EUR million)	Share (%)							
		Bayer	Monsanto	*Combined*	ChemChina -Syngenta	DowDu Pont	BASF	FMC	Others
Austria*	[…]	**[90-100]**	[0-5]	**[90-100]**	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
EEA	***[…]***	***[0-5]***	***[0-5]***	***[0-5]***	***[40-50]***	***[0-5]***	***[0-5]***	***[0-5]***	***[40-50]***
Global*	***[…]***	***[20-30]***	***[0-5]***	***[20-30]***	***[40-50]***	***[0-5]***	***[5-10]***	***[0-5]***	***[20-30]***

Source: *Parties' response to the Commission's request for information RFI 30, [Annex 30.8]. Parties' estimate, see Form CO, Annex 10.6.*

Notes: ** 2016 data unavailable or no sales recorded in 2016: data for the latest prior period – typically 2015 – is provided instead*

(A.ii) OSR

Table 163 – OSR insecticidal seed treatments

Country	Market size (EUR million)	Share (%)							
		Bayer	Monsanto	*Combined*	ChemChina-Syngenta	DowDu Pont	BASF	FMC	Others
Denmark*	[…]	[30-40]	[0-5]	***[30-40]***	[60-70]	[0-5]	[0-5]	[0-5]	[0-5]
Finland*	[…]	[90-100]	[0-5]	***[90-100]***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
France	[…]	[90-100]	[0-5]	***[90-100]***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
Sweden*	[…]	[90-100]	[0-5]	***[90-100]***	[0-5]	[0-5]	[0-5]	[0-5]	[0-5]
United Kingdom	[…]	[90-100]	[0-5]	***[90-100]***	[5-10]	[0-5]	[0-5]	[0-5]	[0-5]
EEA	***[…]***	***[80-90]***	***[0-5]***	***[80-90]***	***[0-5]***	***[0-5]***	***[0-5]***	***[0-5]***	***[10-20]***
Global*	***[…]***	***[40-50]***	***[10-20]***	***[50-60]***	***[30-40]***	***[0-5]***	***[0-5]***	***[0-5]***	***[0-5]***

Source: *Parties' response to the Commission's request for information RFI 30, Annex 30.1A. Parties' estimate, see Form CO, Annex 10.6.*

Notes: ** 2016 data unavailable or no sales recorded in 2016: data for the latest prior period – typically 2015 – is provided instead.*

(2169) The Notifying Party provided its estimates separately with regard to Croatia. As explained above at recital (2156), Bayer insecticidal seed treatment is authorised for use on OSR exclusively in Croatia, where it is also the only product authorised for this use. The market for insecticidal seed treatments in Croatia is very small (approximately EUR […] in 2015 and EUR […] in 2016).[1368]

Table 164 – OSR fungicidal seed treatments

Country	Market size (EUR million)	Share (%)							
		Bayer	Monsanto	*Combined*	ChemChina -Syngenta	DowDu Pont	BASF	FMC	Others
Germany*	[…]	[5-10]	[0-5]	***[5-10]***	[0-5]	[0-5]	92	[0-5]	[0-5]
United Kingdom	[…]	[90-100]	[0-5]	***[90-100]***	[0-5]	[0-5]	[0-5]	[0-5]	[10-20]
EEA	***[…]***	***[10-20]***	***[0-5]***	***[10-20]***	***[0-5]***	***[0-5]***	***[0-5]***	***[0-5]***	***[80-90]***
Global*	***[…]***	***[40-50]***	***[10-20]***	***[50-60]***	***[30-40]***	***[0-5]***	***[0-5]***	***[0-5]***	***[0-5]***

Source: *Parties' response to the Commission's request for information RFI 30, Annex 30.1A. Parties' estimate, see Form CO, Annex 10.6.*

Notes: ** 2016 data unavailable or no sales recorded in 2016: data for the latest prior period – typically 2015 – is provided instead.*

[1368] Form CO, part 3, paragraph 343.

(B) Downstream: Parties' market shares in treated seeds

(B.i) Corn

(2170) According to the Notifying Party, all corn treated seeds basically receive fungicidal seed treatment but not all receive insecticidal seed treatment. Therefore, the market shares included in Table 165 correspond to corns seeds treated with insecticides (and fungicides); and the market shares in Table 166 correspond to corn seeds treated with fungicides, which are basically equal to the market shares for all corn treated seeds[1369].

Table 165 – Corn seeds treated with insecticidal seed treatment

Country	Market size (EUR million)	Share (%)							
		Bayer	Monsanto	*Combined*	ChemChina -Syngenta	DowDuPont	KWS	Limagrain	Others
Austria	[…]	[0-5]	[10-20]	***[10-20]***	[5-10]	[30-40]	[10-20]	[0-5]	[20-30]
Belgium	[…]	[0-5]	[0-5]	***[0-5]***	[5-10]	[5-10]	[20-30]	[20-30]	[30-40]
Croatia	[…]	[0-5]	[10-20]	***[10-20]***	[0-5]	[40-50]	[10-20]	[0-5]	[20-30]
Czech Republic*	[…]	[0-5]	[20-30]	***[20-30]***	[10-20]	[20-30]	[20-30]	[10-20]	[10-20]
France	[…]	[0-5]	[10-20]	***[10-20]***	[0-5]	[10-20]	[10-20]	[20-30]	[20-30]
Germany	[…]	[0-5]	[5-10]	***[5-10]***	[5-10]	[10-20]	[30-40]	[10-20]	[20-30]
Greece*	[…]	[0-5]	[10-20]	***[10-20]***	[10-20]	[70-80]	[0-5]	[0-5]	[0-5]
Hungary	[…]	[0-5]	[30-40]	***[30-40]***	[10-20]	[20-30]	[5-10]	[0-5]	[10-20]
Italy	[…]	[0-5]	[10-20]	***[10-20]***	[10-20]	[50-60]	[5-10]	[0-5]	[0-5]
The Netherlands *	[…]	[0-5]	[0-5]	***[0-5]***	[0-5]	[10-20]	[40-50]	[20-30]	[5-10]
Poland	[…]	[0-5]	[5-10]	***[5-10]***	[5-10]	[10-20]	[20-30]	[0-5]	[40-50]
Portugal*	[…]	[0-5]	[10-20]	***[10-20]***	[5-10]	[60-70]	[0-5]	[5-10]	[5-10]
Romania	[…]	[0-5]	[20-30]	***[20-30]***	[5-10]	[30-40]	[10-20]	[0-5]	[10-20]

[1369] Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 212.

Country	Market size (EUR million)	Share (%)							
		Bayer	Monsanto	*Combined*	ChemChina -Syngenta	DowDuPont	KWS	Limagrain	Others
Slovakia*	[…]	[0-5]	[20-30]	***[20-30]***	[10-20]	[20-30]	[10-20]	[10-20]	[10-20]
Slovenia	[…]	[0-5]	[10-20]	***[10-20]***	[10-20]	[40-50]	[0-5]	[10-20]	[10-20]
Spain	[…]	[0-5]	[20-30]	***[20-30]***	[0-5]	[50-60]	[0-5]	[5-10]	[10-20]
United Kingdom*	[…]	[0-5]	[0-5]	***[0-5]***	[0-5]	[5-10]	[20-30]	[40-50]	[20-30]
EEA	***[…]***	***[0-5]***	***[10-20]***	***[10-20]***	***[5-10]***	***[20-30]***	***[20-30]***	***[10-20]***	***[20-30]***
Global*	***[…]***	***[0-5]***	***[30-40]***	***[30-40]***	***[5-10]***	***[20-30]***	***[0-5]***	***[0-5]***	***[30-40]***

Source: *Parties' response to the Commission's request for information RFI 30, [Annex 30.2]. Parties' estimate, see Form CO, Annex 10.6.*

Notes: ** 2016 data unavailable or no sales recorded in 2016: data for the latest prior period – typically 2015 – is provided instead.*

Table 166 – Total corn seeds treated

Country	Market size (EUR million)	Share (%)							
		Bayer	Monsanto	*Combined*	ChemChina -Syngenta	DowDu Pont	KWS	Limagrain	Others
Austria	[…]	[0-5]	[10-20]	***[10-20]***	[5-10]	[30-40]	[10-20]	[0-5]	[20-30]
Belgium	[…]	[0-5]	[0-5]	***[0-5]***	[5-10]	[5-10]	[20-30]	[20-30]	[20-30]
Croatia	[…]	[0-5]	[10-20]	***[10-20]***	[0-5]	[40-50]	[10-20]	[0-5]	[20-30]
France	[…]	[0-5]	[10-20]	***[10-20]***	[0-5]	[10-20]	[10-20]	[20-30]	[20-30]
Germany	[…]	[0-5]	[5-10]	***[5-10]***	[0-5]	[10-20]	[30-40]	[10-20]	[20-30]
Hungary	[…]	[0-5]	[30-40]	***[30-40]***	[10-20]	[20-30]	[5-10]	[0-5]	[10-20]
Italy	[…]	[0-5]	[10-20]	***[10-20]***	[10-20]	[50-60]	[5-10]	[0-5]	[0-5]
Poland	[…]	[0-5]	[0-5]	***[0-5]***	[5-10]	[10-20]	[20-30]	[5-10]	[40-50]
Romania	[…]	[0-5]	[20-30]	***[20-30]***	[5-10]	[30-40]	[5-10]	[0-5]	[10-20]
Slovenia	[…]	[0-5]	[10-20]	***[10-20]***	[5-10]	[40-50]	[0-5]	[10-20]	[10-20]
Spain	[…]	[0-5]	[20-30]	***[20-30]***	[0-5]	[50-60]	[0-5]	[5-10]	[10-20]
EEA	***[…]***	***[0-5]***	***[10-20]***	***[10-20]***	***[5-10]***	***[20-30]***	***[10-20]***	***[10-20]***	***[20-30]***

Source: *Parties' response to the Commission's request for information RFI 30, [Annex 30.2]. Parties' estimate, see Form CO, Annex 10.6.*

(B.ii) OSR

Table 167 – OSR seeds treated with fungicidal seed treatment

Country	Market size (EUR million)	Share (%)							
		Bayer	Monsanto	*Combined*	ChemChina -Syngenta	DowDu Pont	KWS	Limagrain	Others
Bulgaria	[…]	[0-5]	[30-40]	***[40-50]***	[5-10]	[10-20]	[5-10]	[5-10]	[20-30]
Croatia	[…]	[0-5]	[10-20]	***[10-20]***	[5-10]	[10-20]	[50-60]	[0-5]	[5-10]
Czech Republic*	[…]	[0-5]	[20-30]	***[20-30]***	[5-10]	[5-10]	[5-10]	[10-20]	[40-50]
Denmark*	[…]	[0-5]	[60-70]	***[60-70]***	[10-20]	[0-5]	[10-20]	[0-5]	[10-20]
France	[…]	[0-5]	[40-50]	***[40-50]***	[0-5]	[0-5]	[10-20]	[10-20]	[20-30]
Germany	[…]	[5-10]	[10-20]	***[20-30]***	[5-10]	[10-20]	[0-5]	[5-10]	[50-60]
Hungary	[…]	[0-5]	[10-20]	***[20-30]***	[0-5]	[10-20]	[10-20]	[10-20]	[20-30]
Latvia	[…]	[20-30]	[5-10]	***[30-40]***	[0-5]	[0-5]	[10-20]	[0-5]	[50-60]
Lithuania	[…]	[5-10]	[0-5]	***[5-10]***	[0-5]	[0-5]	[10-20]	[0-5]	[70-80]
Poland	[…]	[0-5]	[10-20]	***[10-20]***	[10-20]	[0-5]	[10-20]	[5-10]	[40-50]
Romania	[…]	[0-5]	[30-40]	***[30-40]***	[5-10]	[20-30]	[10-20]	[0-5]	[10-20]
Slovakia*	[…]	[0-5]	[10-20]	***[10-20]***	[5-10]	[5-10]	[10-20]	[20-30]	[30-40]
Sweden	[…]	[0-5]	[40-50]	***[40-50]***	[10-20]	[0-5]	[0-5]	[0-5]	[30-40]
United Kingdom	[…]	[0-5]	[20-30]	***[20-30]***	[0-5]	[0-5]	[20-30]	[5-10]	[40-50]
EEA	***[…]***	***[0-5]***	***[20-30]***	***[30-40]***	***[5-10]***	***[5-10]***	***[10-20]***	***[5-10]***	***[30-40]***
Global	***[…]***	***[20-30]***	***[20-30]***	***[40-50]***	***[0-5]***	***[5-10]***	***[0-5]***	***[0-5]***	***[30-40]***

Source: Parties' response to the Commission's request for information RFI 30, [Annex 30.2]. Parties' estimate, see Form CO, Annex 10.6.

*Notes: * 2016 data unavailable or no sales recorded in 2016: data for the latest prior period – typically 2015 – is provided instead.*

(2171) The Notifying Party indicated that market shares for OSR seeds treated with insecticides are not available. To the best of the Parties' knowledge, any consumption of OSR seeds treated with insecticides in the EEA since 2015,[1370] if any, is a limited consumption derived from treated seeds held in stock by seed companies or distributors, or stored by growers. Monsanto had […] sales of OSR

[1370] As explained above in recital (2156), before 2015 Mesurol was authorised for use on OSR also in France.

seeds treated with insecticides in the United Kingdom towards the end of 2015 (approximately EUR […]).[1371]

(2172) According to Monsanto, it does not have direct sales of OSR seeds treated with insecticides in Croatia, the only EEA country in which Bayer insecticidal seed treatment is authorised for use on OSR. The Notifying Party indicated that the market for OSR seeds in Croatia is significantly smaller than that for corn seeds (i.e. approximately EUR […] for OSR compared to approximately EUR […] for corn in 2015).

(C) Affected markets

(2173) On the basis of the market shares and the information provided by the Parties, the national markets where the Transaction gives rise to affected markets with respect to: (i) insecticidal seed treatments and corn treated seeds are: Austria, Belgium, Croatia, the Czech Republic, France, Germany, Hungary, Italy, the Netherlands, Poland, Slovenia and Spain; with respect to (ii) fungicidal seed treatments and corn treated seeds is Austria; and with respect to (iii) fungicidal seed treatments and OSR treated seeds is the United Kingdom.

2.4.3.2. Commission assessment of vertical effects in insecticidal seed treatment for corn: Input Foreclosure

(A) Notifying Party views

(2174) According to the information provided by the Parties, the Transaction gives rise to vertically affected markets in relation to insecticidal seed treatments for corn and OSR[1372].

(2175) However, in its submissions, the Notifying Party claims first that seed treatment is not a significant input. Second, Bayer would not have the ability nor the incentive to foreclose Monsanto's rivals in the *downstream* market.[1373] As to its ability to foreclose, Bayer would lack any market power *upstream*, in light of regulatory pressure on its own products as well as competitive pressure from existing and forthcoming third-party products.[1374] Regarding incentives to foreclose, Monsanto's purchases would account for too small a part of Bayer insecticidal seed treatments for corn in the EEA and the relative margins generated by corn seed treatments would be larger than the relative margins for corn seeds.[1375] Finally, Bayer considers that the risk of retaliation would prevent any foreclosure.

(2176) The Notifying Party also submits that Bayer […][1376]. In any case, Bayer would not have control over whether Mesurol is applied to corn or OSR seeds. Any attempted foreclosure in Croatia would be defeated by the ability of customers to source Mesurol from elsewhere in the EEA. Hence, Bayer cannot withhold Mesurol for OSR without also withholding Mesurol for corn.[1377]

1371 Form CO, part 3, paragraph 345.
1372 Form CO, part 3, paragraph 9.
1373 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 202.
1374 Form CO, part 3, paragraphs 221-241.
1375 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 221.
1376 Form CO, part 3, paragraphs 388.
1377 Form CO, part 3, paragraphs 390.

(B) Commission assessment

(2177) The Commission identified affected markets with regard to insecticidal seed treatments for corn treated seeds in: Austria, Belgium, Croatia, the Czech Republic, France, Germany, Hungary, Italy, the Netherlands, Poland, Slovenia and Spain.

(2178) In assessing the likelihood of an anticompetitive input foreclosure scenario, the Commission examines, first, whether the merged entity would have, post-Transaction, the ability to substantially foreclose access to seed treatments, second, whether it would have the incentive to do so, and third, whether a foreclosure strategy would have a significant detrimental effect on competition *downstream*.[1378]

(B.i) After the Transaction, Bayer would not likely have the ability to foreclose the upstream market

(2179) Input foreclosure may raise competition problems only if it concerns an important input for the *downstream* product. This is the case, for example, when the input concerned represents a significant cost factor relative to the price of the *downstream* product.[1379]

(2180) First, the market investigation indicated that seed treatment costs account for up to 20% of the total production cost of seeds.[1380] However, cost and treatment are not the key drivers of growers' choice of seeds.

(2181) Based on the information provided by the Notifying Party, growers' choice of seeds is primarily driven by the quality of the seed (for instance, genetic and germplasm suitability for their specific field, growing conditions and crop destination)

(2182) The importance of seed quality for farmers is illustrated in Figure 459 below, which show that "performance" and "yield" are by far the most important characteristics that they consider when purchasing corn seeds. Insect resistance (which is enhanced through insecticidal seed treatments) does not feature in Figure 459.

(2183) Therefore, growers who currently purchase their preferred seeds from Monsanto's seed competitors (downstream) would likely still purchase the same seeds after the Transaction. Even if the seeds they purchase are currently treated with Bayer's insecticidal seed treatments (Mesurol or Sonido), in the event of input foreclosure by Bayer, customers would likely choose to buy the same seeds (and not those of Bayer/Monsanto) either treated with other insecticidal products or untreated since those seeds would likely still meet the customer's required quality criteria.[1381]

Figure 27 – European survey enquiring the most important reasons for purchasing corn seeds (2014—2016)

[…]

Source: Parties' response to the Article 6(1)(c) Decision, ID5016-3, page 50.

(2184) Second, based on the market investigation, the Commission considers that Bayer is not likely to preserve its leading market position in the insecticidal seed treatment market going forward.

1378 Non-Horizontal Merger Guidelines, paragraph 32.

1379 Non-Horizontal Merger Guidelines, paragraph 34.

1380 Parties' response to the Commission's request for information RFI 44, [Annex 44.6.5], ID4989.

1381 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 218.

(2185) Bayer is the leading player in insecticidal seed treatments for corn in several countries of the EEA with market shares above [30-40]% in Hungary and above [50-60]% in Austria, Belgium, Croatia, Czech Republic, France, Germany, Italy, the Netherlands, Poland, Slovenia and Spain. ChemChina-Syngenta is a significant competitor with its product Force 20CS (which contains the active ingredient tefluthrin)[1382] in Italy, with a market share of ~[40-50]%, Hungary (~[20-30]%) and France (~[10-20]%). ChemChina-Syngenta is also present in the Netherlands (~[5-10]%) and Belgium (~[5-10]%). Additionally, in Hungary, other competitors represent ~[30-40]% of the insecticidal seed treatment market.

(2186) However, since 2013, Bayer's portfolio in the EEA has been significantly reduced as a result of the substantial regulatory pressure that exists in the seed treatment market.[1383] Bayer's brands "Poncho", "Gaucho" and "Escocet" were discontinued after the restriction on the use of the three neonicotinoids.

(2187) As discussed in recital (2155), Bayer is present on the market mainly with two insecticidal seed treatments for corn, Mesurol (methiocarb) and Sonido (thiacloprid). However, in 2017 France adopted a law that introduced a prohibition at national level for all neonicotinoids (including Sonido) starting from 2020 at the latest.[1384] This will have a significant impact on Bayer given that France is its most important market, where [80-90]% of Bayer's sales are made and Sonido makes up for [60-70]% of Bayer sales in France.[1385]

(2188) Regarding the other countries, thiacloprid, the active substance of Sonido, is a candidate for substitution, based on its endocrine disrupting properties. Candidates for substitution are pesticides on which national authorities need to carry out an assessment to establish whether more favourable alternatives to using the plant protection product exist, including non-chemical methods. The current approval expires on 4 April 2018. A procedure to renew the approval of thiacloprid, is ongoing.[1386]

(2189) As regards Mesurol, the authorisation of methiocarb (its active substance) will expire in 2018, and it also appears uncertain whether it will be renewed due to alleged toxicity issues and environmental safety concerns (in particular in relation to birds and mammals) that are currently under assessment (see also Figure 456).[1387]

(2190) Moreover, during the investigation, the Commission asked crop protection competitors about their opinion on Bayer's Sonido and Mesurol products being impacted by regulatory constraints in the EEA.[1388] The feedback received from market participants confirmed that the predominant view on the market is that both Sonido and Mesurol will be prohibited.

1382 Form CO, part 3, paragraph 101.

1383 Agreed non-confidential minutes of a call with an institute, 19 July 2017; Form CO, part 3, paragraphs 122 – 129 and 212 – 219.

1384 See Article 125 of Law n. 184 of 8 August 2016 for the reconquest of biodiversity, nature and landscapes, available under https://www.legifrance.gouv.fr/eli/loi/2016/8/8/2016-1087/jo/texte.

1385 Form CO, part 3, Table 3.4.

1386 https://ec.europa.eu/food/plant/pesticides/approval_active_substances/approval_renewal/neonicotinoids_en.

1387 Form CO, part 3, paragraph 218.

1388 Questionnaire to Crop Protection Competitors (Q4), question 34.1.

(2191) A competitor explains that "*Sonido – thiocloprid – aside from being a neonicatinoid – it is subject to fail the human health hazard classification criteria and has been known to be destined for banning under the Reg 1107/2009 regulation for some years. It is both a classifiable carcinogen (category 2) and reproductive toxin (category 1b – unacceptable). This has been a long time coming and is no surprise to Bayer or the trade*".

(2192) The same competitor also argues that "*Mesurol – methiocarb – one of the last of the carbamate insecticides – sharing the mode of action with organophosphates acting as neurotransmitter inhibitors (acetyl cholinesterase) targeted by certain Member States, EFSA and the EU Commission to be removed from EU agriculture. It is simply a question of when. We are not aware of the precise criteria that the EU / EFSA will use for restricting the use of this product because the active substance does not fail any direct hazard criteria. In order to be banned or restricted, it will have to fail more complex risk criteria and that requires examination of the EFSA conclusion, which is overdue for publication*".[1389]

(2193) Another competitor's view is that "*[a]s Sonido contains thiachloprid and Mesurol contains Methiocarb, the two active ingredients are already under screening by the EU regulatory authorities with some restrictions, perhaps they will confirm or reinforce in the future. As also France and other countries are pushing to have a green solution instead of having a chemical solution, the possible regulatory constraints in the EEA will be higher*".[1390]

(2194) Another competitor comment that "*Sonido: Thiacloprid is from the neonicotinoid class of chemistry - political decisions and public opinion may negatively influence the regulatory status*"; "*Mesurol: Crop use is restricted and in some MS it is revoked, but some MS are supporting*"[1391]; "*Toxicological classification is expected to impact the product in other EEA countries*".[1392]

(2195) Furthermore, in Bayer internal documents, the Commission also found consistent evidence that Bayer does not see itself in a strong position in the future due to the likely ban on Sonido and Mesurol, as evidenced below by Figure 455, Figure 456 and Figure 457. In a Bayer internal document[1393] on environmental safety strategy, it is explicitly recommended to […] emphasis added.

Figure 455 – [R&D planning]

[…]

Source: BI 03100 [internal document], ID1614-5, slide 2 (yellow highlight added).

Figure 456 [R&D planning]

[…]

Source: BI 03105 [internal document], ID1614-10, slide 2 (yellow highlight added).

[1389] Questionnaire to Crop Protection Competitors (Q4), ID3530, question 34.1.
[1390] Questionnaire to Crop Protection Competitors (Q4), ID3327, question 34.1.
[1391] Questionnaire to Crop Protection Competitors (Q4), ID3306, question 34.1.
[1392] Questionnaire to Crop Protection Competitors (Q4), ID3052, question 34.1.
[1393] BI 03105 [internal document], ID1614-10, slide 7.

Figure 457 – [R&D planning]

[…]

Source: BI-EDISC-513147 [internal document], ID5609-8863, slide 28.

(2196) Third, the Commission considers that Bayer's position in insecticidal seed treatment for corn and OSR will be further challenged by the existing and forthcoming competitors.

(2197) As mentioned in recital (2185), with regard to corn, Bayer already faces competition from ChemChina-Syngenta's Force 20CS product (tefluthrin) in Italy, Hungary and France, Bayer's key market for insecticidal seed treatment. Additionally, ChemChina-Syngenta is also present in the Netherlands and Belgium; and in Hungary, other competitors represent ~[30-40]% of the insecticidal seed treatment market.

(2198) Moreover, according to its internal documents,[1394] Bayer fears the threat of competition from new entrants on the market (Figure 457), in particular DowDuPont that is in the process of launching a new insecticidal seed treatment for corn and OSR, Cyazypyr. Cyazypyr is expected to be available on the market in the United Kingdom and Poland in 2017, in Hungary and Romania in 2018, in the Czech Republic, Slovakia and Bulgaria in 2019, and in Germany and France in 2020.[1395]

(2199) Furthermore, the Commission investigated the competitive landscape as part of its market investigation, asking companies involved in R&D crop protection for information regarding their discovery and development pipeline in chemical and biological crop protection.[1396] Consistent with Bayer's views, the Commission's analysis indicates that there are competitors with pipeline projects in insecticidal seed treatments for corn which belong to chemical classes that are unlikely to be under regulatory pressure.[1397]

(2200) Therefore, Bayer will face existing and forthcoming competition in its key markets for insecticidal seed treatments for corn, including France, Germany, Czech Republic, Hungary, Italy and Poland, as well as Belgium and the Netherlands, which combined have a market size of approximately EUR […]. As to the remaining four EEA countries in which Bayer sells its insecticidal seed treatments for corn (i.e. Austria, Croatia, Slovenia and Spain) competitors currently present in other EEA countries could decide to enter the market if the merged entity would attempt any foreclosure strategy.

(B.ii) After the Transaction, Bayer would not likely have the incentive to foreclose the upstream market

(2201) The non-horizontal merger guidelines provide that "*[t]he incentive to foreclose depends on the degree to which foreclosure would be profitable. The vertically integrated firm will take into account how its supplies of inputs to competitors*

1394 BI-EDISC-513147 [internal document], ID5609-8863, slide 28.

1395 Form CO, part 3, paragraph 102.

1396 Competitors' responses to the Commission's request for information to competitors on Crop Protection Pipeline RFI Q15.

1397 Competitors' responses to the Commission's request for information to competitors on Crop Protection Pipeline RFI Q15.

downstream will affect not only the profits of its upstream division, but also of its downstream division"[1398]

(2202) First, the investigation indicated that Monsanto accounts for only [10-20]%-[10-20]% of the market for the commercialisation of corn seeds in the EEA, and only [0-5]%-[30-40]% of the market in each of the affected markets.[1399]

(2203) The Commission observes that other customers therefore account for a significant proportion of Bayer's turnover across the EEA. It would not be in the merged entity's interest to supply insecticidal seed treatments exclusively to Monsanto. By refusing to supply its other customers, the merged Bayer/Monsanto would forgo substantial turnover and profit, which it would be unlikely to recoup from increased sales *downstream.*

(2204) Second, as explained above at recital (2198), the investigation indicated that in addition to Force 20CS by ChemChina-Syngenta, a further insecticidal seed treatment by DowDuPont is close to entering several EEA national markets therefore reducing the profitability of any foreclosure strategy.

(2205) Finally, the elements on the file further indicate that, in light of the new entrants, the merged entity will continue to face at least one integrated player that can sell both seed treatment and seeds, as well as at least one non-integrated player that is likely to enter *upstream*. As such, after the transaction farmers will continue to benefit from the offers of at least two fully integrated players (one being the merged entity), as well as at least one further non-integrated *upstream* player.

(2206) In relation to the latter, the Commission notes that even in the event of input withholding by Bayer, the *upstream* non-integrated seed treatment player is unlikely to have an incentive to foreclose the *downstream* non-integrated seed players (such as Limagrain and KWS) as these customers will ultimately compete with the integrated offers of Bayer and the other independent integrated competitor.

(B.iii) No significant detrimental effect on competition

(2207) In general, a merger will raise competition concerns because of input foreclosure when it would lead to increased prices in the downstream market thereby significantly impeding effective competition.[1400] First, anticompetitive foreclosure may occur when a vertical merger allows the merging parties to increase the costs of downstream rivals in the market thereby leading to an upward pressure on their sales prices.[1401] Second, effective competition may be significantly impeded by raising barriers to entry to potential competitors.[1402]

(2208) The Commission observes that, as explained above in recitals (2205) and (2206), the merged entity will continue to face at least one integrated player that can sell both seed treatment and seeds, as well as at least one non-integrated player that is likely to enter *upstream*. Therefore, downstream rivals would have the option to revert to other competitors if the merging parties would attempt to increase the input costs. On

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1398 Paragraph 40 of the Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings, OJ C 265, 18.10.2008, p. 6 ("Non-Horizontal Merger Guidelines").

1399 Bayer's response to the Commission's request for information RFI 44, [44.6.1], ID4985.

1400 Non-Horizontal Merger Guidelines, paragraph 47.

1401 Non-Horizontal Merger Guidelines, paragraph 48.

1402 Non-Horizontal Merger Guidelines, paragraph 49.

the other hand, the presence of those competitors also constitute a factor that countervails any strategy by the merged entity on the downstream market.

(B.iv) Conclusion

(2209) In light of the market investigation and the evidence available to it, the Commission considers that post-Transaction the Parties would not be likely have the ability and incentive to engage in an input foreclosure strategy with regard to insecticidal seed treatment for corn in Austria, Belgium, Croatia, the Czech Republic, France, Germany, Hungary, Italy, the Netherlands, Poland, Slovenia or Spain.

2.4.3.3. Commission assessment of vertical effects in insecticidal seed treatment for corn: Customer Foreclosure

(A) Concerns raised during the market investigation

(2210) During the investigation, market participants have expressed concerns regarding the ability of the combined entity to foreclose seed treatment providers. According to a competitor "*Bayer are the powerhouse of seed treatment with technical solutions for most seed scenarios, Monsanto are a seed trait giant that require seed treatment technology. Farmers and end users do not influence what seed treatment is supplied with the seed, the acquisition of Monsanto by Bayer could exploit this situation and be anti-competitive and thus not provide farmers with best value for money*."[1403]

(2211) One of the main seed treatment providers in the EEA also explains that "*[a]s Monsanto has more than* [20-30]*% market share of the corn seed business and is currently not using solutions from Bayer, a merged company Bayer+Monsanto would be able to increase significantly the use of Bayer's seed treatment solutions*".[1404]

(B) Notifying Party views

(2212) The Notifying Party submits that there is no realistic prospect of customer foreclosure; first, given the limited size of Monsanto's market share in most EEA countries (< [30-40]%) and on an EEA-wide basis ([10-20]%-[10-20]%) and the fact that its market share is only marginally above [30-40]% in Hungary; and, second, because Monsanto itself only treats a minority of its seeds with insecticidal seed treatments.[1405]

(C) Commission assessment

(2213) The Commission identified affected markets with regard to insecticidal seed treatments for corn treated seeds in: Austria, Belgium, Croatia, the Czech Republic, France, Germany, Hungary, Italy, the Netherlands, Poland, Slovenia and Spain.

(2214) The Commission examines whether, after the Transaction, the merged entity would have the ability to restrict access to the *downstream* market of treated seeds by reducing its purchases of seed treatment from its *upstream* rivals.

(2215) Customer foreclosure may occur "*when a supplier integrates with an important customer in the downstream market*" and because of this downstream presence, "*the merged entity may foreclose access to a sufficient customer base to its actual or potential rivals in the upstream market (the input market) and reduce their ability or*

1403 Questionnaire to Crop Protection Competitors (Q4), ID3306, question 35.1.

1404 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), ID2783, question 92.1.

1405 Form CO, part 3, paragraph 264.

incentive to compete" which in turn, "*may raise downstream rivals' costs by making it harder for them to obtain supplies of the input under similar prices and conditions as absent the merger. This may allow the merged entity profitably to establish higher prices on the downstream market*".[1406]

(2216) For customer foreclosure to be a concern, a vertical merger must involve "*a company which is an important customer with a significant degree of market power in the downstream market. If, on the contrary, there is a sufficiently large customer base, at present or in the future, that is likely to turn to independent suppliers, the Commission is unlikely to raise competition concerns on that ground*".[1407]

(2217) First, according to the market investigation and the information provided by the Parties, at present Monsanto is sourcing insecticidal seed treatment almost exclusively from Bayer. In 2016, Monsanto purchased […]% of its insecticidal seed treatment from Bayer, […]. Therefore, the Transaction is unlikely to have a significant effect with regard to Monsanto's supply sources.

(2218) Second, the Commission agrees with the Notifying Party, that post-Transaction the Parties would not have significant market power in the downstream markets. Monsanto's market share in the downstream market is consistently under [30-40]% (including in Austria, Belgium, Croatia, the Czech Republic, France, Germany, Italy, the Netherlands, Poland, Slovenia, and Spain) except in Hungary, where it is slightly above (i.e. [30-40]%).

(2219) Monsanto faces strong competition from several players in treated corn seeds across EEA national markets, including DowDuPont, KWS, Limagrain, ChemChina-Syngenta and others.

(2220) In particular, in Hungary, Monsanto is the number one player ([30-40]%), closely followed by DowDuPont ([20-30]%), ChemChina-Syngenta ([10-20]%) and KWS ([5-10]%). In the other affected markets, the situation is as follows:

(1) In Austria, DowDuPont is the number one player ([30-40]%), followed at a considerable distance by Monsanto ([10-20]%), KWS ([10-20]%) and ChemChina-Syngenta ([5-10]%).

(2) In Belgium, KWS is the number one player ([20-30]%), followed by Limagrain ([20-30]%), DowDuPont ([5-10]%) and ChemChina-Syngenta ([5-10]%). Monsanto is the fifth largest competitor with a market share of [0-5]%.

(3) In Croatia, DowDuPont is the number one player ([40-50]%), followed at a considerable distance by Monsanto and KWS ([10-20]%).

(4) In the the Czech Republic, KWS ([20-30]%), Monsanto ([20-30]%) and DowDuPont ([20-30]%) are all very close in market shares.

(5) In France, Limagrain is is the number one player ([20-30]%), closely followed by DowDuPont ([10-20]%) and KWS and Monsanto ([10-20]%).

(6) In Germany, KWS is the number one player ([30-40]%), followed at distance by DowDuPont and Limagrain ([10-20]%), while Monsanto has a market share of only [5-10]%.

1406 Non-Horizontal Merger Guidelines, paragraph 58.

1407 Non-Horizontal Merger Guidelines, paragraph 61.

(7) In Italy, DowDuPont is the market leader ([50-60]%), followed at a considerable distance by Monsanto ([10-20]%) and ChemChina-Syngenta ([10-20]%).

(8) In the Netherlands, Monsanto has a negligible market share ([0-5]%).

(9) In Poland, the most important players are KWS ([20-30]%) and DowDuPont ([10-20]%). Monsanto is at the third place ([5-10]%).

(10) In Slovenia, DowDuPont is market leader ([40-50]%), followed at a considerable distance by Limagrain ([10-20]%) and Monsanto ([10-20]%).

(11) In Spain DowDuPont is market leader ([50-60]%), followed at a considerable distance by Monsanto ([20-30]%).

(2221) The above confirms Monsanto's internal document which indicate that the downstream market is very competitive.[1408]

(2222) Therefore, even if Monsanto would opt systematically for Bayer seed treatment to be used on its seeds, it would be unlikely to foreclose a sufficient size of the downstream market to determine a significant impediment of effective competition in the upstream market.

(C.i) Conclusion

(2223) In light of the market investigation and the evidence available to it, the Commission considers that post-Transaction the Parties would not be likely have the ability to engage in a customer foreclosure strategy with regard to insecticidal seed treatment for corn in Austria, Belgium, Croatia, the Czech Republic, France, Germany, Hungary, Italy, the Netherlands, Poland, Slovenia or Spain.

2.4.3.4. Commission assessment of vertical effects in fungicidal seed treatment for corn and OSR

(A) Notifying Party views

(2224) According to the information provided by the Parties, the Transaction gives rise to vertically affected markets in relation to fungicidal seed treatments for corn and OSR[1409].

(2225) However, as regard fungicidal seed treatment, the Notifying Party explains that, on the affected markets, namely Austria as regards corn and the United Kingdom as regards OSR, Bayer's activities are limited to the commercialization of generic thiram-based products.

(2226) Further the Notifying Party notes that, regarding fungicidal seed treatment for corn, the overall consumption of products from Bayer in Austria was minimal in 2015, amounting to only EUR […].[1410]

(2227) As to fungicidal seed treatment for OSR, Bayer is merely a re-seller of Hy-Pro Duet (thiram) in the United Kingdom, which Bayer acquires from Agrichem and re-sells on a non-exclusive basis.[1411]

1408 MI 02345 "EME HUB Strategic Review, February 16th & 17th, 2016", ID930-5252, Note to slide 50.

1409 Form CO, part 3, paragraph 9.

1410 Form CO, part 3, paragraph 143.

1411 Form CO, part 3, paragraph 366.

(2228) On this basis, the Notifying Party concludes that there can be no competitive concerns in relation to fungicidal seed treatments for corn and OSR.

(B) Commission assessment

(2229) The Commission notes that, as concerns fungicidal seed treatment for corn and OSR, the Transaction gives rise to affected markets only in Austria and the United Kingdom, respectively.

(2230) Both in Austria and the United Kingdom, Bayer is merely active as a reseller of generic products, acquired from a third party on a non-exclusive basis.

(2231) Therefore, Agrichem would sell its products to other distributors if Bayer would attempt an input foreclosure strategy in relation to these generic products. Moreover, these products, as any other generic product, could be produced and sold by other suppliers.

(2232) With regard to corn, the Commission observes that there are a number of distributors active in the EEA that could enter the Austrian market if Bayer would attempt an input foreclosure strategy. According to the market investigation, in the market for corn fungicidal seed treatment at EEA level, ChemChina-Syngenta has a market share of [40-50]%, BASF of [0-5]% and other competitors (including Bayer) account for [40-50]% of the remaining EEA market.

(2233) In the downstream market, DowDuPont is the number one competitor in Austria with a market share of [30-40]%, followed at a considerable distance by Monsanto ([10-20]%), KWS ([10-20]%) and ChemChina-Syngenta ([5-10]%). Therefore, Monsanto is not an important customer downstream.

(2234) With regard to OSR, there are also a number of distributors active in the EEA that could enter the United Kingdom market if Bayer would attempt an input foreclosure strategy. In the United Kingdom, besides Bayer (market share: [90-100]%) there are already other competitors that account for [10-20]%. Moreover, in the market for OSR fungicidal seed treatment at EEA level, Bayer has a market share of [10-20]%, BASF of [0-5]% and other competitors account for [80-90]% of the EEA market.

(2235) In the downstream market, Monsanto and Bayer have a combined market share of [20-30]% to which Bayer contributes with a small increment of [0-5]%. KWS is a strong competitor with a market share of [20-30]%, followed by Limagrain ([5-10]%). DowDuPont and ChemChina-Syngenta are also present in the market with a share of [0-5]%. Other competitors account for [40-50]% of the market. Therefore, Monsanto is not an important customer downstream.

(C) Conclusion

(2236) In light of the market investigation and the evidence available to it, the Commission considers that post-Transaction the Parties would not be likely have the ability to engage in input or customer foreclosure strategy with regard to fungicidal seed treatment for corn and OSR in Austria and the United Kingdom, respectively.

2.4.3.5. Conclusion

(2237) The Commission therefore concludes that the Transaction would not lead to a significant impediment to effective competition due to the vertical relationship between the Parties' activities in the *upstream* seed treatment market and the *downstream* seed market in respect of (i) insecticidal seed treatment for corn and treated corn seeds in Austria, Belgium, Croatia, the Czech Republic, France,

Germany, Hungary, Italy, the Netherlands, Poland, Slovenia or Spain; in respect of (ii) fungicidal seed treatments and corn treated seeds in Austria; and in respect of (iii) fungicidal seed treatments and OSR treated seeds in the United Kingdom.

3. FOLIAR FUNGICIDES

3.1. Introduction

(2238) Fungicides are agrochemicals that control diseases; they are used to prevent the deterioration of plants and plant products caused by fungi and moulds prior to and after harvesting.

(2239) Fungicides, other than seed treatment, can be applied at different phases and with different modalities, namely by way of foliar application, drench application, and application in soil. Of these applications, foliar fungicides represent the most important category; […].[1412]

(2240) Fungicides are used on a variety of crops. The most important crop for fungicide sales both worldwide and in the EEA are cereals. Fungicides for use in the EEA at present are marketed toward a number of pathologies, the main and most devastating diseases are septoria tritici, rusts, tan spot, powdery mildew and fusarium.

(2241) The key components of fungicides are active substances, or active ingredients, which produce the desired biological effect (that is, killing the pest or making it inoffensive). Active ingredients can typically be classified according to several aspects, including in particular the mode of action ("MoA"), the chemical class, and the molecule.[1413] The mode of action describes how a particular molecule acts on a plant. Fungicides are based on a number of different modes of action. Currently, the market is dominated by four modes of action: SDHI, DMI, QoI and multisites. Several sources, including internal documents of Bayer, indicate that at present, one of the main concerns is the development of Septoria tritici resistance towards SDHIs and DMIs and the development of *Ramularia collo cygni* resistance towards all existing modes of action.[1414]

(2242) The global fungicide market has been valued at around EUR 13 145 Mio. The European market has been valued at EUR 4 499 Mio in 2016. The fungicide market has been considerably growing in recent years, and the expected compounded average growth rates is at 3% between 2015 and 2025.

3.2. Market definition

3.2.1. Product market definition

3.2.1.1. Commission precedents

(2243) In its previous decisions, the Commission has found that foliar and soil crop protection products and seed treatment products are in separate product markets. Further, foliar and soil crop protection products are in separate product markets.[1415]

(2244) In previous decisions, the Commission has assessed fungicides by crop and considered further possible distinctions by disease.[1416] For instance, for wheat, the

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1412 BI-EDISC-532539 [internal document], ID5609-28255, slide 10.

1413 Commission Decision in Case M.7932 – Dow/DuPont (2017), recital 153 et seq.

1414 BI-EDISC-0577282 [internal document], ID5609-72998, slide 7.

1415 Commission Decision in Case M.3465 – Syngenta CP/Advanta (2004), recital 28.

Commission noted that distinctions could be made between fungicides for powdery mildew, rusts, eyespot and septoria.[1417] The Commission has also considered further segmentations based on the mode of action, for instance between strobilurin-based and non-strobilurin-based fungicides for cereals,[1418] and a segmentation between "systemic" fungicides and "non-systemic" or "contact" fungicides.[1419]

(2245) However in a more recent case[1420], the Commission came to the conclusion that a market segmentation by mode of action or chemical class is not justified. The market definition was therefore based on a crop/disease combination.

3.2.1.2. Notifying Party views

(2246) The Notifying Party agrees with Commission precedents for the segmentation of fungicides by application and plant-type.[1421]

(2247) It further acknowledges that in its precedents the Commission has considered alternative product market definitions, namely a distinct market for strobilurin-based fungicides.[1422] As Bayer's strobilurin portfolio has been fully registered and has expanded since this decision, the Notifying Party submits that a separate market for strobilurins should be reconsidered.[1423] For the analysis of all other fungicides, the Parties propose to analyse fungicides by the plant type being protected.[1424]

(2248) The Notifying Party also submits that biological and chemical crop protection products would not be part of the same product markets. Biocontrol products would allegedly not compete with chemical crop protection products, but rather complement them. This would be because biocontrol products have strong limitations in terms of effectiveness, flexibility of application and handling, and a shorter shelf life.[1425]

(2249) On the other hand, the Notifying Party notes that the same product markets identified by the Commission for conventional chemical crop protection markets are applicable to the biological crop protection business, with the addition of separate product markets for biofertilisers and biostimulants.[1426]

3.2.1.3. Commission assessment

(2250) The market investigation in this case and the Commission's most recent precedent confirms – in the absence of new arguments and evidence to the contrary brought by the Notifying Party – that fungicides should be segmented by crop/disease.

1416 Commission Decisions in Case M.6141 – CNAC/Koor Industrie/Makhteshim Agan Industries (2011), recital 23; Case M.2547 – Bayer/Aventis Crop Science (2002), recital 655; Case M.1806 – AstraZeneca/Novartis (2000), recital 25; and Case M.1378 – Hoechst/Rhône-Poulenc (2004), recital 34.

1417 Commission Decision in Case M.1806 – AstraZeneca/Novartis (2000), recital 26.

1418 Commission Decision in Case M.1806 – AstraZeneca/Novartis (2000), recital 31.

1419 Form CO, part 4, paragraphs 106 and 110.

1420 Commission Decision in Case M.7932 – Dow/DuPont (2017), recital 1769.

1421 Form CO, part 4, paragraph 103.

1422 Form CO, part 4, paragraphs 106 and 110.

1423 Form CO, part 4, footnote at page 20.

1424 Form CO, part 4, paragraph 109.

1425 Form CO, part 4, paragraphs 13 and 17.

1426 Form CO, part 4, paragraph 15.

(2251) The investigation indicated that a segmentation of the fungicide market between biological and chemical, as proposed by the Notifying Party, might not be justified.[1427] However, this question can ultimately be left open in the present case.

3.2.1.4. Conclusion

(2252) In line with its precedents, the Commission will carry out its competitive assessment of fungicides by crop/disease.

(2253) The Commission also considers that, for the purpose of this decision, it can be left open whether chemicals and biologicals constitute separate product markets since the Transaction does not give rise to concerns about its compatibility with the internal market under any plausible market definition.

3.2.2. Geographic market definition

(2254) As explained in Section XI.1.2.2, the Commission considers that crop protection product markets are national in geographic scope.

3.3. Definition of innovation spaces

(2255) The Commission's framework of analysis to assess the likely impact of the Transaction on innovation competition – which is applied in the present Decision taking into account the specific facts of the case and characteristics of the relevant markets – is described in Section V.3.

3.3.1. Commission precedents and Notifying Party views

(2256) The Commission precedents regarding innovation spaces in crop protection markets have been discussed at Section XI.1.4.1.1.

(2257) The Notifying Party has not expressed any specific view on the issue of innovation spaces in fungicides.

3.3.2. Commission assessment of the definition of innovation spaces in fungicides

(2258) On the basis of its precedent and the investigation, the Commission considers that the relevant innovation space for its assessment is fungicides for different crop/diseases or groups of diseases.[1428]

3.3.3. Conclusion

(2259) For the purposes of this case, the Commission considers that the relevant innovation space for its assessment is innovation in fungicides for different crop/diseases or groups of diseases.

3.4. Activities of the Parties in the EEA

(2260) As regards the Parties' activities, Bayer is currently one of the main fungicides players globally and in the EEA, however several products in its portfolio are under pressure due to increasing resistance and regulatory issues. On the other hand, Monsanto is not currently active on this market. Both Parties however have pipeline

[1427] Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), question 86; Questionnaire to Distributors and Institutes (Q2), question 79; Questionnaire Questionnaire to growers (Q3), question 33; Questionnaire to crop protection competitors (Q4), question 29; Questionnaire to Row Crop Competitors (Q5), question 103.

[1428] Commission Decision in Case M.7932 – Dow/DuPont (2017), recital 2165.

products on the same innovation spaces. A more detailed description of the Parties' activities is set out below.

3.4.1. Bayer

(2261) Bayer currently has a broad portfolio of foliar fungicides including, both chemicals and biological fungicides. Figure 458 shows Bayer's most important chemical brands.

Figure 458 – Bayer Fungicide Portfolio

[…]

Source: BI-EDISC-0532539 [internal document], ID5609-28255, slide 4.

(2262) Looking forward, Bayer has also an important discovery and development pipeline in fungicides[1429], […][1430]. […].[1431]

3.4.2. Monsanto

(2263) Monsanto does not currently sell any foliar fungicides in the EEA. However, in 2013, Monsanto created a JV for the development of fungicides with Nimbus Therapeutics (Nimbus). Nimbus is a computational drug discovery company with a platform to discover and rapidly optimize small molecule inhibitor of "undruggable" targets.[1432] […].[1433]

(2264) Based on information provided by the Parties[1434], the Commission notes that the JV is developing […], which contains a new MoA. Hence, Nimbus is based on an innovative MoA. Nimbus fungicide is effective against a broad spectrum of fungal diseases, including fusarium, septoria rhizoctonia, phytophthora, Asian soy rust and other rusts, frog-eye, leaf spot and several mildews.[1435]

(2265) Two products are currently under development: […].[1436] […].[1437]

3.5. Competitive assessment

3.5.1. Notifying Party views

(2266) The Notifying Party first submits that there will be no overlap in foliar fungicides […].[1438] It is explained that the regulatory environment in the EEA is unclear, and it is therefore not possible to estimate the possibility of registration in the EEA, and the time of such registration process. Initial trials […]. These trials would be required to be conducted first in order to allow Monsanto to identify regulatory challenges and the testing required in order to submit Nimbus for EEA registration.[1439] In later submissions[1440], the Notifying Party reiterate that […].

1429 Bayer's response to the Commission's request for information RFI 33, [Annex 33.14], ID4158-145.
1430 Bayer's response to the Commission's request for information RFI 33, [Annex 33.14], ID4158-145.
1431 Monsanto's response to the Commission's request for information RFI 33, [Annex 33.3], ID4119.
1432 MI 08265 [internal document], ID2330, slide 7.
1433 MI 05878 [internal document], ID1455-5792, slide 6.
1434 MI 08265 [internal document], ID2330, slide 10.
1435 Monsanto's response to the Commission's request for information RFI 33, [Annex 33.3], ID4119.
1436 Form CO, part 4, paragraph 145.
1437 Monsanto's response to the Commission's request for information RFI 33, [Annex 33.3], ID4119.
1438 Form CO, part 4, paragraph 147.
1439 Form CO, part 4, fn 64 at page 43.
1440 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 269-270.

(2267) In its submissions, the Notifying Party further argues that Monsanto's Nimbus fungicide for foliar application and Bayer's fungicides fluoxastrobin, fenamidone and trifloxystrobin are not substitutable products.[1441] The Nimbus fungicide has a different molecular target and works on a different mode of action. Furthermore, they state that "*it is extremely unlikely that the single Nimbus compound would be substitutable for every single functionality of the Bayer fungicides. At present, there is not a single AI in the market which covers such a broad spectrum of fungal diseases and it is unlikely that Nimbus will be the first*".[1442]

(2268) The Notifying Party also note that there are a number of players active in the development and commercialisation of fungicides which would be products likely to compete with Bayer's current fungicide portfolio. The fungicide market constantly needs to provide new MoAs due to development of resistance among fungi, as well as to enable pro-active resistance management. Consequently, they are aware of at least 12 other companies with at least 16 new active ingredients in their global development pipelines at present (Nihon Nohyaku, Dow (at least two AIs), BASF (at least two AIs), FMC/Isagro, Sumitomo (at least three AIs), Nippon Soda, Kumiai, Mitsui, DuPont, Kureha, Syngenta and Agra Kanesho).[1443]

3.5.2. Market structure

(2269) As the following figure shows, [70-80]% of the market worldwide value is driven by Bayer ([30-40]%), BASF ([20-30]%) and Syngenta ([10-20]%).

Figure 459

[…]

Source: BI-EDISC-50091 [internal document], ID5413-4091, slide 14.

(2270) Bayer is the leading player in cereal fungicides in the EEA globally and in several national markets, as confirmed by the market shares provided by the Notifying Party.[1444]

(2271) As noted in Bayer internal documents[1445], Bayer's current products are rather old […] so that Bayer's market shares on the basis of its current products are likely to decrease in the near future.

(2272) Evidence on the file confirms that, unlike the related seed treatment product, […]. More specifically, it results that Monsanto is considering launching Nimbus […].[1446]

(2273) However, the investigation revealed that Monsanto planned to launch Nimbus already in […].[1447] Yet, due to reasons related to the launch of the Nimbus seed treatment fungicide in the US, early 2017 it was decided to […].[1448]

1441 Parties Crop Protection Product Overlap Tables (submitted 24 August 2017), ID4832, page 11; Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 271-272.

1442 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 272.

1443 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 273-274.

1444 Bayer's response to the Commission's request for information RFI 69, [Annexes 69.1.1.], ID6011, and [Annex 69.1.2.], ID6012.

1445 BI-EDISC62120 [internal document], ID5413-16120; BI-EDISC-716997 [internal document], ID5918-29133.

1446 MI 09457 [internal document], ID5401, slide 14.

1447 MI 10872.0001 [internal document], ID5672-952.

1448 Monsanto's response to the Commission's request for information RFI 101, question 1, ID8648.

(2274) There are consequently no overlaps in the EEA for foliar fungicides, on the basis that Monsanto does not currently sell any of these products in the EEA. Overlaps between Bayer and Monsanto are therefore limited to overlaps in innovation.

3.5.3. The Transaction is unlikely to reduce innovation competition efforts between Bayer and Monsanto and constraints from the innovation efforts of competitors

(2275) […].

(2276) Therefore, contrary to the submission of the Parties[1449], the Commission concludes that the Transaction raises a horizontal overlap in foliar fungicides in relation to the pipeline projects described above.

(2277) However, as indicated in a previous case,[1450] the Commission understands that modes of action and chemical classes are overall seen as relevant distinguishing factors by crop protection players. […]. Therefore, Bayer's and Monsanto's pipeline fungicides are not close competitors.

(2278) The review of Bayer internal documents indicate that Bayer does not rank Nimbus as a product that is likely to a have a strong impact on its fungicides, compared to pipeline products of other competitors.[1451] In the same vein as indicated in the slide below, Bayer sees rather BASF and ChemChina-Syngenta as its closest competitors, who are not researching in completely new modes of action rather than those companies that are working on new modes of action.[1452]

Figure 460 – […]

[…]

Source: BI-EDISC-50091 [internal document], ID5413-4091, slide 27.

(2279) From the previous considerations, it follows that Bayer and Monsanto are not close competitors in innovation for foliar fungicides in cereals, fruits and grapes.

(2280) The Notifying Party argues that there are numerous companies active in the development and commercialisation of fungicides which would be products likely to compete with Bayer's current fungicide portfolio.[1453]

(2281) The Commission accordingly investigated the competitive landscape as part of its market investigation. The Commission asked companies involved in R&D crop protection for information regarding their discovery and development pipeline in chemical and biological crop protection.[1454]

(2282) Consistent with the arguments raised by the Parties, the Commission's analysis of the competitors' pipeline confirmed that there are a sufficient number of competitors innovating in the same innovation spaces as the Parties, both in terms of targeting similar research targets and also in terms of pipeline products targeting the same crop disease.

1449 Form CO, part 4, paragraph 147.

1450 Commission Decision in Case M.7932 – Dow/DuPont (2017), recital 654.

1451 BI-EDISC-0170032 [internal document], ID5608-32418

1452 BI-EDISC-50091 [internal document], ID5413-4091, slide 27.

1453 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 240.

1454 Competitors' responses to the Commission's request for information to competitors on Crop Protection Pipeline RFI Q15.

(2283) Based on the results of the market investigation, the Commission considers that, on the innovation space for foliar fungicides in cereals, fruits and grapes, competitors are likely to represent a strong competitive constraint on the Parties.

3.6. Conclusion on innovation competition in foliar fungicides

(2284) Therefore, on balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition with respect to innovation competition in foliar fungicides in cereals, fruits and grapes.

4. FOLIAR INSECTICIDES

4.1. Introduction

(2285) Insecticides are products designed to control insects that damage cultivated crops, particularly food crops. As fungicides, also insecticides can be applied in a number of different ways, including foliar, soil and seed treatment application.

(2286) There are a multitude of different insects that affect crops in the EEA, including both so-called chewing insects (eg coleoptera and lepidoptera) and sucking insects. There are broad-spectrum insecticides available, but typically because of the specific active ingredient and mode of action, each insecticide works most successfully against a particular insect or group of insects.[1455]

(2287) Speciality crops fruits and nuts and vegetables, oilseed rape, cereals and corn are the main crops for insecticides in the EEA.

(2288) Globally, insecticide sales amount to about USD 14 billion worldwide, of which about USD 1.2 billion sales are in the EEA.[1456] The Member State with the highest insecticide sales in the EEA is Italy (USD 257 million), followed by Spain (USD 206 million), France (USD 176 million), Germany (USD 104 million) and Greece (USD 85 million). Together, these five countries account for around 70% of sales of insecticides in the EEA.[1457]

4.2. Market definition

4.2.1. Product market definition

4.2.1.1. Commission precedents

(2289) In previous decisions[1458], the Commission found that the relevant product markets for insecticides products can be defined on the basis of crop/pest combinations, where each such combination constitutes a separate relevant product market. Moreover the Commission found that, for insecticides, distinctions can be made based on the method of application. On this basis, the Commission found that the relevant product markets for insecticides can be segmented by crop, soil or foliar application and pest.

1455 Form CO, part 4, paragraph 97.

1456 Agrowin.

1457 Agrowin.

1458 Commission Decisions in Case M.7932 – Dow/DuPont (2017) and in Case M.7962 – ChemChina/Syngenta (2017).

4.2.1.2. Notifying Party views

(2290) Concerning insecticides, the Notifying Party proposes to analyse insecticides segmented by crop, by method of application and by pest group.[1459]

(2291) The Notifying Party submits that, along the same lines as the sucking/chewing differentiation, the product market should be further segmented according to the types of pests targeted. From a demand-side perspective, farmers would choose an insecticide based on its ability to target and control a particular key pest on the particular crop which would be affected. The insecticide chosen will be the one the farmer views as most effective against the particular insect or insect group.[1460]

(2292) The Notifying Party also submits that biological and chemical crop protection products would not be part of the same product markets. The Notifying Party argues that biocontrol products would allegedly not compete with chemical crop protection products, but rather complement them. This would be because biocontrol products have strong limitations in terms of effectiveness, flexibility of application and handling, and a shorter shelf life.[1461]

(2293) On the other hand, the Notifying Party notes that the same product markets identified by the Commission for conventional chemical crop protection markets are applicable to the biological crop protection business, with the addition of separate product markets for biofertilisers and biostimulants.[1462]

4.2.1.3. Commission assessment

(2294) The market investigation in this case and the Commission's most recent precedents confirm – in the absence of new arguments and evidence to the contrary brought by the Notifying Party – that insecticides should be segmented by crop/pest.

(2295) The investigation indicated that the crop protection markets should not be segmented, as proposed by the Notifying Party, between biological and chemical crop protection products. A majority of respondents in the market investigation indicated that biological products compete with chemical products when they target the same need, at least to a limited extent or in the future.[1463]

4.2.1.4. Conclusion

(2296) In line with its precedents, the Commission will carry out its competitive assessment of insecticides by crop/pest.

(2297) As to the segmentation between biologicals and chemicals, the Commission considers that, for the purpose of this decision, it can be left open whether insecticides should be further divided along the lines proposed by the Notifying Party since the Transaction does not give rise to concerns about its compatibility with the internal market under any plausible market definition.

1459 Form CO, part 4, paragraph 98.

1460 Form CO, part 4, paragraph 96.

1461 Form CO, part 4, paragraphs 13 and 17.

1462 Form CO, part 4, paragraph 91.

1463 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), question 86; Questionnaire to Distributors and Institutes (Q2), question 79; Questionnaire Questionnaire to growers (Q3), question 33; Questionnaire to crop protection competitors (Q4), question 29; Questionnaire to Row Crop Competitors (Q5), question 103.

4.2.2. Geographic market definition

(2298) As explained in Section XI.1.2.2., the Commission considers that crop protection product markets are national in geographic scope.

4.3. Definition of innovation spaces

(2299) The Commission's framework of analysis to assess the likely impact of the Transaction on innovation competition – which is applied in the present Decision taking into account the specific facts of the case and characteristics of the relevant markets – is described in Section V.3.

4.3.1. Commission precedents and Notifying Party views

(2300) The Commission precedents regarding innovation spaces in crop protection markets have been discussed at Section XI.1.4.1.1. In its precedent, the Commission considers that in insecticides the pest seems to be the leading target for innovation.[1464]

(2301) The Notifying Party has not expressed any specific view on the issue of innovation spaces in insecticides.

4.3.2. Commission assessment of the definition of innovation spaces in insecticides

(2302) On the basis of its precedent and the investigation, the Commission considers that the relevant innovation space for its assessment is insecticides on a pest basis.

(2303) The geographic definition of innovation spaces can be left open since no competition concerns arise under any plausible definition.

4.3.3. Conclusion

(2304) For the purposes of this case, the Commission considers that the relevant innovation space for its assessment is insecticides on a pest basis.

(2305) The geographic definition of innovation spaces can be left open since no competition concerns arise under any plausible definition.

4.4. Activities of the Parties in the EEA

(2306) As regards the Parties' activities, while Bayer is an important player in insecticides with a broad portfolio, Monsanto is not active at present on the market. However, Monsanto has a […]. A more detailed description of the Parties' activities is set out below.

4.4.1. Bayer

(2307) Bayer currently commercializes a portfolio of insecticides targeting coleoptera in OSR including four products Proteus 110D, Decis-Mega 050, Calypso 480SC and Decis 025EC based on three AIs (thiacloprid, deltamethrin, imidacloprid).[1465]

(2308) As regard its pipeline[1466], Bayer has […].

1464 Commission Decision in Case M.7932 – Dow/DuPont (2017), recital 2165.

1465 Parties' Crop Protection Product Overlap Tables (submitted 24 August 2017), ID4832.

1466 Bayer's response to the Commission's request for information RFI 33, [Annex 33.14], ID4158-145.

4.4.2. Monsanto

(2309) As already mentioned, Monsanto does not currently sell any insecticides in the EEA. However, as part of its BioDirect platform, Monsanto […].

(2310) The BioDirect platform was created by Monsanto with the aim of developing the application of the RNAi technology, ie gene silencing mechanism, in crop protection. The RNAi is a technology that has been widely applied in human health, but has so far only limited application in crop protection, and was never used in the insecticide sector.[1467]

(2311) Monsanto has no plans to launch […][1468], […].[1469]

4.5. Competitive assessment in insecticides innovation: non-coordinated effects on innovation competition

4.5.1. Notifying Party views

(2312) The Notifying Party claims that that there are no overlaps with regard to Monsanto's pipeline RNAi-based product […] and any current or pipeline products from Bayer. The Notifying Party argues that the Biodirect pipeline insecticide is uncertain to ever reach the EEA market and even if successfully launched will not overlap with Bayer current insecticides as it would be launched not before […].[1470]

(2313) Further, Monsanto's BioDirect […] product and Bayer's thiacloprid and deltamethrin are not substitutable products. BioDirect […] is effective only against the […] (and no other pest), while thiacloprid and deltamethrin are active against a number of other relevant pests (for example, aphids). The application windows for BioDirect […] on the one hand and Bayer's thiacloprid and deltamethrin on the other are different: […].

(2314) Further, neither Party would have a reduced incentive to innovate as a result of the Transaction, because the R&D activities of the Parties focus on different innovation spaces. Bayer is focused on traditional chemical insecticide R&D and biological insecticide R&D (based on microbes and fungi) whereas Monsanto's R&D efforts in insecticides are focused on RNAi technology.[1471]

(2315) Finally, the Notifying Party notes that other competitors, and particularly ChemChina-Syngenta and Dow DuPont, would remain a significant competitive constraint in insecticides.[1472]

4.5.2. Market structure

(2316) Bayer is, along with DowDuPont and ChemChina-Syngenta, one of the main players in the insecticides markets and has historically, also been a strong innovator in insecticides, with a focus on sucking insecticides.

(2317) As regards Bayer's current position on the market, Bayer appears to be a leading player in foliar insecticides targeting coleoptera in OSR in several national EEA markets, namely Austria, Bulgaria Finland, Hungary, Italy, Latvia, Lithuania,

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1467 MI 307814 [internal document], ID7710-1168, slide 7.

1468 Form CO, part 4, paragraph 129.

1469 Parties' Crop Protection Product Overlap Tables (submitted 24 August 2017), ID4832.

1470 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 281 and 279.

1471 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 288.

1472 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 285 and 289.

Norway, Poland, Romania, and Slovenia. However, as submitted by the Parties, while Bayer products are old products facing strong regulatory pressure, and even believed by several market players to be ban in the future, Monsanto does not currently sell any insecticides in the EEA […].[1473]

(2318) There are consequently no overlaps in the EEA on the product market for insecticides, on the basis that Monsanto does not currently sell any of these products in the EEA. Overlaps between Bayer and Monsanto are therefore limited to overlaps in innovation.

4.5.3. The Transaction is unlikely to reduce innovation competition efforts between Bayer and Monsanto and constraints from the innovation efforts of competitors

(2319) As explained above Bayer […], according to the information provided by the Notifying Party and the review of internal documents, […]. In its pipeline, Bayer has however a pipeline insecticide targeting […].[1474]

(2320) Even assuming, that the relevant innovation space would include all chewing pests the Commission observes that Bayer and Monsanto pipeline products are based on different modes of action. More generally, information provided by the Parties in their submissions as well as internal documents indicate that Monsanto R&D efforts on insecticides are focused and limited to […]. On the contrary, Bayer current and pipeline portfolio include chemical and biological insecticides. As indicated above at recital (2277), the Commission understands that modes of action and chemical classes are overall seen as relevant distinguishing factors by crop protection players. Therefore, these are not close competitors and there is a limited risk of discontinuation.

(2321) Finally, the Notifying Party argues that there are numerous companies that are in the process of developing insecticides which would be products likely to compete with Bayer's and Monsanto's insecticides portfolio.

(2322) The Commission accordingly investigated the competitive landscape as part of its market investigation. The Commission asked companies involved in R&D crop protection for information regarding their discovery and development pipeline in chemical and biological crop protection.[1475]

(2323) Consistent with the arguments raised by the Parties, the Commission's analysis of the competitors' pipeline confirmed that there are a relevant number of competitors innovating in the same innovation spaces as the Parties, both in terms of targeting similar research targets and also in terms of pipeline products targeting the same crop pests.

(2324) Based on the results of the market investigation, the Commission considers that, on the innovation space for foliar insecticides targeting coleoptera and/or lepidoptera, competitors are likely to represent a strong competitive constraint on the Parties.

1473 Bayer's response to the Commission's request for information RFI 33, [Annex 33.14], ID4158-145.

1474 Bayer's response to the Commission's request for information RFI 33, [Annex 33.14], ID4158-145.

1475 Competitors' responses to the Commission's request for information to competitors on Crop Protection Pipeline, RFI Q15.

4.6. Conclusion on innovation competition in foliar insecticides

(2325) Therefore, on balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition with respect to innovation on insecticides targeting coleopteran and /or lepidoptera.

5. MICROBIAL CROP EFFICIENCY PRODUCTS

5.1. Introduction

(2326) Microbials are comprised of microorganisms, typically a bacterium, virus or fungus.[1476] They can be used to protect crops from pests or diseases (in the form of biocontrol products, also known as biopesticides), and/or to enhance plant productivity and fertility (in the form of biostimulants or biofertilisers). Since these products are formulated using naturally occurring substances such as bacteria, they are known as "biological" crop protection products.

(2327) Biostimulants and biofertilisers can be distinguished from biopesticides, because they are designed to improve crop health, yield and tolerance to stress conditions and unlike biopesticides, do not have any direct actions against pest or disease.[1477] They are also referred to as "crop efficiency" products.

(2328) In terms of their properties, biostimulants stimulate existing biological and chemical processes in the plant to enhance plant growth and health, for example by increasing nutrient uptake, whereas biofertilisers contain high levels of plant nutrients which can be easily absorbed by plants to cause an increase in plant growth.[1478] They have different types of application, such as application in the soil, or as a seed treatment.[1479]

(2329) The value of the entire biologicals market globally was estimated by Bayer to be EUR […] in 2015.[1480] This is a growing market and both Monsanto and Bayer have invested in this area. Bayer predicts that the microbial market (including biofertilisers, biostimulants and biopesticides) would grow from an estimated EUR […] in 2015 to EUR […] by 2025.[1481] Figure 461 below shows the different types of biological products available and the estimated market size of each type of product.

Figure 461 – [Marketing strategy]

[…]

Source: BI-EDISC-1133596 [internal document], ID7496-39189, slides 17.

(2330) On a global basis, when considering microbials, the Parties' activities overlap in the area of crop-efficiency products (i.e. biostimulants and biofertilisers), rather than biopesticides. The Commission therefore focusses its analysis on microbial crop efficiency products, rather than the broader area of microbials.

1476 Form CO, part 4, paragraph 35.
1477 Form CO, part 4, paragraph 2.
1478 Form CO, part 4, paragraph 2.
1479 Form CO, part 4, paragraph 45.
1480 BI-EDISC-1133596 [internal document] 14 June 2016, ID7496-39189, slide 17
1481 BI-EDISC-1133596 [internal document] 14 June 2016, ID7496-39189, slide 17.

5.2. Market definition

5.2.1. Product market definition

5.2.1.1. Notifying Party's views

(2331) The Notifying Party submits that the same product markets identified by the Commission for chemical crop protection products are applicable to biological crop protection products but that there should be a separate product market for biofertilisers and biostimulants.[1482]

5.2.1.2. Commission assessment

(2332) The Commission notes that, from a demand-side perspective, microbial crop efficiency products have different properties than crop protection products. Crop efficiency products are designed to improve crop health and enhance plant productivity and fertility and unlike crop protection products such as biopesticides or chemical crop protection products, their principal aim is not to target pest or disease. It is also clear from the Parties' internal documents that crop efficiency products are considered separately to the pesticide portfolio. For example an internal Bayer strategy document analyses its seed treatment portfolio in the following distinct groups: […].[1483] The Commission therefore agrees with the Notifying Party that microbial crop efficiency products such as biofertilisers and biostimulants appear to be in a separate product market to crop protection products.

(2333) However, the Commission considers that, for the purpose of this decision, the product market definition for microbial crop efficiency products can be left open since the Transaction does not give rise to concerns about its compatibility with the internal market under any plausible market definition. For the same reasons, the Commission has not found it necessary to conclude whether microbial crop efficiency products could be further segmented into biostimulants and biofertilisers.

5.2.1.3. Conclusion

(2334) The Commission considers that the relevant product market definition for microbial crop efficiency products can be left open since the Transaction does not give rise to concerns about its compatibility with the internal market under any plausible market definition.

5.2.2. Geographic market definition

5.2.2.1. Commission assessment

(2335) In the absence of any affected markets in biostimulants and biofertilisers, the Notifying Party did not advance any arguments regarding the geographic market definition for these products. For similar reasons as the ones explained in Section XI.1.2.2, namely the EEA regulatory framework, the Commission considers that microbial crop efficiency markets are likely to be national in geographic scope.[1484]

1482 Form CO, part 4, paragraph 91.

1483 BI 08500 [internal document], ID5432-12, slide 6.

1484 Commission Decision in Case M.7962 – ChemChina/Syngenta (2017), recital 174.

5.2.2.2. Conclusion

(2336) The Commission considers that the relevant geographic market definition for microbial crop efficiency products can be left open since the Transaction does not give rise to concerns about its compatibility with the internal market under any plausible market definition.

5.2.3. Conclusion

(2337) For the purposes of this case, the Commission considers that the relevant market definition for microbial crop efficiency products can be left open since the Transaction does not give rise to concerns about its compatibility with the internal market under any plausible market definition.

5.3. Definition of innovation spaces

(2338) The Commission's framework of analysis to assess the likely impact of the Transaction on innovation competition – which is applied in the present Decision taking into account the specific facts of the case and characteristics of the relevant markets – is described in Section V.3.

5.3.1. Commission precedents and Notifying Party views

(2339) The Commission precedents regarding innovation spaces in crop protection markets have been discussed at Section XI.1.4.1.1.

(2340) The Notifying Party has not expressed any specific view on the issue of innovation spaces in microbial crop efficiency products.

5.3.2. Commission assessment of the definition of innovation spaces in microbial crop efficiency products

(2341) In defining innovation spaces for crop efficiency products, the Commission notes that the Parties' R&D targets include, […] (for Bayer)[1485] and […] (for Monsanto).[1486] Both Parties' innovation efforts are therefore geared towards crop efficiency products (based on microbial solutions).

(2342) The Commission further takes the view that innovation spaces for microbial crop efficiency products are global, because innovation efforts are rolled-out in all possible geographies across the globe.

5.3.3. Conclusion

(2343) For the purposes of this case, the Commission considers that the relevant innovation space for its assessment is innovation in microbial crop efficiency products.

5.4. Activities of the Parties in the EEA

(2344) As regards the Parties' activities, both Parties have pipeline crop efficiency products. Monsanto is the leading microbial player globally […]. In those areas where Bayer's products potentially overlap with those of Monsanto, Bayer is currently […].[1487] A more detailed description of the Parties' activities is set out below.

1485 BI 08890 [internal document], ID6613-81, submitted in response to the Commission's request for information RFI 71, question 9.

1486 Parties' response to the Commission's request for information RFI 78, question 9, ID6796, and documents submitted in response to that question including MI 09462 [internal document], ID6809.

1487 See Table 168.

5.4.1. Bayer

(2345) Currently, the only biological crop protection products sold by Bayer in the EEA are biopesticides. The vast majority of these biological products sold by Bayer are fungicides ([…]% of Bayer's sales in the EEA).[1488] Bayer does not sell any crop efficiency products in the EEA at the moment, but has a number in the pipeline. […].[1489]

Table 168 – Bayer's pipeline crop efficiency products

[…]

Source: Parties' response to Commission's request for information 78, Annex 78.4 and Crop Protection Product Overlap Tables (submitted 24 August 2017), ID4832.

5.4.2. Monsanto

(2346) Monsanto is the leading microbial/crop efficiency player globally, and this position has been established in a relatively short period of time (around four years) as a consequence of its BioAg Alliance. This alliance was formed in 2014 between Monsanto and the Danish biotechnology company Novozymes. The terms of the BioAg Alliance are set out in the Global Alliance Agreement between Monsanto and Novozymes dated 10 February 2014 (the "BioAg Agreement").[1490] The focus of the BioAg Alliance is the development and commercialisation of new microbial solutions for use in agriculture to help maximise crop yields. Monsanto's biological business, through the BioAg Alliance, focusses on inoculants and other biofertiliser technologies applied primarily by way of seed dressing, primarily on row/broad acre crops. Monsanto's focus is on yield enhancement for corn and soy crops in North and South America.[1491]

(2347) Within the BioAg Alliance each party has different responsibilities. [Details of collaboration]. The alliance is governed by an Alliance Board, responsible for establishing the Alliance's long-term strategic objectives. A joint leadership team, with members appointed by both Monsanto and Novozymes, has general oversight responsibilities and establishes the Alliance's daily cross-functional activities. Joint sub-teams oversee the Alliance activities according to Alliance plans.[1492]

1488 Form CO, part 4, paragraph 47.

1489 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 227–229.

1490 Monsanto's response to the Commission's request for information RFI 71, ID6605, question 1.

1491 Form CO, part 4, paragraphs 74–79.

1492 Form CO, part 4, paragraphs 74–79.

(2348) Most of Monsanto's current and pipeline biological products are developed in the context of the BioAg Alliance.[1493] Monsanto has launched biofertilisers for several crops including soy, corn and wheat, with sales amounting to USD […] in 2016 in the EEA.[1494] Further, it has numerous products in the pipeline, […]. Those products which target the same crops as the Bayer crop efficiency products (i.e. targeting row crops such as corn and soy) are set out below.

Table 169 – Monsanto's current and pipeline crop efficiency products

[…]

Source: Form CO, part 3, tables 3.110-3.112; Monsanto's response to the Commission's request for information 78 and Crop Protection Product Overlap Tables (submitted 24 August 2017), ID4832.

5.5. Competitive assessment in microbial crop efficiency products: non-coordinated effects

5.5.1. Product and price competition

5.5.1.1. Notifying Party arguments

(2349) The Notifying Party submits that the Transaction will not raise any concerns in biostimulants or biofertilisers in the EEA, because there will be no potential overlap between the Parties' respective activities in biostimulants or biofertilisers in the EEA.[1495] While the Form CO had indicated that two Bayer pipeline biostimulant products ([…] and […]) could be launched in the EEA in […], the Notifying Party noted, in the response to the Article 6(1)(c) Decision, that the Form CO had also indicated that this outcome was not certain, because it was too early in the R&D process.[1496]

(2350) In the Response to the Article 6(1)(c) Decision, the Notifying Party therefore argued that the EEA launch date indicated in the Form CO was merely an estimate of the earliest date by which the two Bayer molecules could achieve commercial launch and were not an estimate of actual EEA launch.[1497]

5.5.1.2. Market structure

(2351) As regards the size of these markets in the EEA, the Parties argue that it is very difficult to estimate these, on the basis that neither party routinely collects data on these segments, due to the fact that Bayer is not currently active in the EEA and Monsanto only sells a handful of products.[1498]

(2352) There are consequently no affected markets in the EEA for biostimulants and biofertilisers, on the basis that Bayer does not currently sell any of these products in the EEA. Overlaps between Bayer and Monsanto are therefore limited to pipeline overlaps in microbial crop efficiency products.

1493 Monsanto's response to the Commission's request for information RFI 78, ID6793, question 1.
1494 Form CO, part 3, Tables 3.107 and 3.108.
1495 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 227 – 231.
1496 Form CO, part 4, paragraph 480.
1497 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 228.
1498 Parties' response to the Commission's request for information RFI 93, ID7916, paragraph 13.

5.5.1.3. Assessment of closeness of competition between Bayer and Monsanto and competitive constraints imposed by competitors

(2353) There is no current overlap between the Parties in biostimulant or biofertilisers (whether soil or seed treatment) in the EEA, on the basis that Bayer does not sell any products in the EEA at the moment. Further, the Notifying Party argues that there will be no potential overlap in the EEA, since Bayer is not developing its biostimulants pipeline products for launch in the EEA and there are no plans to launch in the future.[1499]

(2354) The information on the Commission's file confirms the Notifying Party arguments that Bayer's biostimulant pipeline products are being developed for countries other than Europe (e.g. US, Americas) and [launch strategy]. There is also no pipeline overlap between the Parties in biofertilisers because Bayer does not currently have any biofertiliser seed treatment products in its pipeline. Monsanto meanwhile does have a number of biostimulant products [launch strategy]. Consequently, the Commission finds that [launch strategy] and will not therefore grow into an effective competitive force in the EEA.

(2355) The Commission finds that there are a number of other companies who are also currently active in the EEA selling microbial crop efficiency products and/or which have forthcoming pipeline products that will be launched in the EEA.[1500] The Commission therefore finds that there are a sufficient number of competitors and potential competitors which could constrain the merged entity. Competitors' innovation capabilities will be analysed further in Section XI.5.5.2.3.

5.5.2. Innovation competition

5.5.2.1. Notifying Party arguments

(2356) The Notifying Party submits that neither Bayer, nor Monsanto, can be considered a leading innovator in biostimulant seed treatments in the EEA. The Notifying Party considers that there are multiple third parties that are active in biostimulant seed treatment R&D, including DowDuPont, BASF, ChemChina-Syngenta, Sumitomo and numerous players making "significant investment" in R&D in this area.[1501]

5.5.2.2. Market structure

(2357) Bayer has several biostimulant seed treatment pipeline projects targeting [crops] (see above Table 168). Monsanto also has numerous current and pipeline biostimulant seed treatment products targeting, amongst other crops, corn, soy, OSR and wheat (see above Table 169).

5.5.2.3. The Transaction is unlikely to reduce innovation competition efforts between Bayer and Monsanto and constraints from the innovation efforts of competitors

(2358) On the basis that both Parties have a number of pipeline microbial crop efficiency products and are innovating in this area, the Commission has investigated whether the Transaction may give rise to concerns in innovation competition for microbial

1499 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 227-231, and Parties' response to the Commission's request for information RFI 78, [Annex 78.4.], ID6801, and Parties' Crop Protection Product Overlap Tables (submitted 24 August 2017), ID4832.

1500 Competitor's response to the Commission's request for information to competitors on Crop Protection Pipeline Q15.

1501 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 232 – 236.

crop efficiency products. In particular, a competitor notes that the Parties have strong capabilities in biological crop protection and biostimulants through various investments over the years including, for example, the BioAg Alliance for Monsanto and for Bayer Gingko Biowaorks and Biagro.[1502]

(2359) As part of the Commission's investigation, the Commission asked both the Parties, and the Parties' main competitors in biologicals (including microbial crop efficiency products)[1503], a series of detailed questions regarding their respective capabilities, and actual and pipeline products.[1504] The Commission also extensively reviewed internal documents of the Parties.[1505]

(2360) As a result of this investigation, the Commission has not found evidence on the file to suggest that Bayer intends to redirect, reorient or delay any of its microbial crop efficiency pipeline as a result of the Transaction.

(2361) In addition, as regards the Parties' respective capabilities in microbial crop efficiency products, a Bayer internal document suggests that while all of "Big-Ag" (references made to BASF, Bayer, DuPont, Monsanto and ChemChina-Syngenta) is investing, it suggests that […].[1506]

(2362) However, Bayer also considers, in the same internal document, that […].[1507] Bayer also considered that […].[1508]

(2363) As regards Monsanto, while Monsanto considers itself to be an important microbials player, as a consequence of the BioAg Alliance it also identifies a number of competitors in its internal documents. In particular, while one internal document highlights Bayer as having broad capabilities, Monsanto also identifies […].[1509] […].[1510] […].[1511]

(2364) The Commission has also assessed competitor innovation capabilities in biologicals, together with their ability to commercialise products. This involved an assessment of data such as numbers of scientists working on projects, capabilities to conduct trials (including field testing sites and numbers of trials conducted) and formulation capabilities.[1512] On the basis of this data, the Commission found that there are at least five other competitors with significant R&D capabilities in biologicals. There are also a number of smaller players who still have the ability to develop and commercialise products. In particular, the Commission found that smaller competitors had the ability to outsource one or more functions to third party contractors, which ensured that they were able to commercialise products, despite having fewer resources than certain larger players.

1502 DowDuPont comments on the Statement of Objections of 2 February 2018, ID10488, paragraphs 3 – 5.

1503 The Commission sent requests for information to all companies identified by Bayer as its "competitors" in the Biologicals space in a key strategy document on Biologicals: BI-EDISC-1133596 [internal document] 14 June 2016, ID7496-39189, slides 51 – 54.

1504 Commission's request for information RFI 78 (biologicals) and Commission's request for information to biological competitors RFI Q21.

1505 Commission's requests for information RFI 44, RFI 54, RFI 80, RFI 89.

1506 BI-EDISC-1133596, [internal document] 14 June 2016, ID7496-39189, slides 51.

1507 BI-EDISC-1133596, [internal document] 14 June 2016, ID7496-39189, slide 52.

1508 BI-EDISC-1133596, [internal document] 14 June 2016, ID7496-39189, slide 53.

1509 MI 17352.00001 [internal document], ID5441, slide 11.

1510 MI 17352.00001 [internal document], ID5441, slide 11.

1511 MI 17352.00001 [internal document], ID5441, slide 12.

1512 Competitors' responses to Commission's request for information to biological competitors RFI Q21.

(2365) In addition, the Commission notes that Monsanto's strength in microbial crop efficiency products is attributable to its participation in the BioAg Alliance with a third party, Novozymes. In particular, the aim of the alliance was to combine Novozymes' established position in microbials (through its microbials [details of collaboration].[1513]

(2366) The terms of the BioAg Alliance are set out in the BioAg Alliance, [details of collaboration].[1514] [Details of collaboration].

(2367) The Commission does not reach any conclusions regarding the likelihood of either of these two outcomes of the proposed Transaction on the BioAg Alliance. However, the Commission notes that one of these two outcomes would be that Novozymes is freed from the BioAg Alliance and may consequently be free to launch as either an independent competitor, or to partner with another third party.

(2368) In summary therefore, and contrary to arguments raised by competitors,[1515] the Commission finds that although the proposed Transaction will combine two important players in biologicals, there will continue to be numerous other players with important innovation capabilities and with the ability to bring new products to the market.

5.6. Conclusion on product and price competition and innovation competition in microbial crop efficiency products

(2369) Therefore, on balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition in relation to microbial crop efficiency seed treatment, both in terms of product and price competition and innovation competition.

6. BEE HEALTH

6.1. Introduction

(2370) Bee health is strictly speaking a branch of the animal health business; yet, it is also closely related to the crop protection sector. The economic implications of apiculture are far reaching in spite of it being a relatively small business,[1516] and go beyond honey production. Honeybees are important pollinators and therefore play a crucial role in agriculture. It is estimated that pollinators, including honeybees, bumblebees and wild bees, contribute at least EUR 22 billion each year to European agriculture.[1517]

(2371) Since the 1990s, European beekeepers have repeatedly reported unusually high bee colony losses during the winter periods. Over the period 2002 to 2010, it was estimated that colony losses were between 5% and 35%, peaking during the 2002/03 winter. In 2010, the Commission published a communication on Honeybee

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1513 Monsanto's response to the Commission's request for information RFI 71, ID6605, question 1.

1514 Monsanto's response to the Commission's request for information RFI 71, ID6605, question 2, with reference to Clause 38.3 of the BioAg Agreement.

1515 DowDuPont comments on the Statement of Objections of 2 February 2018, ID10488, paragraph 7, and response of DowDuPont to Questionnaire Market Test, ID11332.

1516 https://ec.europa.eu/food/animals/live_animals/bees/health_en.

1517 https://ec.europa.eu/food/animals/live_animals/bees_en. See also BI-EDISC-0162515, "Bee health: what can farmers and the crop protection industry do to help?", ID5608-24901.

Health[1518] in order to clarify the key issues related to bee health and identify appropriate actions to address them. Since then, EU beehives appear to have been increasing steadily to an estimated […] in 2016.[1519]

(2372) So far, no single cause has been identified for the declining bee numbers. Several possible contributing factors have been suggested, acting in combination or separately. These include the effects of intensive agriculture and pesticide use, starvation and poor bee nutrition, viruses, attacks by pathogens and invasive species.[1520]

(2373) Crop protection players are not merely concerned about the effects of their products – especially insecticides and genetically modified organisms – on bees, but are also directly involved in the development of products aiming at improving bee health. Furthermore, their efforts and interest appear to have intensified in reaction to public and regulatory attention on the abnormal annual colony losses and the occasional decline in bee colonies remarked upon ten years ago.

(2374) Bee health products for use in the EEA at present are marketed towards four basic pathologies: varroosis, a parasitic disease spread by varroa mites (*Varroa destructor*); wax moths; bee lice (*Braula coeca nitzsch*); and fungal infections (such as nosemosis, a disease spread by the *Nosema apisa* parasite, and ascosferosis, a disease spread by the *Ascosphaera apis* parasite).[1521] As reported by the Notifying Party, of the […] bee health products authorised for use in EEA Member States, […] are exclusively or primarily marketed for the control of varroa mites or treatment of varroosis,[1522] considered as the most serious disease.

(2375) Varroa mite is an external parasite that attacks both honeybees and honeybee larvae, harming them in various ways. It weakens the bee's immune system, causing disease progression to be more acute. It transmits viruses that spread quickly within and between different bee colonies. It transmits viruses directly into the bee's hemolyph and previously harmless viruses can thus become lethal.[1523] Varroa mites have a two-stage lifecycle, consisting of a phoretic stage and a reproductive stage. Mites in the phoretic stage cling to adult bees and feed on their blood. Mites in the reproductive stage infiltrate brood cells in the hive and lay eggs alongside where bee larvae are developing.[1524]

(2376) Varroa mites are specific to honeybees because the mites can only reproduce in a honeybee colony and they have a pronounced economic impact on the beekeeping industry, while available treatments have a number of limitations and are rather expensive. During the investigation, an apiculture association noted that "*[i]t is difficult to estimate the impact of varroa control measures on the final honey price. The target in the sector is in principle that veterinary treatments should not exceed 5% of production costs. However, this amount is normally significantly exceeded in the fight against varroa, because it is essential to treat varroa - with*

1518 https://ec.europa.eu/food/sites/food/files/animals/docs/la_bees_health_honeybee_health_communication_en.pdf.

1519 MI 40744 [internal document], ID5441-26949, slide 20.

1520 http://www.efsa.europa.eu/en/topics/topic/bee-health.

1521 Parties' white paper on Bee Health, ID4711, paragraph 2.

1522 BI-EDISC-0162515 [internal document], 26/2/2015, ID5608-024901, slide 7; S. Parties' white paper on Bee Health, ID4711, paragraphs 3-6.

1523 BI-EDISC-0162415 [internal document], ID5608-24801, slide 12.

1524 Parties' white paper on Bee Health, ID4711, paragraph 28.

expensive and / or time-consuming products – in connection with honey production. It is estimated that varroa is one of the causes of colony mortality (which would amount to a mortality rate of at least 30% in the absence of treatment)".[1525]

(2377) Similar to pest control products, bee health products also have properties that can endanger human or animal health or the environment. Therefore, in the EEA, all new active ingredients shall abide with the procedure laid down in regulation (EU) 470/2009[1526] for the establishment of residue limits of pharmacologically active substances in foodstuffs of animal origin. In addition, as other veterinary products, new bee health products are subject to the additional requirements and procedures established by directive 2001/82/EC[1527] and regulation (EC) 726/2004[1528] on the centralized authorisation procedure through the European Medicines Agency. A decentralized procedure was introduced by directive 2004/27/EC[1529]. As the mutual recognition procedure, it is based on recognition by national authorities of a first assessment performed by another Member State. The majority of bee health products in the EEA have been authorised through this decentralized procedure.

(2378) At present, authorised products for the control of varroa mites include a number of synthetic chemicals and organic acids as well as a number of products available based on natural active ingredients. Authorised synthetic varroacides are based on three modes of action, namely amidine (amitraz), organophosphate (coumaphos), pyrethroids (tau-fluvalinate and flumethrin). Organic acids are based on two active ingredients (formic acid and oxalic acid). The most common natural active ingredients are: camphor, eucalyptus, menthol and thymol. All these biological and chemical products are normally used in rotation. Organic apiculture is still a marginal phenomenon in the EEA, while the exclusive and intensive use of chemicals is avoided due to the risk of the development of resistance to the active ingredients as only few alternatives are available.[1530]

6.2. Market definition

6.2.1. Product market definition

6.2.1.1. Commission precedents

(2379) The Commission has not assessed the bee health sector in previous decisions and has thus not yet defined the relevant product market.

(2380) In previous cases, the Commission divided animal health products into three core areas, namely (i) biologicals (vaccines), (ii) pharmaceuticals and (iii) medicinal feed

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1525 Agreed non-confidential minutes of a call with an apiculture association, 20 July 2017, (ID9291). Courtesy translation of French version: "*[i]l est difficile de faire une estimation de l'impact sur le prix final du miel de la lutte contre le varroa. La cible dans le secteur est en principe de ne pas dépasser 5% des coûts de production pour les traitements vétérinaires, mais cette valeur est largement dépassée en réalité dans la lutte contre le varroa car il est indispensable de traiter – avec des méthodes coûteuses et/ou chronophages – le varroa pour produire du miel. Il est estimé que le varroa est l'un des responsables de la mortalité des colonies (qui s'élèverait à environ 30% minimum en absence de traitement).*"

1526 OJ L 152, 16.6.2009, p. 275.

1527 OJ L 311, 8.11.2001, p. 1.

1528 OJ L 136, 30.4.2004, p. 1.

1529 OJ L 136, 30.4.2004, p. 34.

1530 BI-EDISC-0162415 [internal document], ID5608-24801, slide 25.

additives[1531] and, in turn, segmented pharmaceuticals for animal usage into (a) parasiticides, (b) antimicrobials, (c) endocrine treatments, (d) anti-inflammation and (e) analgesic pharmaceuticals.[1532] From past decisions, it follows that the most relevant factors to be taken into account when defining the relevant product markets in the area of animal health pharmaceuticals are animal species, active ingredient, target pathology, mode of administration, duration of efficacy and duration of the withdrawal period.[1533]

6.2.1.2. Notifying Party's views

(2381) The Notifying Party notes that bee health products are a small segment of the animal health sector rather than of the crop protection sector. It submits that there is a separate, defined product market for products which target and control varroa mite infestations of bee colonies.[1534]

6.2.1.3. Commission assessment

(2382) Following the investigation and in line with previous decisions in the animal health sector, the Commission considers that there is a separate, defined product market for products which target and control varroa mite infestations of bee colonies.

(2383) Furthermore, the Commission investigated whether a narrower segmentation between biological and chemical products would be appropriate. The replies of market participants[1535] as well as several internal documents[1536] support the conclusion that biological and chemical products compete and are part of the same market. A further segmentation on the basis of the active ingredient/ mode of action or of administration does not appear justified either.

6.2.1.4. Conclusion

(2384) In light of previous cases, the views of the Notifying Party and the results of the market investigation, the Commission considers that the relevant product market includes bee health products targeting varroa mites.

6.2.2. Geographic market definition

6.2.2.1. Commission precedents

(2385) In the past, the Commission consistently considered that the relevant geographic market in the animal health sector is national in scope.[1537]

6.2.2.2. Notifying Party views

(2386) As with crop protection products, the Notifying Party notes that bee health products targeting varroa mites are subject to national registration requirements, but also that

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1531 Commission Decisions in Case M.4691 – Schering Plough/Organon Biosciences (2007), paragraph 22, and M.1681 – Akzo Nobel/Hoechst Roussel Vet (1999), recital 13.

1532 Commission Decisions in Case M.4691 – Schering Plough/Organon Biosciences (2007), paragraph 22, and M.1681 – Akzo Nobel/Hoechst Roussel Vet (1999), recital 13.

1533 Commission Decision in Case M.7277 – Eli Lilly/Novartis Animal Health (2014), paragraph 14.

1534 Form CO, part 4, paragraph 112.

1535 Questionnaire to Bee Health Customers (Q7), question 7; Questionnaire to bee heath competitors (Q8), questions 7; Agreed non-confidential minutes of a call with a competitor, 8 November 2017 (ID8887).

1536 MI 48330 [internal document], ID5441-38412, slide 12.

1537 Commission Decisions in Case M.7277 – Eli Lilly/Novartis Animal Health (2014), paragraphs 56-58, and M.6205 – Eli Lilly/Janssen (2011), paragraph 15, and M.4691 – Schering-Plough/Organon Biosciences (2007), paragraphs 42-45.

under the effect of regulations the industry is moving towards standardisation within the EEA. Eventually, the Notifying Party proposes to leave the exact geographic market definition open.[1538]

6.2.2.3. Commission assessment

(2387) The assessment carried out in Section XI.1.2.2 applies *mutatis mutandis* to bee health products.

(2388) In addition, the Commission observes that bee health products in the EEA have been authorised predominantly through the decentralized procedure.[1539]

6.2.2.4. Conclusion

(2389) In light of precedents and the views of the Notifying Party, the Commission considers that for the purpose of this decision, bee health product markets are national in their geographic scope.

6.3. Definition of innovation spaces

(2390) The Commission's framework of analysis to assess the likely impact of the Transaction on innovation competition – which is applied in the present Decision taking into account the specific facts of the case and characteristics of the relevant markets – is described in Section V.3.

6.3.1. Commission precedents and the Notifying Party views

(2391) As already mentioned under recital (2379), the Commission has not assessed the bee health sector in previous decisions.

(2392) The Notifying Party has not directly addressed the issue of the definition of innovation spaces in its submission. However, in the Form CO it notes that "*significant investment has been made in research into and the development of crop protection products to specifically target the varroa mite*" (emphasis added).[1540]

6.3.2. Commission assessment of the definition of innovation spaces

(2393) The Commission observes that, from the pipeline of bee health producers, it follows that the pest seems to be the leading target for R&D in the bee health sector. In any case, in the EEA there is essentially only one relevant pest and overall innovation in bee health seems limited to one and the same target, the varroa mites. Other research lines are negligible or not immediately relevant for the EEA.[1541]

(2394) The *varroa destructor* is a pest that is present in several regions of the world, but at present is especially widespread in North America and Western Europe. From this background, the innovation space for products targeting varroa mites is at least EEA-wide, but could comprise also North America.

(2395) However, for the purpose of this case, the geographic definition of innovation spaces can be left open since no competition concerns arise under any plausible definition.

1538 Form CO, part 4, paragraph 115.

1539 http://www.hma.eu/uploads/media/Questionnaire_-_Bee_products_in_EU_EE_update_06.03.15.pdf.

1540 Form CO, part 4, paragraph 113.

1541 Competitors' responses to the Commission's request for information to Bee Health Competitors Q24, [Annex].

6.3.3. Conclusion

(2396) For the purposes of this case, the Commission considers that the relevant innovation space for its assessment is bee health products targeting varroa mite.

(2397) The geographic definition of innovation spaces can be left open since no competition concerns arise under any plausible definition.

6.4. Activities of the Parties in the EEA

(2398) As regards the Parties' activities, Bayer's portfolio includes four chemical varroacides; Bayer does not have any product in its pipeline, but it has certain in–house R&D capabilities and a number of ongoing R&D collaborations with third-parties; Monsanto is not active on the market, but has one bee health product targeting varroa mite in its pipeline. A more detailed description of the Parties' activities is set out below.

6.4.1. Bayer

(2399) Bayer is an established player on the bee heath market with over 30 years of experience. Its global sales of products targeting varroa mite in 2016 amounted to EUR […], of which EUR […] is in the EEA. The most relevant national markets in the EEA were Croatia (EUR […]), Spain (EUR […]) and Poland (EUR […]).[1542]

(2400) In the EEA, Bayer manufactures and sells overall four chemical varroacides based on two old active ingredients, coumaphos and flumenthrin, no longer covered by patent rights.

(2401) Three of the current products, namely Perizin (coumaphos), Bayvarol (flumenthrin) and Checkmite+ (coumaphos) are relatively old products that can be used at different stages of the pest development and administered with different delivery mechanisms. These three products are authorised in 11 Member States. According to the Notifying Party, revenues from these three products have sharply declined in recent years from EUR […] in 2013 to EUR […] in 2016[1543], while globally revenues appear to have remained rather stable over the same period of time.

(2402) In 2017, Bayer has registered a new product targeting varroa mite: Polyvar Yellow. This product is based on the same active ingredient as Bayvarol, ie flumethrin, but makes use of a novel and innovative delivery mechanism, the varroa gate. The varroa gate is inserted at the entrance of the hive, and it contains distinct holes through which the bees have to pass when entering or leaving the hive, thereby ensuring contact with the active substance. The gate concept ensures treatment of the bee colony and prevents horizontal mite transfer from nearby colonies.[1544] Such an application also provides the advantage of a reduction of in-hive residues arising from the treatment.[1545] With Polyvar Yellow, Bayer will extend its geographical presence in the EEA to […] Member States, with estimated sales at a peak of EUR […].[1546]

1542 Form CO, part 4, Table 4.11.
1543 Form CO, part 4, Table 4.11.
1544 BI-EDISC-0161795 [internal document], ID5608, slide 1.
1545 Form CO, part 4, paragraphs 134-5.
1546 BI-EDISC-0161820 [internal document], ID5608-24206, slides 2 and 3.

(2403) The internal documents of the Notifying Party show that the varroa gate was developed as a basis for a more ambitious project. [Pipeline product development plans].[1547]

(2404) However, according to the information provided by the Parties in replies to RFIs and internal documents, the second and the third products were both discontinued. [Pipeline product], due to be launched in the second half of […], was discontinued due to problem with the formulation.[1548] [Pipeline product] was discontinued due to efficacy issues and regulatory changes. […][1549], but at present no agreement has been achieved.

(2405) The investigation also revealed that alternatives to a coumaphos Varroa-gate project were discussed. One such alternative was a [pipeline products]. Ultimately, however, it was decided to halt further investment in clinical and safety studies for [pipeline products].[1550]

(2406) At present, Bayer has no bee health products targeting varroa mite under development and, in 2016, Bayer's strategy moved from research in-house to externalizing research to third-parties through collaborations.

6.4.2. Monsanto

(2407) Monsanto does not currently sell any bee health product in the EEA nor in the United States, but it is about to enter the bee health market for the first time. Monsanto engagement in the bee health market is more recent than Bayer, starting in 2011 with the acquisition of a company dedicated to bee health products, Beeologics.[1551]

(2408) As part of its BioDirect platform, see above recital (2310), Monsanto has [pipeline products]. The BioDirect bee health product would introduce a new mode of action, called RNAi see above at recital (2310); the RNAi mechanism would be used to silence expression of certain genes necessary for varroa mites to survive, thereby killing the mites. [Pipeline product].[1552] This product was [development stage], and the estimated date of launch in the United States is […], and in the EEA is […].[1553]

6.5. Competitive assessment in bee health innovation: non-coordinated effects on innovation competition

6.5.1. Notifying Party's views

(2409) In its submissions, the Notifying Party contends that there is no horizontal overlap between the Parties' products in the first place because the commercialization of Monsanto's RNAi product in the EEA is unlikely in light of the regulatory barriers and customer acceptance. Moreover, even if Monsanto's RNAi product was successfully commercialised, the Parties' products would complement rather than compete with each other.[1554]

1547 BI-EDISC-0556093 [internal document], ID5609-51809, slide 3.
1548 BI-EDISC-0161939 [internal document], ID5608-24325, slide 22.
1549 Form CO, part 4, paragraph 136.
1550 Bayer's response to the Commission's request for information RFI 93, ID7916, question 4.
1551 MI 49982.00001 [internal document], ID5441-41007, slide 2
1552 MI48330 [internal document], ID5441-38412, slide 2.
1553 BI-EDISC-0161820 [internal document], ID5441-33553.
1554 Parties' response to the Statement of Objections, ID9941, paragraphs 686 et seq.

(2410) Further, the Notifying Party submits that Bayer's position on the market is not good. First, due to Bayer's modest, and declining, sales: overall there are elements indicating that its products may not have a combined market share equal to, or exceeding, 20% in the EEA or any EEA Member State.[1555] Second, even assuming a general trend of increasing sales thanks to its new product, PolyVar Yellow, it is unlikely that Bayer would strengthen its market position: sales projections merely assume that the total market might expand in the period[1556]; the varroa gate would overall have limited potential amongst others due to the strong competition of organic methods, but also to a certain hostility towards chemical products and towards the company itself due to its insecticides business.[1557] In addition, Bayer ceased the development of products targeting varroa mite in 2016.

(2411) Finally, the Notifying Party submits that there are strong constraints from other competitors.[1558] Its view is that there is also sufficient innovation in the bee health sector as all the major competitors innovate in bee health products[1559], while, on the other hand, [R&D strategy].[1560] In addition, there are no high barriers to entry preventing new companies from entering the bee health market.

6.5.2. Market structure

(2412) The bee health market is a small niche market. As claimed by the Notifying Party, there are no estimations of its size.

(2413) In the absence of an estimation of the market size and therefore reliable market shares, other market participants as well as the data collected by the Commission during the investigation[1561] confirm that Bayer products do not have a combined market share equal to, or exceeding, 20% at EEA level. It is also unlikely that the 20% market share threshold is exceeded in any EEA Member State.

(2414) On the other side, the market is highly fragmented, and Bayer's competitors are essentially SMEs. Other agrochemical companies are not present on the market.

(2415) Witth reference to their portfolio and their geographical presence, currently the main competitors of Bayer appear to be two companies specialised in bee health: Véto pharma and Vita Europe.[1562] Véto pharma is a French based company, that manufactures and sells Apivar, an amitraz-based product. Vita Europe, a UK based company, commercializes Apistan (tau-fluvalinate). Both companies manufacture and distribute other products as well based on organic acids and oils, namely Apiguard (thymol) for Véto pharma, and Vita Feed Green (liquid feed based on essential oils of walnut, thyme, marjoram and wild marjoram) and Vita Feed Gold (natural extract based on natural beet and molasses) for Vita Europe.

(2416) Further competitors at eyes level with Bayer are some players dedicated exclusively to organic chemicals, namely Chemicals Laif, Andermatt BioVet, Laboratorios

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1555 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 245-246, and Parties' response to the Statement of Objections, ID9941, paragraphs 672 et seq.

1556 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 247-250.

1557 Parties' response to the Statement of Objections, ID9941, paragraph. 663.

1558 Parties' response to the Statement of Objections, ID9941, paragraph 704.

1559 Parties' response to the Statement of Objections, ID9941, paragraph 658.

1560 Bayer's response to the Commission's request for information RFI 93, ID7916, question 4.

1561 Competitors' responses to the Commission's request for information to Bee Health Competitors Q24, question 1.

1562 Agreed non-confidential minutes of a call with a competitor, 7 September 2017 (ID05125).

callier and BeeVital. NOD Apiary Products, a Canadian company formed in 1997 sells formic acid-based products for varroa mite control. NOD launched its flagship product, Mite Away formic acid pads (MAQS), in Europe only in 2014 with the support of BASF.[1563]

(2417) There are no overlaps in the EEA on the bee health market, on the basis that Monsanto does not currently sell any of these products in the EEA. Overlaps between Bayer and Monsanto are therefore limited to overlaps in innovation.

6.5.3. Commission concerns in the Statement of Objections

(2418) In its Statement of Objections, the Commission raised concerns on a preliminary basis with respect to innovation in bee health products targeting varroa mites in the EEA. The concerns were raised in light of the elements detailed below and with regard to the evidence available to the Commission at the moment of the issuing of the Statement of Objections.[1564]

(2419) First, the Commission considered that Bayer is currently a main player on the bee health market and the leading R&D player in bee health.

(2420) Based on the review of internal documents, the Commission maintained that Bayer's forthcoming product would allow Bayer to extend its geographical presence in the EEA[1565], and recover its previous position on the market since in recent years its sales had significantly decreased.[1566]

(2421) This view was also supported by the feedback from market participants. For instance, a competitor pointed out the importance of a new delivery mechanism and its potential applications ("*[t]he authorization of a new product covers also the mode of application. At present, we can confirm that drops, vaporizers and sprays are the most common modes of application. If the authority comes to the conclusion that the gate patented by Bayer is a more convenient mode of application, Bayer would be able to limit other players*").[1567]

(2422) The Commission also preliminarily concluded that Bayer is the leading innovator in the sector on the basis of the review of Bayer's internal documents and the feedback received from market participants during the investigation.[1568] For instance, one competitor commented: "*Bayer and Monsanto are the best placed for innovation in the market. In addition to significant financial resources, they have the possibility to exploit synergies with research on pesticides in general*".[1569]

1563 MI 40744 [internal document], ID5441-26949, slide 30.

1564 Statement of Objections, paragraphs 1753-1760.

1565 BI-EDISC-0161820 [internal document], ID5608-24206, slides 2 and 3.

1566 Statement of Objections, paragraph 1720.

1567 Agreed non-confidential minutes of a call with a competitors, 8 November 2017 (ID9381).

1568 Agreed non-confidential minutes of a call with an apiculture association, 8 November 2017 (ID8710).

1569 Agreed non-confidential minutes of a call with Véto-Pharma, 4 September 2017 (ID5388). Courtesy translation of French version: « *Bayer et Monsanto sont les mieux placés sur le marché en ce qui concerne l'innovation. En plus d'importants moyens financiers, ils ont la possibilité d'exploiter les synergies avec la recherche menée sur les pesticides en général* ».

(2423) Furthermore, this preliminary finding was supported by a comparison of the R&D expenses in the sector; the gap between Bayer R&D expenses and those of its competitors was particularly pronounced in the period 2012-2017.[1570]

(2424) Finally, the Commission found evidence in internal email exchanges that, contrary to the submissions of the Notifying Party, [R&D strategy].[1571] In addition, Bayer's internal document displayed in Figure 462 indicated that Bayer has still significant R&D expenses, amounting to almost EUR […], for research conducted in cooperation with third-parties. The current list of projects included the discovery of new varroacides, [pipeline projects].

Figure 462 – [R&D strategy]

[…]

Source: BI-EDISC-0215489, ID5893-44531, slide 11.

(2425) Second, the Commission considered that Monsanto's innovation efforts target the EEA and that its new product targeting varroa mites is likely to reach the EEA.

(2426) The elements on the file also indicated that Monsanto's innovative pipeline product would be likely to compete with Bayer's current products as well as other products that might ultimately results from Bayer current R&D efforts in this sector.[1572] This was based on internal documents indicating that [R&D strategy].[1573] This finding was also supported by the feedback of market participants. For instance, a competitor explained that "*it cannot be said that the new products that should be launched on the market are only complementary to those already on the market. The new products will replace, at least partially, the products already available. They will therefore be competing products*".[1574]

(2427) Third, the Commission considered that post-Transaction the Parties would not have the same incentives to innovate in bee health as they would have separately absent the Transaction[1575] and that, given their limited R&D capacities, current competitors would not constitute an effective competitive constraint.[1576]

(2428) Therefore, the Commission reached the preliminary conclusion that the Transaction would likely cause a significant impediment to effective competition in relation to innovation for products targeting varroa mites by combining the R&D capacities of the two most important, if not sole, innovators in this space.

1570 Competitors' responses to the Commission's request for information to Bee Health competitors Q24, question 2.

1571 BI-EDISC-055608 [internal document], ID5609-51802.

1572 Statement of Objections, paragraphs 1765.

1573 MI48330 [internal document], ID5441-38412, slide 2.

1574 Agreed non-confidential minutes of a call with a competitor, 4 September 2017 (ID5388). Courtesy translation of French version: "*il n'est pas possible d'affirmer que les nouveaux produits qui devraient être lancés sur le marché ne seraient que complémentaires à ceux déjà présents sur le marché. Les nouveaux produits devraient remplacer, au moins partiellement, les produits déjà présents. Ils seront donc en concurrence*".

1575 Statement of Objections, paragraphs 1766-1771.

1576 Statement of Objections, paragraphs 1772-1781.

6.5.4. Commission assessment

(2429) In their response to the Statement of Objections, the Parties contested some of the elements on which the Commission based its preliminary conclusion that the Transaction would likely cause a significant impediment to effective competition.

(2430) The Notifying Party provided evidence that, contrary to the preliminary finding of the Commission, the varroa gate most likely has only a limited potential. Figure 463 and Figure 464 show that a large part of the beekeeper community refuses to use synthetic products. For some of the beekeepers, there is a perceived danger of chemical residue in wax and honey which could diminish the quality of the honey, the beekeeper's end product.

Figure 463

[…]

Source: BI-EDISC-155784 [internal document], ID5608-18170, slide 5.

Figure 464

[…]

Source: BI-EDISC-161835 [internal document], ID5608-24221, slide 10.

(2431) Further, the Notifying Party submitted evidence to the fact that, in 2015, Bayer had already made the decision to reduce its efforts in bee health, before ultimately reaching the decision in 2016 to stop any development of new varroa mite products.

(2432) In addition, as regards its in-house R&D capabilities, the Notifying Party explained that Bayer may on occasion run "*basic tests*" with "*potentially promising candidate substances*", but such tests would be highly exceptional and far removed from constituting a definite R&D strategy geared towards product development.[1577] Furthermore, [Bayer HR information].[1578]

(2433) Finally, as regards Bayer's external collaborations described above in Figure 462, additional evidence provided by the Notifying Party shows that the current R&D budget is allocated almost entirely to a project that does not aim at the discovery and development of new varroacides. This new evidence shows that R&D expenses for the other projects, in particular those related to discovery of new varroacides, is negligible,[1579] and at present competitors have at present more significant R&D activities than Bayer.

(2434) On the basis of the additional evidence provided by the Notifying Party, the Commission first considers that, on balance, the available evidence does not support the finding that going forward Bayer would still be a leading innovator in bee health.

(2435) In any event, the Commission also notes that Bayer and Monsanto's current and forthcoming products present extremely different characteristics (different modes of action, different delivery mechanisms). Similarly, their bee health lines of research are significantly different: Monsanto is […] focussing on and targeting RNAi technologies; whilst, on the other hand, internal documents indicated on the other

1577 Parties' response to the Statement of Objections, ID9941, paragraph 668.
1578 Parties' response to the Statement of Objections, ID9941, paragraph 669.
1579 Draft Form RM, Part 4: Bee Health, submitted on 15 January 2018, [Annex 103.6], ID10081.

side that Bayer in-house bee health discoveries capabilities are limited to [R&D strategy][1580]. Therefore Bayer and Monsanto are not close competitors in bee health.

(2436) Furthermore, [R&D strategy].[1581] For Monsanto, [R&D strategy] (and which might be subject to some public debate) with a project that should be positively perceived by the public. It follows that for both Parties their presence on the market is most important, rather than to maximize their turnover.

(2437) From this background, there are reasons to conclude that it is unlikely that the Parties will discontinue their current and future products, nor discontinue or redirect their innovation efforts.

(2438) Second, the Commission investigated the competitive landscape as part of its market investigation. The Commission asked companies involved in R&D crop protection for information regarding their discovery and development pipeline.[1582] Consistent with the arguments raised by the Parties, the Commission's analysis of the competitor pipeline confirmed that there are a sufficient number of competitors innovating in the same innovation spaces as the Parties.

(2439) As concerns the limited financial resources of the bee health market participant, the Notifying Party put forward that major subsidies are available specifically for bee health innovation both at European and at national Member State level. The yearly budget for national apiculture programmes co-financed by the EU for the period 2017 – 2019 has steadily increased and is currently 36 EUR million. In 2017, 28% of this budget was allocated to varroasis and other diseases in particular.

(2440) Therefore, in light of the above, the Commission considers that in this particular case the evidence available is not sufficient to comprehensively establish to the requisite standard that the Transaction would significantly impede effective competition with respect to innovation in this area.

6.6. Conclusion

(2441) Therefore, on balance and in light of the results of the market investigation and the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition with respect to innovation competition in bee health products targeting varroa mites in the EEA.

SECTION XII: DIGITALLY-ENABLED AGRONOMIC PRESCRIPTIONS

1. INTRODUCTION

1.1. Overview of the digital agriculture sector

(2442) Digital agriculture (or digital farming) refers to the collection of data and information about farms with the aim of providing tailored advice or aggregated data to farmers. Digital agriculture makes use of precision farming[1583] technology, yet – in addition – also takes recourse to intelligent networks and data management tools. Digital

[1580] Draft Form RM, Part 4: Bee Health, submitted on 15 January 2018, [Annex 103.6], ID10081.

[1581] MI 338712 [internal document], ID8104, slide 3 and BI-EDISC-0556093 BCS/BAH [internal document], ID5609-51809, slide 11.

[1582] Competitors' responses to the Commission's request for information to bee health competitors RFI Q24.

agriculture enables the provision of a range of measurement and advisory services, including in relation to weather, yield, farm management or prescriptions and recommendations of fertility, seeds, and crop protection products, with the aim of increasing farm productivity. Figure 465 provides a graphic representation of the digital agriculture network.

Figure 465 – Digital agriculture network

[…]

Source: MI 2040 [internal document], ID930-5302, page 4.

(2443) According to the Notifying Party, digital agriculture is currently in its infancy. However, globally countries are adopting digital agriculture at a significant pace. Digital agriculture is of particular importance for the entire population given that by 2025 the global population is expected to reach 8 billion people (9.6 billion by 2050),[1584] and the overall food production will need to significantly increase (by ~70%) in a relatively short period to meet the demand.

(2444) The drive to improve agricultural productivity and increase profits is enhancing the adoption of digital agriculture.[1585] For instance, digital farm management services are expected to grow worldwide from USD 1.6 billion in 2017 to USD 4.1 billion by 2022; and in Europe, they are expected to reach USD 1.3 billion by 2022.[1586]

(2445) Digital technologies and analytics are transforming agriculture, making a farm's field operations more insight driven and efficient. Digital agriculture is generally expected to be the main new trend for farming in the coming years and a key source of information and recommendations for farmers. Bayer considers that "*[d]igital farming is about to revolutionise agriculture, not only in Europe, but worldwide*" and that it offers "*the biggest game changing potential*."[1587]

1.2. Digitally-enabled agronomic prescriptions

(2446) Within digital agriculture, digitally-enabled agronomic prescriptions ("digitally-enabled prescription(s)") refer to recommendations or advice on the selection and application (e.g. doses, timing) of agronomic inputs (e.g. seeds, crop protection products, fertilisers) provided at a geographically increasingly granular level (e.g. region, field, field-zone or narrower) for a farmer to implement, and generated by an analytics agronomic engine based on large set of public and proprietary data.

(2447) Digitally-enabled prescriptions support and to some extent replace the reliance of farmers on their experience and intuition with scientific and data-based advice. In

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1583 Precision agriculture refers to hardware and equipment (e.g. planters, sensors, robotics) that can execute farming tasks more efficiently and precisely. Precision agriculture hardware devices provide a potential source of data for digital agriculture and potentially enable better implementation of digital agriculture insights; however, precision agriculture is not digital agriculture.

1584 CEMA's website regarding "The Global Food Challenge" at: http://www.cema-agri.org/page/global-food-challenge (ID11912).

1585 Form CO, part 5, Annex 5.1, MarketsandMarkets Report: "*Farm Management Software Market – Global Forecast to 2022*" (2017).

1586 Form CO, part 5, Annex 5.1, MarketsandMarkets Report: "*Farm Management Software Market – Global Forecast to 2022*" (2017).

1587 Press release entitled "Digital Farming set to revolutionize agriculture", 7 June 2017, available at: http://www.politico.eu/sponsored-content/digital-farming-set-to-revolutionize-agriculture/ (ID11922).

this way, digitally-enabled prescriptions assist the farmers in taking agronomic decisions, increasing productivity, and potentially reducing input costs.

(2448) Like digital agriculture as a whole, digitally-enabled prescriptions are an emerging service. At the time of the Transaction, the potential worldwide or EEA-wide revenue estimates are not stable because the monetisation models are not yet fully developed or tested. As a reference, Monsanto estimates peak sales for its [pipeline product] USD […] and [pipeline product] USD […].[1588] Bayer estimates for its digitally-enabled prescriptions for wheat a value creation of EUR […] by 2030.[1589]

(2449) The Parties consider digitally-enabled agronomic prescriptions to be a key value driver for their digital agriculture solutions.[1590]

1.2.1. General inputs, technology and tools of digitally-enabled prescriptions

(2450) The provision of digitally-enabled prescriptions requires a series of capabilities, namely collection of agronomic data, an analytics agronomic engine, automatic models based on algorithms, as well as a digital delivery system such as applications or platforms. As described in this Section, these inputs and capabilities are essential for providers to be able to offer competitive digitally-enabled prescriptions.

(2451) According to the market investigation, the relevant capabilities and tools are developed at a global level; but then are carefully adjusted to the specificities of each country to provide customised prescriptions at a granular level, e.g. field and field-zone level.

1.2.1.1. Agronomic data

(2452) Monsanto considers obtaining as much useful agronomic data as possible to be the first challenge to enable it to provide digitally-enabled prescriptions.

(2453) Agronomic data may be derived from the company itself (i.e. proprietary data), from third-party and public sources (such as biomass or weather data from satellites or weather stations), from the farmer via manual provision of data (such as crop type and seed variety) or from sensors placed in the farmer's field or mounted on the farmer's machinery. Both Bayer and Monsanto collect data from all these sources.

(2454) While some of this data is relatively easy to access, such as weather or satellite imagery, other, such as proprietary data and farmers' data, is in the hands of a limited number of operators.

(2455) Proprietary agronomic data is collected and accumulated through a company's research and development ("R&D") activities, field testing, market investigation, comparisons to competitors' products, as well as feedback from customers. Therefore, companies such as Bayer and Monsanto that develop and produce agronomic input products are likely to have the best, most complete, most updated and most accurate proprietary data on their products.

(2456) With regard to farmers' data, automatic data collection, e.g. through agricultural equipment, seems to be more accurate and reliable than manual data collection, e.g. manually provided by farmers. Bayer and Monsanto collect farmers' data manually, through their digital tools and distributors, and automatically, through

1588 MI 338642 [internal document], ID7980-11, slide 4.

1589 BI-EDISC-911689 [internal document], ID5943-31825, slide 22.

1590 Addendum to the Parties' response to the Commission's request for information RFI 63, paragraph 67.

partnerships with key agricultural equipment companies, such as Deere & Company,[1591] CHN, etc.

1.2.1.2. Data processing capabilities

(2457) A second key challenge to develop digitally-enabled prescriptions involves data processing. Data processing presents several challenges: (i) cleaning and enhancing agronomic data.[1592] Raw agronomic data is usually unstructured, scaled, inferential and of low resolution,[1593] so it needs to be cleaned and processed, that is to say enriched, so it becomes detailed, controlled and causal;[1594] (ii) the development and validation of agronomic logic or algorithms to obtain a certain outcome (e.g. higher yield); and (iii) the creation of a software system to automatically combine agronomic logic with data sources.[1595]

(2458) Monsanto refers to [data processing][1596]. Similarly, Bayer uses internally a term "[data processing]" (or "[…]") which refers to Bayer's data and knowledge backbone together with the artificial intelligence which processes data to provide agronomic advice as an output.[1597]

(2459) Agronomic data and the analytics engine are interlinked. Agronomic data is key to "train" the algorithm that will process the data and enable the company to provide digitally-enabled agronomic prescriptions. Figure 466 shows how an analytics engine works.

Figure 466 – [Data processing]

[…]

Source: MI 8365 [internal document], ID3731-9, slide 3.

(2460) During the market investigation, Bayer indicated that the advice or service that a digital agriculture supplier wants to provide will condition the data layers and the features or functionalities that a digital agriculture supplier needs.[1598] For example, Bayer's FIELD MANAGER provides advice for fungicide timing and zone spray to winter wheat so it requires functionalities such as field maps and field zoning.[1599]

(2461) The time and cost necessary to develop a fully functional digitally-enabled prescription depends on its complexity, the number of data layers required and the specific data that needs to be collected for an algorithm to function accurately.[1600]

(2462) In order to develop the appropriate algorithm, the correlation of the different data inputs and the resulting yield has to be validated and quantified. Field trials will be required. According to Bayer, field trials are the main complexity drivers and thus also the biggest time and cost challenge in the development of agronomic advisory

1591 Deere & Company will be referred in this Section as John Deere or Deere & Company.
1592 Parties' response to the Commission's request for information RFI 27, question 13.
1593 Parties' submission entitled [internal document], dated May 2017 (ID1341), slide 10.
1594 Parties' response to the Commission's request for information RFI 27, question 8.
1595 BI-EDISC-188907 [internal document], ID5893-17949, slide 6.
1596 MI 11 [internal document], ID1635-280, slide 62.
1597 Parties' submission entitled "White Paper - Digital Agriculture", dated 4 September 2017 (ID5016-30), footnote 45.
1598 Parties' response to the Commission's request for information RFI 27, question 8.
1599 Parties' response to the Commission's request for information RFI 27, question 8.
1600 Parties' response to the Commission's request for information RFI 27, question 10.

products. Moreover, partners are required to assist in the development and validation of these products.[1601]

1.2.1.3. Digital tools to deliver digitally-enabled prescriptions

(2463) The exact delivery model for these agronomic services has not yet been set. According to MarketsandMarkets, the "cloud-base" delivery is gaining traction while other models are expected to become obsolete in the coming years. The cloud-base delivery model "*[i]ncludes arranging groups of software networks and servers, which allow centralization of data storage. Cloud-based farm management software is used for managing finances, record stock management, and in-farm maps among others*."[1602]

(2464) The cloud-based delivery model can be segmented into (i) software or applications as a service ("Apps" or "Verticals"), and (ii) platform as a service ("Platform").[1603]

(a) An Apps delivery model consists in a software licensing and delivery model, wherein software is licensed on a subscription basis and is centrally hosted.

(b) A Platform delivery model is a category of cloud computing services, which provides a platform that allows customers to develop, run, and manage applications without the complexity of building and maintaining the infrastructure typically associated with developing and launching an application. A Platform provider hosts the hardware and software on its own infrastructure.

1.3. Drivers and challenges for the adoption and growth of digitally-enabled agronomic prescriptions

(2465) Agriculture is a conservative business. One of the challenges faced by the adoption of digitally-enabled prescriptions is their acceptance by farmers. Traditionally, agronomists have been the advisors of farmers. However, a considerable revenue gap remained (see Figure 467).

Figure 467 – Revenue gap by crop

[…]

Source: Form CO, part 5, Annex 5.73, slide 15.

(2466) Digitally-enabled prescriptions of crop protection products, seeds and fertilisers have the ability to reduce, even eliminate, that revenue gap. The use of digitally-enabled advisory services enables farmers to increase yield while decreasing their expenses by implementing granular recommendations customised to their particular fields and field-zones.

(2467) As a result, digitally-enabled prescriptions have the potential to disrupt markets and profits pools of mature agribusiness companies.[1604]

(2468) The increase of yield and cost-efficiency is driving the adoption of these digital services by farmers; and their disruptive effect is one of the elements that is driving

1601 Parties' response to the Commission's request for information RFI 27, question 13.

1602 Form CO, part 5, Annex 5.1, page 36.

1603 Form CO, part 5, Annex 5.1.

1604 The Boston Consulting Group's presentation entitled "Lessons from the Frontlines of the Agtech Revolution", October 2016, page 3 (ID11928).

its adoption by traditional agrochemical and seeds companies. The latter is illustrated by the following extract of a Bayer internal document (see Figure 468).

Figure 468 – Potential disruptive effect of digital agriculture

[…]

Source: Form CO, Part 5, Annex 5.70, [internal document], slide 20.

(2469) The provision of digitally-enabled prescriptions also brings some challenges. Prescriptions require a deep and detailed knowledge of the agronomic inputs that are being prescribed. Agrochemical companies active in the crop protection and/or the seeds and traits business have the largest amount of agronomic data with regard to their own products. Moreover, they have a thorough understanding of the crop protection and the seeds and traits industry which is essential to design digitally-enabled prescriptions. In particular, understanding how the different input products interact is of great value to develop and perfect the digital models and algorithms. This is of particular importance in the case of seeds since the seeds portfolio changes at a more rapid pace than the crop protection portfolio.

(2470) Additionally, partnerships are also relevant for the collection of data, the perfection of algorithms, models and technology. Larger companies with more proprietary data, economic and digital resources are more likely to attract key partners interested in sharing their areas of expertise and own data.

2. ACTIVITIES OF THE PARTIES IN DIGITAL AGRICULTURE

(2471) Bayer and Monsanto are both active in the provision of digital agriculture services, and they are about to launch or developing, respectively, their digitally-enabled prescription services. Digital agriculture is a key trend in the industry. Strengthening of the Parties' capabilities in this segment is one of the main rationales for the Transaction.[1605]

2.1. Monsanto's efforts in digital agriculture

(2472) Monsanto portrays itself as […].[1606] It aspires to become […].[1607,1608] […]. According to Monsanto "*[w]e see it as the Amazon of agriculture, where we're bringing additional apps up onto that platform and where the best apps win*".[1609]

1605 See, for example, BI-EDISC-200201 [internal document], ID5893-29243, slides 14, 25 and 26. See also Mr. Werner Baumann (Bayer CEO) stating: "*[W]e would create a leading platform in digital farming*" (Bayer Monsanto Acquisition Investor Conference Call, dated 14 September 2016, page 7, available at: http://www.investor.bayer.com/securedl/14230 (ID11911)).

1606 MI 11 [internal document], ID1635-280, slide 59.

1607 MI 11 [internal document], ID1635-280, slide 54.

1608 MI 8287 [internal document], ID2330-90, slide 17.

1609 Press release entitled "Monsanto's Climate Corp to expand digital farming platform", dated 17 August 2016, available at: http://www.reuters.com/article/us-monsanto-farming-data-idUSKCN10S1Q4 (ID11927). In 2015, Monsanto received an award for an "Internet of Things" ("IoT") initiative. IoT is an emerging technology in multiple industries that promises to connect billions of devices, making them smart and connected. Press release entitled "Monsanto Recognized as A 2015 CIO 100 Award Winner" dated 1 June 2015, available at: https://monsanto.com/news-releases/monsanto-recognized-as-a-2015-cio-100-award-winner/ (ID11916).

2.1.1. Monsanto's relevance in digital agriculture in figures

2.1.1.1. Acres, users, revenues and investment

(2473) In 2013, Monsanto acquired for USD 930 million a U.S. data science company, The Climate Corporation (and its "FieldView" product), which became the backbone of Monsanto's activities in digital agriculture.[1610] Besides the Climate FieldView, Monsanto also has other digital agriculture products in Europe, VitalFields and AquaTEK.

(2474) Monsanto's digital agriculture business currently covers more than […] acres worldwide, of which almost […] are in Europe. The European acres are divided among Monsanto's digital agriculture products[1611] as follows: […]% are attributable to VitalFields; […]% to Climate FieldView and […]% are attributable to AquaTEK. According to Monsanto's internal documents, it expects to reach […] acres by 2025.[1612]

(2475) Monsanto has[1613] […] users worldwide and […] in Europe ([…]% attributable to VitalFields, […]% to AquaTEK and […]% to Climate FieldView). Monsanto employs […] people worldwide who work on digital agriculture, of which […] employees focus on R&D. Additionally, The Climate Corporation alone has approximately […] patents related to digital agriculture.[1614]

(2476) According to the Notifying Party, Monsanto's total gross sales revenues in 2016 from Climate FieldView were USD […]. Monsanto receives revenues from […] acres (i.e. Paid acres) worldwide, and from […] paid acres in Europe.[1615] According to Monsanto's public statements in 2016, it expects gross profit […] and forecasts paying acres of […] by 2025.[1616]

(2477) With regard to its European business projections, Monsanto's internal documents indicate that in the long term it expects annual revenues of […], as well as a net present value ("NPV") in the range of USD […].[1617]

(2478) Monsanto's cumulative investment in digital agriculture up until May 2017 is of USD […]. Its average annual investment is of approximately USD […]. With regard to R&D, Monsanto has a cumulative investment up to June 2017 of USD […].[1618]

(2479) Monsanto has heavily invested in acquiring digital agriculture companies, (to date, the cumulative investment in these companies equals more than USD […]). In 2013, Monsanto made its most relevant purchase acquiring the U.S.-based The Climate Corporation and its "FieldView" platform for USD 930 million.

1610 Throughout the Decision, Monsanto will be referred to indistinctively as Monsanto, The Climate Corporation, Climate or Monsanto's Climate Corporation.

1611 See Section XII.2.1.2 for a description of Monsanto's digital agriculture products.

1612 MI 11 [internal document], ID1635-280, slide 54.

1613 Parties' response to the Commission's request for information RFI 27, Annex 1.

1614 Parties' response to the Commission's request for information RFI 27, Annex 1.

1615 Parties' response to the Commission's request for information RFI 27, Annex 1.

1616 Press release entitled "Monsanto's Climate Corp to expand digital farming platform", dated 17 August 2016, available at: http://www.reuters.com/article/us-monsanto-farming-data-idUSKCN10S1Q4 (ID11927).

1617 MI 2354 [internal document], ID10332-96, slide 89.

1618 Parties' response to the Commission's request for information RFI 27, Annex 1.

(2480) Through The Climate Corporation, Monsanto has also acquired[1619] the U.S. precision farming start-up 640 Labs, active on hardware technology which enables the FieldView Drive functionality (2014);[1620] the soil analysis business line of Solum, Inc. in order to build The Climate Corporation's soil analysis capabilities (2014); the seed purchase research tool assets from YieldPop for USD […] (2014); SupraSensor for USD […], active in the development of nitrate sensor hardware equipment (2016); VitalFields, a farm management software company based in Estonia and trading in Europe (November 2016); and HydroBio, active in the prescription of irrigation recommendations (2017).

(2481) In addition, Monsanto has also invested[1621] in a number of emerging agricultural technology businesses *inter alia* AquaTEK focused on irrigation management and active in Europe, AgSolver focused on sustainable land management, land valuation and business planning; or Blue River Technology focused on agricultural robotics.

2.1.1.2. Geographic scope

(2482) Monsanto is mainly active in the U.S., and it is currently expanding to Europe, Latin America, and other areas. Monsanto intends to build upon its "*industry leading U.S. footprint*" to expand to other geographic areas.[1622] On the likely geographic expansion of Monsanto's digital agriculture products see Section XII.4.3.1.2.

2.1.2. Monsanto's main digital agriculture products

(2483) Monsanto currently markets two different digital agriculture products in Europe: (i) VitalFields; and (ii) AquaTEK; and it will pre-launch a third one, Climate FieldView Plus, in the 2018 growing season in Germany, France and Ukraine.

(2484) Monsanto's digital agriculture offerings are predominantly supplied in the U.S. but also in other jurisdictions such as Brazil and Canada.

2.1.2.1. Monsanto's products with digitally-enabled prescription functionalities

(A) Climate FieldView

(2485) Climate FieldView is Monsanto's core digital farming product. Climate FieldView is designed to be a platform for digital farming tools that tap into the agronomic data collected, processed and stored by the platform. Climate FieldView also has advisory functionalities. Climate FieldView provides farmers with, among other things, weather information, field scouting tools, field health analysis based on satellite imagery, brand-agnostic prescriptions to improve seeding strategy and prescriptive information to allow farmers to decide the most efficient use of fertiliser.

(2486) Climate FieldView brings together data collected from multiple sources including in-house and external data: (i) The Climate Corporation's data streams sourced from third parties (e.g. weather data, satellite imagery, etc.), (ii) data input by the farmers manually or automatically through their machinery (e.g. seeding, fertiliser and yield data, etc.), and (iii) Monsanto's in-house research. Once the data is collected, it is

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1619 Form CO, part 5, paragraphs 48-80.

1620 FieldDrive tracks soil quality, yield, and combine routes via sensors placed on agriculture machinery. The data is transmitted over satellite to Monsanto, who gives farmers access to this data.

1621 Form CO, part 5, paragraphs 81-90.

1622 Monsanto's *Third-Quarter FY2017* of 28 June 2017 non-confidential presentation, slide 16 at: https://monsanto.com/app/uploads/2017/06/FINAL-DRAFT-Q3F17-Earnings-Slides-6-26-17.pdf (ID11917).

analysed by computer algorithms and machine learning programs that are specifically designed for *and* geared at each of Monsanto's various advisory tools.

(2487) As a result, The Climate Corporation's advanced data analytics capabilities are able to provide the farmer - through a digital software tool- recommendations and advice to guide their decision-making process. This advice for instance could be in the form of telling the farmer when exactly they should plant the relevant seeds in the ground, how many seeds they should use, and where in the field to plant them.

(2488) Monsanto's digitally-enabled prescriptions could also take the form of advising a farmer when to apply a certain crop protection product, how much to apply and on which part of the field to apply. The advisory tools are the means to provide agronomic services to farmers and the main value pool of digital agriculture.[1623]

(2489) Climate FieldView is offered in the following packages:

(1) *Climate FieldView Prime* which includes a basic package of Field Level Weather[1624] and Scouting;[1625]

(2) *Climate FieldView Plus* offers the same tools as Prime as well as Field Health Advisor,[1626] Script Creator,[1627] and Yield Analysis.[1628] This package is part of the offering that will be introduced in Germany, France and Ukraine in the 2018 growing season;

(3) *Climate FieldView Pro* offers the highest level of functionality. Farmers gain access to all the tools discussed previously as well as Nitrogen Monitoring[1629] and the Advanced Script Creator.[1630] Climate FieldView Pro has informed field scouting capabilities to enable the farmer to prioritise areas in need of attention before he/she enters the field, assess how variables such as soil type are impacting yield and seed performance and compare current crop to historic crop yield, enabling optimum science/data-based decisions to be made for the following season; and

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1623 Form CO, part 5, paragraphs 55-56.

1624 Field Level Weather provides highly localised weather reporting and prediction services to farmers to aid in their decisions when to plant, spray, and harvest most effectively.

1625 The Scouting functionality provides a digital map interface that allows the farmer to drop a "pin" in a certain part of their field and write notes about what he sees at that spot to identify issues. This supports a number of decisions by facilitating geographic and temporal tracking of signs of plant stress.

1626 Field Health Advisor ("FHA") provides early detection of crop health issues on the field-wide level through computer analysis of satellite imagery. In addition to growth monitoring that captures relative and absolute field biomass, this functionality provides the farmer with information on signs of large-scale crop stress, estimates of overall crop health, and calculations of vegetation index.

1627 Script Creator facilitates manual variable rate seeding prescriptions and allows a farmer to easily program a detailed plan to plant a manually selected seed variety at multiple seeding rates or densities across a field that has varying levels of field health. This allows a farmer to tweak his/her seeding plan and maximise yield by planting at a higher density in more fertile soil.

1628 Yield Analysis provides a retrospective look at the planting and harvest season. This tool is also marketed as "Crop Performance Analysis" and allows a farmer to track and estimate the impact of agronomic decisions on yield.

1629 Nitrogen Monitoring, also referred as "Nitrogen Advisor". This is a sophisticated nitrogen monitoring tool to predict potential field-level nitrogen availability depending on nitrogen or fertiliser applications, crop stage, weather, crop type and nitrogen requirements of the specific seed or crop type in the field. This tool supports the farmer's decision about when to fertilise and how much nitrogen input to utilise, based on their yield goals.

1630 The description of this tool is provided in recital (2493) of the Decision.

(4) *Climate FieldView Drive*, which enables the farmer to view real-time data as it passes through the field and to optimise seeding input in subsequent seasons[1631] by capturing agronomic and machine data generated by the equipment and wirelessly streaming it to the Climate FieldView software via Bluetooth.

(2490) Customers can get access to these packages for free or by paying different fee ranges: (i) *Climate FieldView Prime* is offered for free; (ii) *Climate FieldView Plus* is the intermediate fee-paying subscription; and (iii) *Climate FieldView Pro* is the highest level of fee-paying subscription.

(A.i) Digitally-enabled prescriptions

(2491) Monsanto offers its digitally-enabled prescriptions services as part of the *Climate FieldView Pro* package in the U.S. Monsanto internally refers to digitally-enabled prescriptions as "advanced" scripts as opposed to "manual" scripts, in which the farmer creates the script himself using the digital tools provided by Monsanto.[1632]

(2492) Seeds. Monsanto currently offers digitally-enabled seeding prescription services in the U.S. for corn at field level.[1633] The name of the specific tool/services is *Advanced Script Creator*.

(2493) Monsanto's Advanced Script Creator takes the manual prescription system available at the Climate FieldView Plus level and incorporates computer-assistance. That is, the Advanced Script Creator will not only calculate changes in the seeding plan and facilitate yield optimisation among different seeding rates and hybrid choices, but the soil map analysis allows for easy identification of management zones which generate variable seeding rate or treatment prescriptions that can be executed directly on farm machinery. Monsanto provides these prescriptions for its seed hybrids as well as seed hybrids of its competitors.

(2494) According to Monsanto, the development of its current advanced seed scripting tool took approximately [prior and ongoing development efforts].[1634]

(2495) Monsanto is currently developing and plans to offer its digitally-enabled seeding prescription services in Canada in the spring of 2018. During the investigation, Monsanto indicated that [prior and ongoing development efforts].[1635]

(2496) [Pipeline product].[1636]

(2497) [Pipeline product] (see Section XII.4.3.1.2).

1631 According to Monsanto, when Climate FieldView is launched in the EEA (e.g. in France and Germany for the 2018 growing season), the functionalities of the above-mentioned packages will initially be different (i.e. less extensive) than those in the U.S. Addendum to the Parties' response to the Commission's request for information RFI 63, paragraphs 3-4.

1632 Manual scripts are not the focus of the Commission's investigation. According to Monsanto, manual scripts are not based on any agronomic algorithm or on a digitally-enabled agronomic engine, and they are unrelated to digitally-enabled prescriptions. They do not provide data to inform digitally-enabled prescriptions. Monsanto's response to the Commission's request for information RFI 98, paragraph 22; Agreed minutes of a call with Monsanto, 13 November 2017, paragraph 5 (ID9516).

1633 Monsanto's response to the Commission's request for information RFI 98, paragraph 21.

1634 Monsanto's response to the Commission's request for information RFI 98, paragraph 44.

1635 Monsanto's response to the Commission's request for information RFI 98, paragraph 31.

1636 Monsanto's response to the Commission's request for information RFI 98, paragraph 29.

(A.ii) Other crop protection digital services

(2498) Besides digitally-enabled prescriptions, Monsanto is currently developing other products targeting or related to crop protection and crop protection products.

(2499) [Pipeline product].[1637]

(2500) [Pipeline product].[1638] [Pipeline product].[1639]

(2501) [Pipeline product].[1640]

(2502) [Pipeline product].

(2503) [Pipeline product].[1641]

(2504) [Pipeline product].[1642] [Pipeline product].

(2505) [Pipeline product].[1643] Monsanto currently offers tools to analyse the status and health of a given agricultural field in the U.S [pipeline product]. Some functionalities of [pipeline product] are already commercially available in the U.S. under the product name *Field Health Imagery*. *Field Health Imagery* is a software which provides information to the farmer regarding the health of a given field on the basis of satellite pictures that measure the biomass of the field in question. [Future development plans].

(B) AquaTEK

(2506) AquaTEK is a software which provides farmers with the opportunity to use data to optimise their decision-making with respect to how much, where and when to irrigate their fields.

(2507) AquaTEK is the result of Monsanto's co-operation since 2009 with the University of Milan and Netafirm, an Israeli-based specialist in micro-irrigation solutions. The co-operation initially launched in Italy, where Monsanto has a commitment to the sustainable production of maize, but is currently rolled out in Spain and Portugal. At present there are no plans to integrate the AquaTEK project into the Climate FieldView platform.

(2508) Digitally-enabled prescriptions. This software provides digitally-enabled prescriptions concerning irrigation. AquaTEK's irrigation prescriptions uses multi-spectral satellite imaging of the crop canopy across each field, weather data from a network of local stations, and soil information to oversee crop water use and irrigation needs across every field throughout the growing season.

2.1.2.2. Monsanto's other digital agriculture products

(2509) VitalFields is a record-keeping software which enables farmers to plan, manage and analyse field activities including simplified tracking and reporting of all crop inputs, and compliance with EU regulatory and environmental standards.

1637 MI 2106 [internal document], ID930-5373, slide 175.

1638 The Commission notes that in Monsanto's internal documents the word "disease" generally refers to fungi issues, while the words "pest" and "weeds" generally refer to insects and herbs issues.

1639 MI 42845.00001, ID10246-471, slide 2.

1640 MI 342794.00001 [internal document], ID10246-416, slide 5.

1641 MI 2106 [internal document], ID930-5373, slide 166.

1642 MI 2106 [internal document], ID930-5373, slide 171.

1643 MI 2106 [internal document], ID930-5373, slide 157 and notes to slide 156. See also Monsanto's website Field Health Imagery, available at https://climate.com/features/field-health-imagery (ID11918).

(2510) VitalFields was acquired by Monsanto in November 2016. The acquisition of this company was the first substantial step of Monsanto into the European market.

(2511) Monsanto expect to have fully integrated VitalFields into Climate FieldView in […]. According to the Notifying Party, the acquisition of VitalFields provided Monsanto access to a group of European farmers which were already working digitally with VitalFields and who may be receptive to use the Climate FieldView product.[1644]

2.1.3. Monsanto's potential business model: [pipeline product]

(2512) Monsanto is considering the delivery of its digital agricultural solutions based on a so-called [pipeline product].

Figure 469 – [Pipeline product]

[…]

Source: MI 338642 [internal document], ID7980-11, slide 48.

(2513) [Pipeline product].

(2514) [Pipeline product].[1645]

(2515) [Pipeline product].[1646]

(2516) [Pipeline product].[1647] [Pipeline product].[1648]

2.1.4. Monsanto's partnerships

(2517) Monsanto has also entered into a large number of partnerships and collaborations with various players in relation to digital agriculture.

(2518) [Pipeline product].[1649]

(2519) Data-sharing partners. Monsanto has so-called Application Programming Interface ("API") partners. These are data sharing partners that include Deere & Company, GROWMARK, AgIntegrated, Inc., Agrian, AgStudio, Software Solutions Integrated, Inc., MZB Technologies, and EFC Systems.

(2520) According to the Notifying Party, the API licence agreements grant licences to use The Climate Corporation's API to develop functionality that allows a grower to push or pull certain data between their Climate FieldView account and third party application accounts. [Collaboration].

(2521) *Deere & Company*. On 24 July 2015, Deere & Company and The Climate Corporation entered into an API License Agreement. [Collaboration].[1650]

(2522) [Collaboration].[1651]

(2523) *AGCO*. In addition, The Climate Corporation signed an agreement with AGCO on 3 October 2017. The Agreement will enable the transfer of data between AGCO

1644 Form CO, part 5, paragraph 74.
1645 Monsanto's response to the Commission's request for information RFI 98, paragraph 3.
1646 MI 338642 [internal document] ID7980-11, slide 48.
1647 MI 2073 [internal document], ID930-5339, slide 23.
1648 MI 338642 [internal document], ID7980-11 slide 46.
1649 Monsanto's response to the Commission's request for information RFI 98, paragraph 50. Parties' response to the Statement of Objections, section XII.2.1.3.1.
1650 Form CO, part 5, paragraph 65.
1651 Monsanto's response to the Commission's request for information RFI 98, paragraph 48.

equipment and The Climate Corporation, allowing growers using AGCO equipment the option to connect to the Climate FieldView platform. [Collaboration]. The covered geographies include several EEA countries.[1652]

(2524) [Collaboration].

Figure 470 – [Collaboration]

[…]

Source: MI 330732 [internal document], ID7980-10, slide 55.

2.2. Bayer's efforts in digital agriculture

(2525) Bayer considers that "*[d]igital farming is about to revolutionise agriculture, not only in Europe, but worldwide.*"[1653] Bayer decided to enter the digital agriculture sector in 2014: [business strategy].[1654]

(2526) Bayer's acquisition in 2015 of proPlant Gesellschaft für Agrar-und Umweltinformatik mbH, Münster (Germany) ("proPlant") was considered to strongly support Bayer's digital agriculture ambition to [business strategy] offering customers [business strategy]. This transaction was meant to accelerate the time-to-market and speed-to-scale of Bayer's digital agriculture offer. These were considered critical as [business strategy].[1655] This trend continued in 2016. Bayer included digital agriculture as one of the priority topics to [business strategy].[1656]

(2527) In November 2017, Bayer announced that it would market its digital agriculture solutions under the brand xarvio.[1657]

2.2.1. Acres, users, revenues and investment

(2528) Today, Bayer's digital agriculture business currently covers […] acres worldwide, of which […] are in Europe. Bayer has […] users worldwide and […] in Europe. Bayer employs […] worldwide who work on digital agriculture, of which […] focus on R&D. Additionally, Bayer has approximately […] patents related to digital agriculture.[1658]

(2529) According to the Notifying Party, Bayer had in 2016 revenues derived from digital agriculture of […]. Bayer receives revenues from […] paid acres worldwide, of which […] are located in Europe.[1659] According to Bayer's internal documents, Bayer expects revenues of […] from digital agriculture and an increase in sales by […].[1660] In response to the Article 6(1)(c) Decision, Bayer submits that the more recent estimate of its revenues by 2022 is […].[1661]

1652 Monsanto's response to the Commission's request for information RFI 98, paragraph 49.

1653 Press release entitled "Digital Farming set to revolutionize agriculture", dated 7 June 2017, available at: http://www.politico.eu/sponsored-content/digital-farming-set-to-revolutionize-agriculture/ (ID11922).

1654 Bayer's [internal document] confidential presentation, slide 9.

1655 BI 3190 [internal document], ID2312-45, slides 51 and 55.

1656 BI 6 [internal document], ID292-6, slide 9.

1657 Press release entitled "Bayer launches new Digital Farming brand xarvio™", 9 November 2017, available at: http://www.press.bayer.com/baynews/baynews nsf/id/Bayer-launches-new-Digital-Farming-brand-xarvio (ID11921).

1658 Parties' response to the Commission's request for information RFI 27, Annex 1.

1659 Parties' response to the Commission's request for information RFI 27, Annex 1.

1660 BI 3190 [internal document], ID2312-45, slide 64.

1661 Parties' response to the Article 6(1)(c) Decision, paragraph 325-326.

(2530) Bayer's cumulative investment in digital agriculture up until May 2017 is of […] and its average annual investment is of approximately […]. With regard to R&D, Bayer has a cumulative investment up to June 2017 of […]. […].[1662] In response to the Article 6(1)(c) Decision, Bayer submits that its cumulative budget on digital agriculture between 2018 and 2020 would be lower – in the region of […].[1663]

(2531) Bayer has invested in acquiring digital agriculture companies, (to-date, approximately […]). Bayer entered digital agriculture by way of two acquisitions: in 2015, it purchased proPlant, the plant health diagnosis and infection level warning service provider, and in the same year the Zoner geo-information system from IntelMax (Canada), for an aggregate consideration of […] (including milestone payments).

(2532) A key strategic driver of Bayer's investment in digital agriculture is the anticipated disruptive negative effect of digital agriculture on its core crop protection product business. Importantly, Bayer's entry into the field of digital agriculture seems to be part of a defensive strategy. In particular, Bayer expects a reduction of crop protection and fertiliser sales, while sales of seeds will become more attractive. This is illustrated by the following Bayer's internal document (see Figure 471).

Figure 471 – [Impact of digital agriculture in crop protection]

[…]

Source: [internal document] confidential presentation, slide 37.

2.2.2. Bayer's main digital agriculture products

(2533) Bayer currently markets four different digital agriculture software solutions in Europe: (i) expert.; (ii) Zoner; (iii) Climate.center and (iv) WEEDSCOUT app. In addition, Bayer is beta-testing a new digital farming advisory tool, the FIELD MANAGER. This tool is not yet commercially available.

(2534) Bayer's digital agriculture offerings are predominantly supplied in Europe.

2.2.2.1. Bayer's products with digitally-enabled prescription functionalities

(2535) FIELD MANAGER is a web-based software designed as a hyper-localised field management tool for farmers to gain maximum efficiency out of their use of crop protection products. FIELD MANAGER provides an assessment on the risk of pests/diseases, the timing for the application of the necessary fungicides, insecticides or herbicides to a given crop (Spray Timer), and the zone in which the crop protection product needs to be applied and a field scripting (i.e. the file for the implementation of the prescription by the farmer's agricultural equipment) (Zone Spray).[1664]

(2536) FIELD MANAGER has three core functionalities:

(2537) Spray Timer: The Spray Timer function automatically notifies the farmer when the correct time for crop protection products applications is approaching, using a tried-and-tested disease risk model as a basis.[1665] Spray Timer provides a prescription for spraying of fungicides and insecticides, while the functionality for herbicides is in

1662 MI 2040 [internal document], ID930-5302, slide 3.
1663 Parties' response to the Article 6(1)(c) Decision, paragraph 330.
1664 Agreed non-confidential minutes of a call with Bayer, 13 November 2017, paragraph 3 (ID9528).
1665 Form CO, part 5, paragraph 38.

development for the EEA. That prescription is generated by an agronomic engine and provided for a given crop at field level. Spray Timer does not generate a file for the implementation of the prescription by the farmer's agricultural equipment.[1666]

(2538) Zone Spray: Zone Spray uses satellite imagery (and additional data sourced either from third parties or input by the farmer) to identify the crop growth stage of the plant and assess variations in biomass across a farmer's field. Based on these differences in biomass measurements, FIELD MANAGER is able to generate a variable crop protection application map, also referred to as a crop protection application "prescription". The map, which can be used directly with the farmer's spraying machinery, illustrates to the farmer the localised areas of the field where s/he needs to apply a greater or smaller amount of a crop protection product, or none at all, as shown in the Figure 472.[1667]

Figure 472 – Zone Spray application

[…]

Source: Addendum to the Parties' response to the Commission's request for information RFI 63, paragraph 28.

(2539) At present, Bayer's prescriptions are specifically for the application of fungicide to winter wheat crops in France and Germany (to be commercialised as of the 2018 growing season). Bayer is also developing digitally-enabled prescriptions for other inputs and crops (see Section XII.4.3.1.1). FIELD MANAGER's Zone Spray helps the user to manage specifically in France and Germany, the concentration of fungicides being sprayed on different areas of the field, enabling the user to manage the overall use of fungicide rather than simply spray the entire field at a fixed dosage. By targeting fungicides to the areas of the field where they are needed, FIELD MANAGER helps the user to optimise fungicide use.

(2540) Autopilot Beta: Autopilot Beta is capable of automatically planning and performing an entire fungicide strategy working with data from Spray Timer and Zone Spray. The Autopilot Beta is currently in the testing stage. To Bayer's knowledge, Autopilot Beta is a novelty in the digital farming sector.

(2541) FIELD MANAGER also operates as a data store for information collected by the farmer or supplied by third parties. FIELD MANAGER is capable of automatically recommending a crop protection strategy for a field or field zone. FIELD MANAGER is designed to augment the performance and customer experience of Bayer's portfolio of crop protection products. It will achieve optimum performance with Bayer's own product portfolio as the software can access all of the relevant internal product information as a data input. However, according to the Notifying Party, FIELD MANAGER does not operate exclusively with Bayer's range of products. It will also be able to advice on the most efficient usage of crop protection products from other suppliers.

2.2.2.2. Bayer's other digital agriculture products

(2542) *Expert.* is a web-based software, originally developed by proPlant, which provides specific recommendations to the farmer for the amount and timing of the application of a fungicide or combination of fungicides to combat a specific disease affecting the

[1666] Agreed minutes of a call with Bayer, 13 November 2017, paragraph 3 (ID9528).

[1667] Addendum to the Parties' response to the Commission's request for information RFI 63, paragraph 60.

farmer's crops. It matches the chemical formula or target pest or disease of the product to the particular pest or disease identified in the farmer's field, providing the farmer with a list of crop protection products to choose from. The farmer can choose to manually input a record of the crop protection products chosen, as this will influence future application timing recommendations.

(2543) Expert. is available in 14 EU Member States (Austria, Belgium, Czech Republic, Finland, France, Germany, Luxembourg, Netherlands, Poland, Sweden and the United Kingdom) and from spring 2017 also in three additional EU countries (Denmark, Hungary and Spain).[1668] Expert. accounts for the majority of Bayer's current digital agriculture turnover. Bayer is currently also working on the development of a new product that will be offered as an alternative to Expert., […].

(2544) *Zoner* is a web-based software for the analysis of field productivity. Zoner is a mapping tool which provides graphic representations of satellite or aerial imagery of fields, enabling the farmer to identify heterogonous zones of field fertility or plant stress. Through analysis of field variability, Zoner can assist the farmer with delineating areas of the field for variable rate fertilisation, pesticide application or seeding, but the actual decision is undertaken manually by the farmer. Zoner does not provide recommendations for improving agricultural operations or create variable rate seeding ("VRS") prescription maps by itself but allows farmers to create their own VRS prescription maps. Bayer is currently testing Zoner in Spain, and expects to be able to commercialise it in Spain later in […].

(2545) *Climate.center* is an online database which stores and manages weather data from different sources in a standardised, user-friendly format. The user interface is multilingual and designed for global use and the web-based server eliminates the need for software installation.

(2546) *WEEDSCOUT App* is a mobile smartphone app for identifying weeds through image recognition. The app is designed to assist farmers to identify specific weeds and to develop agronomic understanding, particularly among smallholders. A cost-free beta version is currently available for use in France and Germany. A commercial version of the WEEDSCOUT app was planned to become available in several app stores in various countries throughout the first half of 2017. Bayer is currently exploring expanding the capabilities of the app into […].

2.2.3. Bayer's potential business models: Integrated Crop Solutions and Job-Step Solution

(2547) Bayer's digital agriculture strategy is focussed on promoting the sale of Bayer's crop protection products.[1669] For these purposes, Bayer's digital agriculture tools provide, on the basis of agronomic data, concrete advice to a farmer on the most efficient use of crop protection products in the farmer's specific fields. The current business model of Bayer is based on the sale of individual apps and/or software (e.g. Weedscout, Expert., Zoner and FIELD MANAGER).[1670]

(2548) For the future, like Monsanto, Bayer is exploring more integrated offerings of digital agriculture. In particular, Bayer is considering the following main business models in the context of digitally-enhanced prescription agriculture which could also be used in a complementary way.

1668 Form CO, part 5, paragraph 25.

1669 Form CO, part 5, paragraphs 16.

1670 Bayer's response to the Commission's request for information RFI 63, paragraph 261.

(2549) […].[1671] […].[1672] […]

(2550) […].

(2551) The different options considered by Bayer for capturing value from farmers using the […] model are presented below (see Figure 473).

Figure 473 – [Value capture model]

[…]

Source: BI 3269 [internal document], ID2312-299, slide 22.

(2552) Figure 474 provides further details on the possible [pipeline product] solution. One alternative foresees […]. This is a comparable business model to Monsanto's [pipeline product] to monetize digital agriculture tools, as discussed in Section XII.2.1.3.

Figure 474 – [Business models]

[…]

Source: Form CO, Part 5 - Annex 72 [internal document], page 62.

2.2.4. Bayer's partnerships

(2553) Bayer has several partnerships and research collaborations in the digital agriculture sector with various members of the value chain, such as [collaborations]. These partnerships relate to various activities such as generation of data, development of sensors, and identification of weeds and diseases.[1673]

(2554) Hence, Bayer's cooperation agreement with John Deere, entered into in 2014, aims at integrating data access, wireless data transmission, and delivery of prescription recommendations. In the words of Shane Hand, Bayer CropScience Digital Farming Strategic Marketing Lead, Bayer's "*intent is to leverage the agronomic strengths of Bayer CropScience and channel partners, combined with the precision-enabled equipment and the MyJohnDeere decision support platform offered by John Deere, to enable farmers to move from precision agriculture to decision agriculture*".[1674]

3. MARKET DEFINITION

3.1. Product market definition

3.1.1. The Commission's precedents

(2555) The Commission has not previously assessed the digital agriculture sector and has thus not yet defined the relevant product markets.

(2556) The Form CO refers to three merger decisions by the United Kingdom Office of Fair Trading (the "OFT"),[1675] in which the OFT considered whether the provision of

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1671 BI 3268 [internal document], ID2312-298, slide 11.

1672 Bayer's response to the Commission's request for information RFI 98, paragraph 2.

1673 Bayer's *Digital Farming Status 16 February 2017* confidential presentation, slides 17-18 (ID453).

1674 Press release entitled "Bayer CropScience Joins John Deere in Developing Digital Tools to Move from Precision to Decision", 13 March 2014, available at: https://www.cropscience.bayer.us/news/press-releases/2014/03172014-0057-bayer-john-deere-digital-tools (ID11920).

1675 Completed Acquisition by Masstock Arable (United Kingdom) Limited of Dalgety Arable Limited, OFT decision 2004; Completed acquisition by Masstock Arable (United Kingdom) Limited of CSC

agronomy advice was a separate market from the market(s) for the provision of crop protection products.

3.1.2. The Notifying Party's views[1676]

(2557) According to the Notifying Party, the various digital farming tools relevant for the analysis of the Transaction provide farmers and other users with various services which support and facilitate the operation of a farm. These tools, including digitally-enabled prescriptions, form part of a broad market for the provision of agronomic advisory and support services.[1677]

(2558) The Notifying Party considers that there are several factors pointing to a wide market definition including the provision of advisory services to farmers via digital and non-digital means. The Notifying Party argues that providers of digital agronomic advisory tools compete with providers of traditional advisory services.[1678] Moreover, according to the Notifying Party, on the supply side, providers of traditional advisory services are increasingly complementing their traditional advisory services with digital farming tools,[1679] and that these hybrid services are likely to be preferred by customers.[1680]

(2559) Therefore, the Notifying Party believes that the appropriate market definition would include all providers of agronomic advisory services to farmers, whether the agronomic advice is delivered through traditional or digital means.

(2560) The Notifying Party refers to the following narrower market segmentations: (i) the provision of agronomic advisory services to farmers using digital farming tools only; (ii) digital farming tools which deliver crop management functionality; (iii) players adopting an application based strategy and players adopting a platform strategy.

(2561) In any event, the Notifying Party argues that regardless of the exact definition of the relevant product market, the Transaction will not have anti-competitive effects.[1681]

3.1.3. The Commission's assessment

(2562) For the purpose of this Decision, within the broad sector of digital agriculture, the Commission focusses on the provision of digitally-enabled prescriptions, since in other areas, based on the available evidence, the results of the market investigation and taking into account the stage of the development and current features of digital agriculture as a whole, the Parties activities do not seem to overlap and/or sufficient competition would likely remain post-Transaction.

(2563) As mentioned in recital (2446), digitally-enabled prescriptions (also called by Monsanto "advanced prescriptions") are recommendations or advice provided to growers on the selection and application (e.g. dosage, timing, etc.) of agronomic inputs (e.g. seeds, crop protection products, fertilisers, etc.) provided at a

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Crop Protection Limited, OFT decision 12 June 2009; and Completed acquisition by Silos (United Kingdom) Limited of Cleancrop UK Limited, OFT decision 3 June 2011.

1676 Form CO, part 5, paragraphs 119-132.

1677 Form CO, part 5, paragraph 120; Parties' response to the Statement of Objections, section XII.5 and paragraph 847.

1678 Form CO, part 5, paragraph 124; Parties' response to the Statement of Objections, paragraphs 848 to 850.

1679 Form CO, part 5, paragraph 125; Parties' response to the Statement of Objections, paragraph 851.

1680 Parties' response to the Statement of Objections, paragraph 851.

1681 Parties' response to the Statement of Objections, section XII.5.3.

geographically increasingly granular level (e.g. field, field-zone, eventually by square meter) for a grower to implement, and generated by an analytics agronomic engine based on a large sets of public and proprietary data.

(2564) First, the Commission considers that digitally-enabled prescription services constitute a distinct service within digital agriculture.

(2565) According to the market investigation, the majority of competitors and customers consider that the main digital agriculture suppliers are active in the provision of various digital agriculture services.[1682] Those services or advice can be differentiated depending on their function, for example, weather forecast, yield measurement, etc. The majority of competitors and customers that responded to the market investigation supported such differentiation.[1683]

(2566) Digitally-enabled prescriptions combine several elements of digital agriculture (such as data collection, data analytics and recommendations and advice) to provide farmers and other users a clear and distinct value proposition: a precise prescription on what, when, where and how input products have to be used in order to achieve an optimal result that eventually would increase the farmer's output and reduce costs. Digitally-enabled prescriptions are provided with the help of large sets of public and proprietary data, complex algorithms and sophisticated analytics agronomic engines with machine learning capabilities. These services are different from other digital agriculture services, such as weather forecasting, weed identification, etc. in that they required *inter alia* more layers of data, more complex algorithms and broader capabilities, and they recommend a concrete action plan for farmers, with a high level of granularity and customization, in order to increase the farmer's yield and reduce costs.

(2567) The Commission considers digitally-enabled prescriptions as a market in its own right, notwithstanding the trend to bundling and integration or considerations regarding future business models (see Sections XII.2.1.3, XII.2.2.3 and XIII).

(2568) Second, the Commission takes the view that the provision of digitally-enabled prescriptions is different from the provision of traditional non-digital agronomic advice or recommendations by a specialist.

(2569) From a demand-side perspective, the ability of digitally-enabled prescriptions to provide granular and customised recommendations to each farmer at a field and particularly at a field-zone level or narrower combining a wide and large variety of data differentiates digitally-enabled prescriptions from traditional agronomic advisory service. Indeed, digitally-enabled prescription services appear to aim to automatically map fields, collect data and provide advice for each section of the field at a scale, with a level of detail and customisation as well as at a speed that could unlikely be matched by traditional agronomic advisors.

(2570) The granularity, customisation and the large number of variables taken into account by digitally-enabled agronomic services makes them more attractive to farmers that are looking for a way to increase yield and/or reduce expenses. The tools offered by a digital agriculture supplier will be able to automatically determine which areas of

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1682 Questionnaire to Digital Agriculture Competitors (Q11), question 8. Questionnaire to Digital Agriculture Customers (Q12), question 6.

1683 Questionnaire to Digital Agriculture Competitors (Q11), question 7. Questionnaire to Digital Agriculture Customers (Q12), question 5.

the farmer's field need irrigation, fertiliser or crop protection products, where and when seeding should be done and they will be able to accumulate historic data to learn, improve and refine further their agronomic advice to the specific farmer and to other through time.

(2571) While digitally-enabled prescription agriculture is still emerging, it is rapidly penetrating the agricultural sector. Based on the information available to the Commission, once farmers further adopt digitally-enabled prescription services they are unlikely to substitute them for traditional agronomic advice since the two types of advice are unlikely to be comparable in terms of granularity, customisation, number of variables included and speed.

(2572) From a supply-side perspective, while some suppliers of traditional agronomic advice are incorporating digital features for the provision of their services they are unlikely to be able to provide digitally-enabled prescription services in the short term due to the substantial investments required to develop or acquired the broad capabilities needed to provide these services. The provision of digitally-enabled prescription services requires *inter alia* access to a variety of public and proprietary data, the development of complex algorithms and models and sophisticated analytics agronomic engines (see also Sections XII.1.2.1 and XII.4.3.3.3).

(2573) In the response to the Statement of Objections,[1684] the Notifying Party refers to traditional agronomic services with digital features as "hybrids" and argues that these hybrid services are likely to be preferred by customers due to (i) the existing relationship and trust between agronomists and customers; (ii) the human aspect in an agriculture market in which digital technologies are new, and (iii) the greater precision and accuracy achieved as a result of a specialist reviewing and interpreting the data alongside the computer.

(2574) However, the Commission considers that the adoption of digital features such as apps and software by suppliers of traditional agronomic services indicates the direction in which the industry is moving. Moreover, the digital features that traditional suppliers are able to incorporate and provide are unlikely to be comparable and therefore compete with a fully-fledged offering of digitally-enabled prescription services, given their limitations (e.g. in terms of proprietary data, granularity of advice, etc.). Hybrid agronomic services are an attempt of suppliers of traditional agronomic services to catch up with the digital evolution of the agriculture domain.

(2575) In fact, the relationship of trust between service providers and customers and the human component do not disappear in the provision of digitally-enabled prescriptions, for example sales forces and support agronomic services remain. Furthermore, a large number of agronomists and other specialists participate in the development of digitally-enabled prescriptions (see, for example, recital (2791)) reviewing results and overall ensuring the precision and accuracy of those digitally-enabled prescription services. Therefore, these components are not lost but already incorporated to digitally-enabled prescription services.

(2576) Third, the Commission considers that the market for digitally-enabled prescriptions should be further segmented based on the main types of input for which the prescription is provided, such as herbicides, insecticides, fungicides, fertilizers, plant growth regulators or seeds. From the demand-side perspective (i.e. growers), if their

[1684] Parties' response to the Statement of Objections, section XII.5.1.

crop suffers from a disease and requires a digitally-enabled prescription of a fungicide, a digitally-enabled prescription of another product (e.g. a herbicide) would not be considered a substitute. As regards the supply-side, the development of digitally-enabled prescriptions for each of the different types of input products requires specific data, investment and time.

(2577) Fourth, the Commission considers that digitally-enabled prescriptions should be further distinguished based on crop groupings for which these services are provided. For the purposes of this Decision, it is appropriate to distinguish digitally-enabled prescriptions of fungicides for broad acre crops (which include, e.g., corn, wheat, barley, etc.). This is due to the fact that digitally-enabled prescriptions of fungicides involve large economies of scale. Scalability has been identified as a key element to ensure competitiveness and viability.[1685] Therefore, the development of services for broad acre crops is more attractive since the acreage dedicated to cultivate these crops is significantly large throughout the EEA, allowing the supplier to enjoy economies of scale and providing a larger return on investments than, for example, prescriptions for fruits and vegetables, which typically occupy smaller acreage.

3.1.4. Conclusion

(2578) On the basis of the available evidence, the results of the market investigation, and taking into account the particular stage of development of digital agriculture as a whole and its features at the time of the Transaction, the Commission considers that for the purpose of this Decision the effects of the Transaction should be assessed on the basis of a relevant product market composed of digitally-enabled prescriptions. The market for these services should be further segmented by input product (e.g. fungicides, herbicides, insecticides, fertilizers, seeds, etc.) and by crop groupings (e.g. broad acre crops).

3.2. Geographic market definition

3.2.1. The Commission's precedents

(2579) The Commission has not previously assessed digitally-enabled prescriptions and has thus not yet defined the relevant geographic market.

3.2.2. The Notifying Party's views

(2580) According to the Notifying Party, some demand-side considerations point to national relevant geographic markets. Traditionally, advisory services to farmers were provided locally and required local agronomic knowledge by the service provider. Furthermore, the provision of digital agronomic advisory services to farmers may, particularly in European countries, be somewhat constrained by national language preferences.

(2581) Supply-side considerations point to a much broader relevant geographic market for digital agronomic advisory services to farmers. Digital farming software development is likely to be at least EEA-wide, if not global, in geographic scope. Digitally-sourced agronomic advisory products do not require specific local knowledge and expertise, but only the capacity to harness. Also, developing digital agronomic advisory products in different languages for different national markets is

[1685] Responses from competitors and customers to Questionnaire Market Test, question 37.1.

unlikely to represent a significant cost. Finally, farmers are able to access digital farming tools from various locations and geographical zones.

(2582) The Notifying Party argues that whether the relevant geographic market is national, EEA-wide or global, the Transaction will not have anti-competitive effects.[1686]

3.2.3. The Commission's assessment

(2583) The Commission's view is that the market for the provision of digitally-enabled prescriptions is national in scope.

(2584) The market investigation indicated that the majority of competitors and customers understand that digital agriculture services are developed centrally[1687] but they are tweaked and adapted for deployment in individual countries even if their core characteristics and functionalities do not change.[1688]

(2585) A competitor stated that "*[…] most companies are developing applications for specific countries [or] parts of countries and they therefore need a lot of modification to be deployed elsewhere. There are the obvious things like language, but beyond that there are many different farming practices and government regulations that require vast modifications before a piece of software can be deployed internationally.*"[1689] Another competitor indicated that "*[…] some functionalities may eventually be adapted to individual countries.*"[1690]

(2586) With regard to small and medium digital agriculture players, a competitor stated that they "*are often limited to a certain geography, certain languages, certain crops, etc. […] [t]hey often need to take into consideration specific local laws […]. Due to all this, a lot of times the service is developed for only 1 country.*"[1691]

(2587) As regards data, the majority of competitors and customers that responded to the market investigation indicated that agronomic data is collected from different world regions and can be combined to identify patterns and trends relevant for the world region it relates to and/or other regions.[1692] However, a competitor indicates that "*[i]t is unclear whether data from one region could be combined to identify patterns in another region. It would depend on many different factors such as the patterns that are attempting to be extrapolated, quality of data and world regions attempting to be combined*."[1693]

(2588) Also, when introducing digitally-enabled prescriptions in a specific country, the supplier has to verify and optimise the algorithms to that location. According to ChemChina-Syngenta, "*it is not easy to introduce a digitally-enabled prescription service from one market to another as there are significant local agronomic variations that need to be incorporated into offerings (for example fungicides*

1686 Parties' response to the Statement of Objections, section XII.5.3.

1687 Questionnaire to Digital Agriculture Competitors (Q11), question 10. Questionnaire to Digital Agriculture Customers (Q12), question 8.

1688 Questionnaire to Digital Agriculture Competitors (Q11), question 11. Questionnaire to Digital Agriculture Customers (Q12), question 9.

1689 Questionnaire to Digital Agriculture Competitors (Q11), question 10.1.

1690 Questionnaire to Digital Agriculture Competitors (Q11), question 11.1.

1691 Questionnaire to Digital Agriculture Competitors (Q11), question 10.1.

1692 Questionnaire to Digital Agriculture Competitors (Q11), question 12. Questionnaire to Digital Agriculture Customers (Q12), question 10.

1693 Questionnaire to Digital Agriculture Competitors (Q11), question 11.1.

diseases vary across different markets)".[1694] However, Bayer stated that [geographic application of pipeline product].[1695]

(2589) Moreover, as indicated above, other competitors also pointed out that factors such as farming practices, government regulations and specific local laws would need to be taken into account to be able to provide a granular and customised agronomic advice.

(2590) Farmers are unlikely to pay for agronomic advice provided by a digital agriculture supplier active in a different geography, since they might not have all the necessary data regarding their country or local area and, as a result, the level of accuracy of the advice would be compromised.

(2591) Furthermore, according to the internal documents of the Parties, market penetration in digital agriculture, including digitally-enabled prescriptions, is done on a country-by-country basis. Entry does not seem to take place over a full region, for instance the EEA.[1696]

(2592) Finally, as pointed out by the Parties, the language plays an important role. Farmers are likely to favour a supplier that can provide digitally-enabled prescriptions in their own language.

3.2.4. Conclusion

(2593) On the basis of the available evidence, the results of the market investigation, and taking into account the particular stage of development of digital agriculture as a whole and its features at the time of the Transaction, the Commission considers that for the purpose of this Decision the relevant geographic market for the provision of digitally-enabled prescriptions is national in scope, although in its assessment the Commission will also take into account the broader regional geographic context where relevant.

4. COMPETITIVE ASSESSMENT: DIGITALLY-ENABLED AGRONOMIC PRESCRIPTIONS

4.1. Concerns raised during the market investigation

(2594) According to the market investigation, the majority of competitors indicated that the Transaction will have a negative impact in digital agriculture leading to higher prices, narrower choices and less innovation.[1697] The majority of customers disagreed indicating that the Transaction would have a positive impact in digital agriculture.[1698]

(2595) A competitor argues that "*[t]he transaction will force others to reduce prices, their digital services will most likely be free of charge and costs covered by increased product sales.*"[1699] A customer corroborated this concern "*[f]armers will pay more for the inputs because of taking the cost of the services*".[1700] Another competitor

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1694 Agreed non-confidential minutes of a call with ChemChina-Syngenta, 30 October 2017, paragraph 12 (ID9480).

1695 Agreed minutes of a call with Bayer, 13 November 2017, paragraph 13 (ID9528).

1696 MI 2078 [internal document], ID1455-5501, slides 9-10.

1697 Questionnaire to Digital Agriculture Competitors (Q11), question 55; DowDuPont's comments on the Statement of Objections of the 15 January 2018, section II, pages 5-8 (ID10083); Oxfam's press release entitled "Fusion von Bayer und Monsanto: Big Player der digitalen Landwirtschaft", 12 February 2018, sent by e-mail to the Commission by Oxfam on 12 February 2018 (ID11470).

1698 Questionnaire to Digital Agriculture Customers (Q12), question 50.

1699 Questionnaire to Digital Agriculture Competitors (Q11), question 55.1.

1700 Questionnaire to Digital Agriculture Customers (Q12), question 50.1.

indicated that the Parties "*[…] will have the advantage of added resources, technology, IP, and distribution that will grow their ability to control consumer buying decisions*".[1701]

(2596) Other competitors stated that "*[d]ue to the high amount of R&D budget, it will be harder for smaller companies like us to keep our competitive advantage*";[1702] and "*[d]igital services will be further devalued making it very hard for independent data management companies to charge adequately for services*".[1703]

(2597) A competitor indicated that "*[i]n the EEA, the effects of the transaction are likely to be bigger. […] In the EEA, the number of competitors is more limited, they have not been in the market for long and the business model is not yet set up. Therefore, the impact of market disruption by the merged entity would be higher in Europe than in the U.S.*"[1704]

(2598) In terms of digital agriculture services, the majority of competitors considered that the following services would likely be negatively impacted by the Transaction (in order of importance):[1705] (i) in season services (e.g. scouting, fertility application, pest / disease control), (ii) platform and field insights (e.g. field data, data visualization, data connectivity); (iii) planning services (e.g. yield analysis, field planning); (iv) harvest services (e.g. execution, maturity, harvest map); (v) pre-planting services (e.g. soil testing, irrigation/tiling); (vi) planting services (e.g. real time record of planting & spraying, planting execution); (vii) farm management; and (viii) weather. The majority of customers did not consider that these services would be negatively affected.[1706]

(2599) In this regard, competitors have made the following statements: "*the combination of Bayer/Monsanto will lead to an acceleration of the 'Network Effect' in the agricultural industry*"[1707] and "*[w]eather will be provided free or almost free and bundled, and were a dominant market position acquired, this will lower competition*."[1708]

(2600) With regard to innovation, the majority of customers and the majority of competitors have opposite views. While the former believe the Transaction will have a positive impact on innovation in digital agriculture (without providing further explanation),[1709] the latter consider that it will have a negative impact.[1710] Thus, competitors indicated that "*[…] for Start Up companies it will be harder to enter the market*"[1711] and "*[i]t will deter some investments in the market and could limit*

1701 Questionnaire to Digital Agriculture Competitors (Q11), question 55.1
1702 Questionnaire to Digital Agriculture Competitors (Q11), question 54.1.
1703 Questionnaire to Digital Agriculture Competitors (Q11), question 54.1.
1704 Agreed non-confidential minutes of a call with ChemChina-Syngenta, 30 October 2017, paragraph 21 (ID9480).
1705 Questionnaire to Digital Agriculture Competitors (Q11), question 56.
1706 Questionnaire to Digital Agriculture Customers (Q12), question 51.
1707 Questionnaire to Digital Agriculture Competitors (Q11), question 56.1.
1708 Questionnaire to Digital Agriculture Competitors (Q11), question 56.1.
1709 Questionnaire to Digital Agriculture Customers (Q12), question 52.
1710 Questionnaire to Digital Agriculture Competitors (Q11), question 57.
1711 Questionnaire to Digital Agriculture Competitors (Q11), question 57.1.

innovation if the new company controls too much IP and intimate knowledge of products required by farmers."[1712]

(2601) The market investigation also points to concerns regarding dominance of the merged entity:[1713] "*Combined with Bayer they will become market dominant in Europe;*"[1714] and "*[…] they will get a dominant role, then all other digitla (sic) service providers will be effected (sic).*"[1715]

4.2. The Notifying Party's views

(2602) First, the Notifying Party argues that Bayer and Monsanto do not compete, and a combination of their offering will not deprive consumers of the choice between rival products.[1716] Specifically, the Parties submit that Bayer and Monsanto are not close competitors in the provision of digitally-enabled prescriptions for crop protection products[1717] and that the Parties absent the transaction would not become close or important competitors in this market.[1718] Their prescription functionalities would apply to different stages of the agricultural process, and there is no overlap between them.

(2603) Moreover, the Parties also argue that neither Bayer nor Monsanto are leaders of digital agriculture or in digitally-enabled prescriptions in the EEA[1719] and the combined entity would not become a clear leader in digitally-enabled prescriptions post-Transaction. Furthermore, the Parties also submit that the Parties' access to data is not unique and does not give them a head start vis-à-vis competitors.[1720]

(2604) With respect to digital agriculture in general,[1721] the Parties consider that the Transaction does not raise competition concerns, in particular due to their different strategies, with Monsanto, through Climate FieldView, pursuing an open, brand-agnostic platform strategy; while Bayer has opted for a vertical strategy, focusing on an advisory tool that will promote its range of crop protection products.

(2605) At platform level, the Parties claim that platform-to-platform competition is vigorous and the combination of Bayer's digital farming tools into the Climate FieldView platform is unlikely to impact platform-to-platform competition. At the level of apps (verticals), the Parties argue that Bayer's and Monsanto's products have a very different focus, and are likely to be used in parallel rather than as substitutes, and a combination of Bayer and Monsanto's digital agriculture offering will not deprive the consumer of the choice between rival products.

(2606) Second, the Notifying Party claims that Monsanto does not offer digitally-enabled prescriptions for crop protection products in the EEA and is not likely to enter

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1712 Questionnaire to Digital Agriculture Competitors (Q11), question 57.1.

1713 DowDuPont's comments on the Statement of Objections of the 15 January 2018, page 6 (ID10083); ABL's comments on the Statement of Objections, section XII.2.2.9 (ID10094).

1714 Questionnaire to Digital Agriculture Competitors (Q11), question 13.

1715 Questionnaire to Distributors and Institutes (Q2), question 101.

1716 Form CO, part 5, paragraphs 98-118.

1717 Parties' response to the Statement of Objections, section XII.4.2; Parties' response to the second Letter of Facts, section 3.

1718 Parties' response to the Statement of Objections, section XII.4; Parties' response to the second Letter of Facts, section 4.

1719 Parties' response to the Statement of Objections, section XII.4.1.

1720 Parties' response to the Statement of Objections, section XII.4.2.4.

1721 Form CO, section VI.

the EEA with such products in a timely manner.[1722] The Notifying Party states that (i) [pipeline product] is a business model and not a digitally-enabled prescription and its development is uncertain;[1723] and (ii) there is no evidence that Monsanto is likely to enter with digitally-enabled prescriptions in the EEA in a timely manner.[1724]

(2607) Third, the Notifying Party argues that the competitive constraints will not be reduced as a result of the Transaction.[1725] The Parties claim that sufficient competition will remain in the market for digitally-enabled prescriptions post-Transaction. In particular, the Parties submit that they do not have a competitive advantage in relation to digitally-enabled prescriptions[1726] as (i) not only integrated players are able to develop digitally-enabled prescriptions, (ii) players in digital agriculture from various backgrounds such as distributors, agricultural equipment manufacturers and software companies benefit from different competitive advantages, and (iii) there are many comparable competitors such as DowDuPont or ChemChina-Syngenta and the competitive constraint currently in the industry will not be reduced through the transaction.

(2608) Fourth, the Notifying Party claims Bayer does not plan to discontinue digital agriculture innovation.[1727]

(2609) Fifth, the Notifying Party argues that there are no basis to conclude that a "first mover" advantage or network effects would have an anti-competitive effect in the context of the Transaction.[1728]

(2610) Sixth, the Notifying Party also puts into question the results of the market investigation as unreliable sources to support the Commission's conclusion.[1729]

(2611) Last, the Notifying Party contests the market definition claiming that digital agriculture is a nascent and dynamic market of which there are no widely accepted or acknowledged market studies. In any event, according to the Notifying Party, the definition of the relevant market definition does not alter the conclusion that there will be no anti-competitive effects as a result of the Transaction.[1730]

4.3. Non-coordinated effects: Likely elimination of potential competition in digitally-enabled prescriptions of fungicides for broad acre crops in the EEA

(2612) For the reasons set out below, the Commission considers that the Transaction would be likely to lead to a significant impediment to effective competition in the market for the provision of digitally-enabled prescriptions of fungicides for broad acre crops in the EEA.

1722 Parties' response to the Statement of Objections, section XII.2; Parties' response to the second Letter of Facts, section 2.

1723 Parties' response to the Statement of Objections, section XII.2.1.

1724 Parties' response to the Statement of Objections, section XII.2.2.

1725 Parties' response to the Statement of Objections, section XII.4; Parties' response to the second Letter of Facts, section 5.

1726 Parties' response to the Statement of Objections, section XII.4.3.

1727 Parties' response to the Statement of Objections, section XII.3; Parties' response to the second Letter of Facts, section 7.

1728 Parties' response to the second Letter of Facts, section 6.

1729 Parties' response to the Statement of Objections, section XII.4.4.

1730 Parties' response to the Statement of Objections, section XII.5.

(2613) Given the nascent nature of the relevant markets, no reliable market share data has been provided by the Parties[1731] or made available for the Commission's analysis.

4.3.1. Bayer and Monsanto are potential competitors in the market for the provision of digitally-enabled prescriptions

4.3.1.1. Bayer is about to start commercialising its digitally-enabled prescriptions of fungicides for broad acre crops in the EEA and is likely to further expand its offering in terms of crop protection products and crops covered

(2614) As described in Section XII.2.2.2.1, Bayer's digitally-enabled prescriptions are offered through xarvio FIELD MANAGER ("FIELD MANAGER"). FIELD MANAGER and Scouting were launched in November 2017 and xarvio FIELD MANAGER will be commercialised as of the 2018 growing season.[1732] Bayer intends to roll-out FIELD MANAGER in […] and the geographic scope of this tool is defined as […].[1733] Bayer also provides agronomic advisory services through Expert. in 17 Member States.[1734]

(2615) Fungicides.[1735] In the EEA, through FIELD MANAGER, Bayer offers digitally-enabled prescriptions of fungicides for winter wheat crops in France and Germany. The prescriptions are provided at field and field-zone level. Bayer is currently working on expanding its digitally-enabled prescription offer of fungicides to include additional crops and geographies in the EEA and abroad.

(2616) In particular, for the 2018 growing season, Bayer is planning to commercialise digitally-enabled prescriptions of fungicides for […] in […]. The prescriptions will be provided at field and field-zone level.

(2617) Additionally, Bayer is developing digitally-enabled prescriptions of fungicides […]. The prescriptions would be provided at field and field-zone level. The beta-test of the prescription is planned for […] and the launch for […].

(2618) Outside the EEA, for the 2018 growing season, Bayer is planning to commercialise […]. Bayer is also planning to pre-launch in the […] growing season digitally-enabled prescriptions of fungicides for […].

(2619) For the U.S. and Brazil, Bayer is developing digitally-enabled prescriptions of fungicides for […]. The prescriptions would be provided at field and field-zone level and the potential test of this prescription is planned for […].

(2620) Insecticides.[1736] In the EEA, Bayer is planning to launch in the […] growing season digitally-enabled prescriptions of insecticides for […].[1737]

(2621) Herbicides.[1738] In the EEA, Bayer is developing digitally-enabled prescriptions of herbicides for […]. The alpha-testing of wheat is expected for […] and the launch for […].[1739] Outside the EEA, besides prescriptions for […], Bayer is planning to launch

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1731 Form CO, part 5, paragraph 137.
1732 BI 3419-1416, [internal document], ID3817-138, slide 8.
1733 BI 3419-1416, [internal document], ID3817-138, slides 2 and 8.
1734 Form CO, part 5, paragraph 25.
1735 Bayer's response to the Commission's request for information RFI 98, paragraph 24 and Annex 98.3.
1736 Bayer's response to the Commission's request for information RFI 98, Annex 98.3.
1737 Bayer's response to the Commission's request for information RFI 98, paragraph 24.
1738 Bayer's response to the Commission's request for information RFI 98, Annex 98.3.
1739 Bayer's response to the Commission's request for information RFI 98, Annex 98.3.

digitally-enabled prescriptions of herbicides for […]. The prescription will be provided at field-zone level.

(2622) To facilitate further developments in digitally-enabled prescriptions of herbicides, Bayer has recently entered into a three-year research collaboration with The Bosch Group.[1740] The collaboration will combine Bosch's research on sensor technology and selective spray systems and Bayer's FIELD MANAGER algorithm.

(2623) Plant growth regulators. Bayer plans to launch digitally-enabled prescriptions of plant growth regulators for […] in key EU countries which are scheduled for alpha-testing already in […].[1741]

(2624) Seeds.[1742] Bayer is developing digitally-enabled seeding prescriptions for […]. The beta-test of the prescription is expected for […] and the launch for […].

(2625) Moreover, Bayer's digitally-enabled prescriptions cover a broad list of diseases, including but not limited to disease risk models in (i) winter wheat for: septoria tritici, septoria nodorum, leaf spot, fusarium, yellow rust, brown rust, powdery mildew, and eye spot; in (ii) barley for: powdery mildew, net blodge, leafe blodge, brown rust, and ramularia; in (iii) sugar beet for: cercospora leaf blodge, ramularia leaf blodge, mildew, and rust; in (iv) potato for: late blight, and early blight; and in (v) oil seed rape for: phoma, rape stem weevil, cabbage stem weevil, pollen beetle, cabbage seed weevil, and pod midge.[1743]

(2626) Based on the digitally-enabled prescription functionalities of FIELD MANAGER, Bayer expects to generate revenues of approximately […] for the period 2018 to 2022 in […].[1744]

(2627) Therefore, the Commission takes into account that Bayer is about to launch in several countries of the EEA digitally-enabled prescriptions of (i) fungicides for (a) […].; and for (b) […]; and of (ii) insecticides for […].

(2628) Moreover, Bayer is developing further digitally-enabled prescriptions that will be launched in the several EEA countries in the near future, in particular digitally-enabled prescriptions of (i) fungicides for […]; of (ii) herbicides for […]; and of (iii) plant growth regulators for […].

(2629) In conclusion, the Commission considers that Bayer is a potential competitor, about to become an actual competitor in the 2018 growing season, in the market of digitally-enabled prescriptions of fungicides for broad acre crops and of insecticides for OSR in several EEA countries. Bayer is also a potential competitor in digitally-enabled prescriptions of fungicides, insecticides, herbicides and plant growth regulators for a wider variety of crops in several EEA countries where Bayer has the ability and incentive to roll out digitally-enabled prescriptions.

1740 Press release entitled "Bayer and Bosch develop new, digital Smart Spraying solutions", 14 September 2017, available at http://www.press.bayer.com/baynews/baynews.nsf/id/Bayer-and-Bosch-develop-new-digital-Smart-Spraying-solutions (ID11919).

1741 Bayer's response to the Commission's request for information RFI 98, Annex 98.2.

1742 Bayer's response to the Commission's request for information RFI 98, Annex 98.2.

1743 Form RM to the Final Commitments submitted by the Parties on 16 February 2018.

1744 Parties' response to the Article 6(1)(c) Decision, paragraph 326; BI 3753 [internal document], ID5016-38, slide 2.

4.3.1.2. Monsanto is likely to enter the EEA with digitally-enabled prescriptions of fungicides for broad acre crops in the EEA

(2630) As indicated in Section XII.2.1.2.1, Monsanto's Climate FieldView already offers in the U.S. digitally-enabled prescriptions of corn seeds. As of spring 2018, it will expand this same offering to Canada. [R&D strategy].

(2631) The Commission considers that, absent the Transaction, Monsanto would be likely to develop and launch in the EEA digitally-enabled prescriptions of fungicides for broad acre crops in the EEA. This view is based on the following evidence.

(A) Monsanto has the ability to develop digitally-enabled prescriptions for crop protection products

(2632) Monsanto has the ability to develop digitally-enabled prescriptions. Through Climate FieldView, Monsanto already offers digitally-enabled prescriptions for seeds in the U.S. [R&D strategy]. Contrary to the claims of the Notifying Party,[1745] this indicates that Monsanto has the required broad capabilities, including agronomic, IT and data capabilities to develop digitally-enabled prescriptions including of crop protection products. Moreover, during the market investigation, [R&D strategy].[1746]

(2633) Furthermore, [R&D strategy].[1747]

(2634) In addition to the data that Monsanto is collecting, Monsanto also has proprietary data concerning crop protection products. Monsanto's crop protection portfolio includes a key herbicide product sold worldwide, Round-up. [R&D strategy].

(2635) Moreover, [R&D strategy].

(2636) In particular, as mentioned in Section XII.2.1.4, [collaborations].[1748]

(2637) In the response to the Statement of Objections, the Notifying Party argues that [collaborations].[1749]

(2638) The Commission notes that [collaborations] would likely contribute to enhancing the quality and accuracy of a digitally-enabled prescription. [R&D strategy].[1750]

(B) Monsanto has incentives to develop digitally-enabled prescriptions of crop protection products

(2639) Monsanto is likely to have an incentive to develop digitally-enabled prescriptions of crop protection products. According to its internal documents, [R&D strategy], as shown in Figure 475.

Figure 475 – Monsanto's slide on digitally integrated solutions

[…]

Source: Parties' response to the Commission's request for information RFI 56, questions 2-7, 16, 17 and 22); MI 249905.00001 [internal document], ID6152-50318, slide 24.

1745 Parties' response to the Statement of Objections, section XII.2.2.2.

1746 Addendum to the Parties' response to the Commission's request for information RFI 63, paragraph 128.

1747 Agreed minutes of a call with Monsanto, 13 November 2017, paragraph 2 (ID9516).

1748 Monsanto's response to the Commission's request for information RFI 98, paragraph 50. Parties' response to the Statement of Objections, section XII.2.1.3.1.

1749 Parties' response to the Statement of Objections, section XII.2.1.3.

1750 MI 338642 [internal document], ID7980-11, slides 48 and 50.

(2640) With Monsanto having digitally-enabled prescriptions for seeds [R&D strategy], developing prescriptions of crop protection products would enable Monsanto to provide a "one-stop-shop" solution for growers. In this respect, [R&D strategy].[1751]

(C) Monsanto's internal documents confirm its interest and plans to develop digitally-enabled prescriptions of fungicides

(2641) Monsanto's internal documents show that, before the Transaction, Monsanto was working on [R&D strategy].[1752]

(2642) [R&D strategy].[1753] The Commission notes that developing a [R&D strategy] for a product that a company has no interest on commercialising or developing would not make business sense.

(2643) [R&D strategy].

(2644) A presentation deck of Monsanto shows that in October 2017 Monsanto was working on the [pipeline product] for digitally-enabled prescriptions of fungicides and for other products. The presentation deck indicated that initial efforts to develop the components of the proposed [pipeline product] were underway, including the [pipeline product] and other aspects regarding fungicides.[1754]

(2645) [R&D strategy].

Figure 476 – [R&D strategy]

[…]

Source: MI 338642 [internal document], ID7980-11, slide 4.

(2646) During the market investigation, Monsanto indicated that its digitally-enabled prescription of fungicides would [pipeline product].[1755] Figure 477 below illustrates the expected increased value generated by the provision of digitally-enabled prescription of fungicides following the proposed [pipeline product].

Figure 477 – [Pipeline product]

[…]

Source: MI 338642 [internal document], ID7980-11, slide 51.

(2647) In addition, Monsanto considers that the [pipeline product] develop around the digitally-enabled prescription of fungicides presents a number of additional opportunities for the company, [pipeline product].[1756]

(2648) In October 2017, the trials for Monsanto's digitally-enabled prescription had already commenced (see Figure 478) and a [pipeline product] was a key work stream from summer 2017 (see Figure 479). In 2017, the trials included […] growers, and, in 2018, they were planned to include 200 fields (see Figure 478). The Notifying Party argues that Monsanto only participated in these trials to [pipeline product].[1757] Nevertheless, this seems to contradict the statement that Monsanto has taken no

1751 MI 298993.00001 [internal document], ID6438-59346, slide 16.
1752 MI 338642 [internal document] ID7980-11.
1753 MI 338642 [internal document], ID7980-11, slide 47.
1754 MI 338642 [internal document], ID7980-11, slide 35 15.
1755 Monsanto's response to the Commission's request for information RFI 98, paragraph 6.
1756 MI 338642 [internal document], ID7980-11, slides 48 and 50.
1757 Parties' response to the Statement of Objections, section XII.2.2.3.

concrete steps to develop digitally-enabled prescriptions of crop protection products.[1758]

Figure 478 – Monsanto's draft science plan

[…]

Source: MI 338642 [internal document], ID7980-11, slide 8.

Figure 479 – Monsanto's key work streams

[…]

Source: MI 338642 [internal document], ID7980-11, slide 52.

(2649) In the response to the Statement of Objections,[1759] the Notifying Party indicates that it took Monsanto […] to develop its digitally-enabled seeding prescription. However, as discussed in recital (2633) above, during the investigation, Monsanto stated […].[1760]

(2650) The Notifying Party also argues that the Commission is equating [pipeline product] with digitally-enabled prescriptions in its assessment and that the development of the [pipeline product] is uncertain and at the early conceptual stages.[1761]

(2651) However, as discussed in Sections XII.4.3.1.2(C) and XII.2.1.3 where the [pipeline product] is described, the Commission clearly makes a distinction between the digital agriculture product, i.e. the digitally-enabled prescription of fungicides, and the [pipeline product]. In addition, the precise [pipeline product] digitally-enabled prescriptions does not affect the overall conclusions reached by the Commission.

(D) Monsanto's interest in digitally-enabled prescriptions of crop protection is not an isolated case but it is in line with Monsanto's overall product strategy in digital agriculture

(2652) In the response to the second Letter of Facts, the Notifying Party claims that the Commission raised new concerns regarding Monsanto's products/functionalities that were not digitally-enabled prescriptions.[1762] However, that is incorrect. The evidence included in the second Letter of Facts simply shows that Monsanto is no stranger to developing crop protection functionalities. Therefore, the development of digitally-enabled prescriptions of fungicides is in line with this overall strategy regarding crop protection digital services/functionalities.

(2653) The evidence in the Commission's file suggests that [R&D strategy].

(2654) Figure 480 (red square added) shows that in July 2016 (i.e. before the Transaction) Monsanto was considering [R&D strategy].

Figure 480 – [R&D strategy]

[…]

Source: MI 11 [internal document], ID1635-280, slide 59 (red square added).

1758 Parties' response to the Statement of Objections, paragraph 735.
1759 Parties' response to the Statement of Objections, paragraph 711 and section 2.2.2.
1760 Agreed minutes of a call with Monsanto, 13 November 2017, paragraph 2 (ID9516).
1761 Parties' response to the Statement of Objections, sections 2.1.1, 2.2.3 and 2.1.2.
1762 Parties' response to the second Letter of Facts, section 2.

(2655) The Notifying Party claims[1763] the document is outdated, that none of these products are in Monsanto's pipelines and they do not refer to digitally-enabled prescriptions.

(2656) The Commission notes that the date of the document is July 2016, i.e. a few months before the announcement of the Transaction. Moreover, as discussed in Section XII.2.1.2.1, Monsanto's digital portfolio includes several functionalities related to crop protection.

(2657) In the response to the second Letter of Facts,[1764] the Notifying Party points to a document that was produced in December 2017, i.e. prepared in the midst of the proceedings of the Commission and potentially after the Parties received the Statement of Objections, which shows that [R&D strategy].[1765]

(2658) However, Monsanto's public statements contradict the claims made by the Notifying Party. According to a press release of The Climate Corporation from 4 January 2018,[1766] Disease Diagnosis is one of capabilities which are "*central to the advancements moving through Climates innovation pipeline*". In particular, the press release indicates that "*[c]orn disease diagnosis (U.S.) [is] advancing from development to pre-commercial phase*".

(2659) Moreover, several internal documents indicate that Monsanto was indeed investing and developing several functionalities focused on [R&D strategy].

(2660) Monsanto's internal documents (see Figure 481, yellow highlight added) show that Monsanto is working on a [pipeline product].

Figure 481 – [Pipeline product]

[…]

Source: MI 2106 [internal document], ID930-5373, slide 175 (yellow highlight added).

(2661) According to its internal documents, Monsanto had plans to launch [pipeline product].[1767] [Pipeline product].[1768] [Pipeline product].[1769] The Notifying Party indicated that Monsanto is not considering introducing this functionality in the EEA and that to do so it would take around [pipeline product].[1770]

Figure 482 – [Pipeline product]

[…]

Source: MI 338643 [internal document], ID7980-12, slide 3 (red ovals added).

1763 Parties' response to the Statement of Objections, section XII.2.2.3.

1764 Parties' response to the second Letter of Facts, paragraph 12 and section 2.1.

1765 Parties' response to the second Letter of Facts, paragraph 15.

1766 Press release entitled "The Climate Corporation expands global research footprint with robust innovation pipeline", 4 January 2018, available at: https://www.climate.com/newsroom/climate-corporation-robust-innovation-pipeline (ID11926).

1767 In the response to the Statement of Objections, the Parties indicated that the launch date will be delayed. Parties' response to the Statement of Objections, section XII.2.1.4.

1768 MI 222061.00001 [internal document], ID5613-84023, page 2.

1769 MI 338643 [internal document], ID7980-12, slide 8.

1770 Parties' response to the Statement of Objections, section XII.2.1.4.

(2662) [Pipeline product].

Figure 483 – [Pipeline product]

[…]

Source: MI 342794.00001 [internal document], ID10246-416, slide 5.

(2663) Moreover, Monsanto is developing further products that are still in its pipeline as part of that roll-out of tools [pipeline product].

(2664) [Pipeline product] for a given field is one of them. This product was described in Section XII.2.1.2.1. Figure 484 below depicts the interface of this functionality. [Pipeline product].[1771]

Figure 484 – [Pipeline product]

[…]

Source: MI 2106 [internal document], ID930-5373, slide 166.

(2665) The Parties submit that the internal document depicted is limited for corn in the U.S. and that the functionality would not amount to a digitally-enabled prescription.[1772] The Commission notes that the fact that this functionality is currently based on a different geography does not imply that it cannot be rolled-out in a timely manner in the EEA.

(2666) Another of these Monsanto's products also described in its internal documents (see Figure 485) is [pipeline product].[1773] [Pipeline product].[1774]

Figure 485 – [Pipeline product]

[…]

Source: MI 2106 [internal document], ID930-5373, slide 171.

(2667) In addition, Monsanto currently offers tools to analyse the status and health of a given agricultural field in the U.S [R&D strategy].

(2668) As described in Section XII.2.1.2.1, one element of the suite of tools for roll-out is [pipeline product].[1775] Some functionalities [pipeline product] are already commercially available in the U.S. under the product name *Field Health Imagery*.[1776] In a recent press release, Monsanto announced that the Field Health Imagery discussed in recital (2505), and already available in the U.S., will be also available from autumn 2018 for the EEA.

(2669) Monsanto plans to further improve this product to also include [pipeline product].[1777] [Pipeline product].[1778]

1771 MI 2106 [internal document], ID930-5373, slide 167.

1772 Parties' response to the second Letter of Facts, section 2.3.2.

1773 Parties' response to the second Letter of Facts, section 2.3.3.

1774 MI 2106 [internal document], ID930-5373, slide 172.

1775 MI 2106 [internal document], ID930-5373, slide 157 and notes to slide 156.

1776 Monsanto's website Field Health Imagery, available at https://climate.com/features/field-health-imagery (ID11918).

1777 MI 2106 [internal document], ID930-5373, slide 161 including notes to slide 161.

1778 MI 2106 [internal document], ID930-5373, slide 161 including notes to slide 161.

(2670) Monsanto has also developed alpha (i.e. test) versions of functionalities aimed at addressing disease vulnerability risk of a given field, disease identification. Monsanto's internal documents indicate that the alpha versions of these functionalities were launched in summer 2017 in the U.S. market.[1779]

(2671) [Pipeline product] (see Figure 486).

Figure 486 – [Pipeline product]

[…]

Source: MI 2106 [internal document], ID930-5373, slide 176.

(2672) [R&D strategy].

Figure 487 – [R&D strategy]

[…]

Source: MI 2073 [internal document], ID930-5339, slide 4 (yellow highlight added).

(2673) In particular, another Monsanto's internal document (see Figure 488) shows the [pipeline product].

Figure 488 – [Pipeline product]

[…]

Source: MI 2073 [internal document], ID930-5339, slide 7.

(2674) The Notifying Party, in the response to the second Letter of Facts,[1780] states that the [R&D strategy] considered in Figure 487 and Figure 488 above are not necessarily projects which will ultimately be invested into or would ultimately be commercialized. The Notifying Party points out that these Figures do not show that Monsanto is developing digitally-enabled prescriptions for crop protection products in the EEA.

(2675) However, the evidence in the Commission's file and, in particular the Figures included in this Section such as Figure 487 and Figure 488 above, clearly show that these [R&D strategy] an important element, [R&D strategy], in Monsanto's overall digital strategy. These evidences are contemporaneous documents which further support the Commission's conclusion regarding the ability, incentives and plans of Monsanto to develop digitally-enabled prescriptions of fungicides.

(E) Monsanto is likely to expand its future digitally-enabled prescription of fungicides to crops other than corn

(2676) Monsanto's internal documents show that it is currently developing [pipeline product]. (see recitals (2641)-(2651) above). The Commission further considers that it is likely that Monsanto's digitally-enabled prescriptions of fungicides in the EEA will be developed for broad acre crops. As mentioned in recital (2577), development of digitally-enabled prescriptions of fungicides for broad acre crops allows reaping larger benefits of scale, compared to lower-acreage crops.

(2677) The Commission also notes that Monsanto plans to include the [pipeline product] in its Climate FieldView platform in Europe (see Figure 482 above; emphasis in red

[1779] MI 2106 [internal document], ID930-5373, slide 164.

[1780] Parties' response to the second Letter of Facts, section 2.3.1.

added; and Figure 494). Moreover, an internal presentation of Monsanto of 2015 dealing specifically with digital agriculture (titled [internal document]) (see Figure 489) shows that [pipeline product] presented one of the highest market opportunities for Monsanto in Europe.

Figure 489 – [R&D strategy]

[…]

Source: MI 342622 [internal document], ID10119-20, slide 7.

(2678) As mentioned in recitals (2615) and (2616), [R&D strategy]. In the Commission's view, this increases the likelihood that Bayer and Monsanto will compete head-to-head in relation to the provision of digitally-enabled prescriptions of [R&D strategy].

(2679) Furthermore, the Notifying Party acknowledged that Monsanto was introducing Climate FieldView Plus [pipeline product] in certain EEA countries in the 2018 growing season.[1781] [Pipeline product] represent 69% of the EEA hectares and it is an attractive market, which reinforces the Commission's view that Monsanto would have incentives to develop digitally-enabled prescriptions of fungicides products for several crops, beyond corn.

(2680) In addition, Monsanto also plans to expand [R&D strategy].[1782] In the response to the second Letter of Facts, the Parties acknowledge that the Climate Corporation has conducted [R&D strategy].[1783]

(F) Monsanto is likely to enter the EEA with digitally-enabled prescriptions of fungicides for broad acre crops in a timely manner

(F.i) Monsanto is beta-testing and will pre-launch Climate FieldView in Germany and France, and [pipeline product]

(2681) Monsanto is the global leader in digital agriculture (see Section XII.4.3.2.1). Monsanto considers that Europe represents a [R&D strategy].[1784] Thus, while currently it is mainly present in the U.S., Monsanto has made important inroads into the EEA markets and expects to grow its presence.

(2682) Monsanto's activities in digital agriculture services in the EEA started with AquaTEK in 2009, which operates in Italy, Spain and Portugal;[1785] and more importantly with the acquisition of VitalFields in 2016. VitalFields operates in Estonia, Germany, Poland, Romania and Latvia.[1786] Monsanto acquired it with the view to [R&D strategy].[1787]. Moreover, the acquisition of VitalFields provided Monsanto access to a group of European farmers which were already working

1781 Parties' response to the second Letter of Facts, section 2.3.7.

1782 Press release entitled "The Climate Corporation expands global research footprint with robust innovation pipeline", 4 January 2018, available at: https://www.climate.com/newsroom/climate-corporation-robust-innovation-pipeline (ID11926).

1783 Parties' response to the second Letter of Facts, paragraph 17.

1784 Monsanto's *Third-Quarter FY2017* of 28 June 2017, slide 16, available at: https://monsanto.com/app/uploads/2017/06/FINAL-DRAFT-Q3F17-Earnings-Slides-6-26-17.pdf (ID11917).

1785 Form CO, part 5, paragraph 82.

1786 Form CO, part 5, paragraph 72.

1787 Form CO, part 5, Annex 5.13: [internal document] (MI 167836.00001), slide 2.

digitally with VitalFields and who may be receptive to use the Climate FieldView product.

(2683) Therefore, before the launch of Climate FieldView, Monsanto was already active in the EEA through VitalFields and AquaTEK, which provide agronomic advisory services.

(2684) In November 2017, Monsanto announced the pre-commercial launch of Climate FieldView in France, Germany and Ukraine for the 2018 growing season.[1788] Before this announcement, Climate FieldView was already being "robustly" beta-tested in these countries.[1789]

(2685) Monsanto's internal documents show that [pipeline product]. Following the pre-commercial launch in Germany, France and Ukraine, [pipeline product].[1790]

Figure 490 – [Pipeline product]

[…]

Source: MI 330732 [internal document], ID7980-10, slide 5.

Figure 491 – [Pipeline product]

[…]

Source: MI 2078 [internal document], ID930-5344, slides 9-10.

(2686) Contrary to the claims of the Notifying Party,[1791] this expansion plan is further proof of the adequate definition of the relevant geographic market in this Decision and the conclusion that Monsanto will have a presence throughout the EEA imminently. Moreover, as of spring 2018, Monsanto's Climate FieldView will offer in Europe (France and Germany): (i) manual seeding scripting, (ii) manual fertility scripting, (iii) data connectivity, and (iv) yield analysis tools; and as of fall 2018, Climate FieldView will also offer advanced Field Health Imagery.[1792]

(2687) Furthermore, during the investigation, the Parties confirm Monsanto's intention to enter the EEA with Climate FieldView, as outlined above.[1793] Moreover, Monsanto [pipeline product] (see Figure 499 below).[1794]

(2688) The Notifying Party also argues that the success of Climate FieldView in the EEA is not guaranteed and that its adoption is dependent upon the farmers' ability to

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1788 Press release entitled "The Climate Corporation Expands Its Industry-Leading, Global Digital Agriculture Platform into Europe", 13 November 2017, available at: https://monsanto.com/news-releases/the-climate-corporation-expands-its-industry-leading-global-digital-agriculture-platform-into-europe/ (ID11927).

1789 Press release entitled "The Climate Corporation Expands Its Industry-Leading, Global Digital Agriculture Platform into Europe", 13 November 2017, available at: https://monsanto.com/news-releases/the-climate-corporation-expands-its-industry-leading-global-digital-agriculture-platform-into-europe/ (ID11927).

1790 Monsanto's response to the Commission's request for information RFI 63, paragraph 37.

1791 Parties' response to the Statement of Objections, section XII.5.2.

1792 Press release entitled "The Climate Corporation Expands Its Industry-Leading, Global Digital Agriculture Platform into Europe", 13 November 2017, available at: https://monsanto.com/news-releases/the-climate-corporation-expands-its-industry-leading-global-digital-agriculture-platform-into-europe/ (ID11927).

1793 Form CO, part 5, paragraph 14; Monsanto's response to the Commission's request for information RFI 63, paragraph 37.

1794 MI 330726 [internal document], ID7980-4, slide 5.

automatically upload their field data.[1795] The Commission notes that Monsanto has already partnership agreements with agricultural equipment manufacturers present in the EEA, such as Deere & Company and AGCO [pipeline product].

(2689) Therefore, the Commission considers that Monsanto's entry into the EEA with Climate FieldView is imminent, i.e. as from Q1 2018 in Germany and France [pipeline product].

(F.ii) Monsanto is likely to bring all its digitally-enabled prescriptions services to the EEA

(2690) [Pipeline product].

(2691) Monsanto already has access to agronomic data regarding the EEA, in particular through Monsanto's already established products (e.g. VitalFields[1796]) and it would gain further access through Climate FieldView; which would allow Monsanto to refine and expand its digitally-enabled prescription tool of fungicides to the EEA, Moreover, Bayer confirms that digitally-enabled prescription products [geographic application of pipeline product].[1797]

(2692) [R&D strategy].

Figure 492 – [Pipeline product]

[…]

Source: MI 330732 [internal document], ID7980-10, slide 43 (red square added).

(2693) The notes to Figure 492 further confirm that Monsanto has the intention of [pipeline product], contrary to what the Notifying Party appears to argue in its response to the Statement of Objections and the second Letter of Facts.[1798]

(2694) [Pipeline product].[1799] However, Figure 492 is part of contemporaneous document and it does not specifically refer to or exclude any Monsanto's current or future digitally-enabled prescriptions. Moreover, the Parties have not shown further evidence supporting its claim.

(2695) Therefore, the Commission is of the view that the [pipeline product] may well refer to all digitally-enabled prescriptions that Monsanto has or may develop in the future, including digitally-enabled prescriptions of fungicides. Moreover, with regard to the time required to develop and bring digitally-enabled prescriptions of crop protection products to the EEA, as explained in Section XII.4.3.1.2(A), during the investigation, Monsanto stated that [R&D strategy].[1800]

1795 Parties' response to the Statement of Objections, section XII.2.2.1.

1796 In assessing the acquisition of VitalFields, Monsanto considered one of the benefits to be [R&D strategy] (Form CO, part 5, Annex 5.13: [internal document] (MI 167836.00001), slide 9).

1797 Agreed minutes of a call with Bayer, 13 November 2017, paragraph 13 (ID9528).

1798 Parties' response to the Statement of Objections, paragraph 743; Parties' response to the second Letter of Facts, section 2.3.9.

1799 Parties' response to the Statement of Objections, paragraph 711 and section 2.2.3; Parties' response to the second Letter of Facts, paragraphs 46-47.

1800 Agreed minutes of a call with Monsanto, 13 November 2017, paragraph 2 (ID9516).

(2696) [R&D strategy].

Figure 493 – [Pipeline product]

[..]

Source: MI 342845.00001 [internal document], ID10246-471, slide2.

(2697) Moreover, Figure 494 below shows [R&D strategy]. While the Parties point out that this specific document refers to a long term investment plan,[1801] Figure 493 above indicates how this time reference can be interpreted. [Pipeline product].

Figure 494 – [Pipeline product]

[…]

Source: MI 342631 [internal document], ID10119-29, slide 32 (yellow highlight added).

(2698) Moreover, in a recent press release, Monsanto announced that the Field Health Imagery discussed in recital (2505) and already available in the U.S. will be also available from autumn 2018 for the EEA.[1802]

(2699) In conclusion, based on the above, and contrary to the arguments brought forward by the Parties in the response to the Statement of Objections and the response to the second Letter of Facts, the Commission considers that Monsanto is likely to develop and launch digitally-enabled prescriptions of fungicides for broad acre crops, in the EEA in a timely manner.

4.3.2. Absent the Transaction, Bayer and Monsanto are likely to impose important competitive constraint on each other and on other competitors

(2700) Each of Bayer and Monsanto has significant strengths and broad capabilities, several of them in common, which, absent the Transaction, would allow the Parties to impose an important competitive constraint on each other and on other players in the provision of digitally-enabled prescription services.

4.3.2.1. Monsanto is considered the leader in digital agriculture globally and Bayer is a leading digital agriculture player in Europe

(2701) Figure 495 shows that Monsanto already considers itself, through The Climate Corporation, to be [quote from internal doucment] and to be established as [quote from internal doucment] In the same Figure it is stated that Monsanto [quote from internal doucment], likely referring to Monsanto's already successfully marketed Climate FieldView platform. This shows that Monsanto's view of itself as a market leading player in this field has clear underpinnings.

Figure 495 – [Business strategy]

[…]

Source: MI 11 [internal document], ID1635-280, page 59.

(2702) The leading role of Monsanto in digital agriculture in the U.S. transpires also from numerous other internal documents, as shown, for example, in Figure 496

[1801] Parties' response to the second Letter of Facts, section 2.3.10.

[1802] Press release entitled "The Climate Corporation Expands Its Industry-Leading, Global Digital Agriculture Platform into Europe", 13 November 2017, available at: https://monsanto.com/news-releases/the-climate-corporation-expands-its-industry-leading-global-digital-agriculture-platform-into-europe/ (ID11927).

to Figure 499. [Business strategy]. Monsanto's leading role is a result of their large investments and successful activities in digital agriculture so far and their future business plans. As discussed in Section XII.2.1.1.1, Monsanto forecasts paying acres of [business strategy] (see recital (2476)). With regard to R&D, Monsanto has a cumulative investment up to June 2017 of USD […]. Monsanto's cumulative investment in digital agriculture up until May 2017 is of […] (see recital (2478)).

Figure 496 – [Business strategy]

[…]

Source: MI 9396 [internal document], ID4827, slide 1

Figure 497 – [Business strategy]

[…]

Source: MI 280820.00001 [internal document], ID6438-28081, slide 40.

(2703) In particular, Monsanto's plan is to deliver [R&D strategy].

Figure 498 – [Business strategy]

[…]

Source: MI 8287 [internal document], ID2330-90, page 17.

(2704) While Monsanto currently enjoys a leading position mainly in the U.S., [business strategy]. The Notifying Party claims that Monsanto is not and would not become a leader in digital agriculture in the EEA.[1803] However, before the Transaction and according to its internal documents, Monsanto did not seem to share the view of the Notifying Party. Figure 499 (yellow highlight added) shows that Monsanto intends to become [business strategy]. This is corroborated by Monsanto's investments, as discussed in Section XII.2.1.1, with regard to its European business projections, Monsanto's internal documents indicate that in the long term it expects annual revenues of USD […] and cover [business strategy], as well as a NPV in the range of USD […] (see recital (2477)).

Figure 499 – [Business strategy]

[…]

Source: MI 196597.00001 [internal document], ID5613-28302, slide 2 (yellow highlight added).

(2705) Competitors such as BASF also view Monsanto as the leading player in digital agriculture. Specifically, BASF's internal documents, based on the views of external consultancy […], refer to Monsanto as a leading player in digital agriculture. Figure 500 (yellow highlight added) summarises the strengths of Monsanto (for example, on plant advice/diagnosis, weather monitoring, etc.) and indicates that Monsanto is […].

Figure 500 – BASF's view of Monsanto's offering in digital farming as "clear leader"

[…]

Source: BASF's [internal document], ID10446, slide 1 (yellow highlight added).

[1803] Parties' response to the Statement of Objections, section XII.4.1.2.

(2706) At the same time and despite the Notifying Party's claim to the contrary,[1804] competitors consider Bayer a leading player in digital agriculture in the EEA. For example, BASF sees Bayer as a leading player in the EEA. Figure 501 (yellow highlight added), taken from a BASF internal presentation, summarises the views of […] on the strengths of Bayer and indicates that Bayer is […]. This is further supported in Section XII.2.2.2, which describes Bayer's activities in digital agriculture (more broadly0, and in Section XII.4.3.1.1 on Bayer's plans to roll-out its digitally-enabled prescriptions in the EEA (more specifically), that show Bayer's leading role in these areas in the EEA.

Figure 501 – BASF's view of Bayer's as leading the European market

[…]

Source: BASF's [internal document], ID10446, slide 2 (yellow highlight added).

(2707) Figure 502 shows the main motivations for Bayer to be active in the digital agriculture field which are related to the [business strategy]. Hence, Bayer has a strong incentive to be present and actively develop in this area.

Figure 502 – [Business strategy]

[…]

Source: M.8084 - Bayer-Monsanto - Part 5 - Annex 72 - [internal document] ID6757-11, page 10.

(2708) In light of the above evidence, the Commission is of the view that Monsanto is a clear global leader in digital agriculture and is likely to become a leading player in the EEA, including digitally-enabled prescriptions (see also Sections XII.4.3.1.2 and XII.4.3.2.2). Moreover, the above evidence shows that Bayer is a leading player in digital agriculture in the EEA and it is ahead of the other competitors with regard to digitally-enabled prescriptions of crop protection products (see also Sections XII.4.3.1.1 and XII.4.3.3.4).

4.3.2.2. Bayer and Monsanto, absent the Transaction, would likely become close competitors in the provision of digitally-enabled prescriptions of fungicides for broad acre crops in the EEA

(2709) The Parties contest the view that, absent the Transaction, the Parties would likely become close competitors for the provision of digitally-enabled prescriptions in the EEA.[1805]

(2710) The Commission disagrees. The evidence included in and referred to in Section XII.4.3.2.1 show that Monsanto is a leader in digital agriculture [business strategy]. Monsanto's internal documents show that that [pipeline products] (see Figure 492 and Section XII.4.3.1.2). Moreover, as indicated in recital (2708) above, Bayer is ahead of the other competitors with regard to digitally-enabled prescriptions of crop protection products in the EEA.

[1804] Parties' response to the Statement of Objections, section XII.4.1.1; Parties' response to the second Letter of Facts, section 4.2.3.

[1805] Parties' response to the Statement of Objections, section XII.4.1.2; Parties' response to the second Letter of Facts, section 4.

(2711) Considering the above, and for the reasons that will be explained below, the Commission considers that the Parties will become close competitors in the EEA in the provision of digitally-enabled prescriptions.

(A) Bayer and Monsanto are both suppliers of input products with full knowledge about their characteristics and performance

(2712) Each of the Parties has a comprehensive portfolio of input products, including crop protection products and seeds (see also recital (2806)). The knowledge of their own products provides a significant competitive advantage to each Party in developing digital agricultural solutions, and in particular digitally-enabled prescriptions which rely on the correct and complete information regarding the performance of a particular input product.

(2713) During the market investigation, competitors stated in this regard: "*When seeds & traits companies have access to [digital agriculture] information they can utilize this information to better target and market to their customers thus increasing the chances that customers would choose their seed product over a competitor*";[1806] "*Presence in the digital agricultural space will allow firms to collect meaningful information on product usage and may allow the digital ag providers to drive farmer choice towards the products of that provider*";[1807] "*A company that can use digital agriculture to influence crop protection purchase decisions will have a potential competitive advantage*".[1808]

(2714) Therefore, the Parties' significant activities in input products will help them to develop more accurate, granular and tailored digitally-enabled prescriptions on a standalone basis and it also provides the Parties with strong incentives to develop and perfect these services to reduce the threat that digital agriculture represents, e.g. revenue losses derived from the farmers' reduced costs.

(B) Bayer and Monsanto have access to significant proprietary and third-party data

(2715) As mentioned in Section XII.1.2.1.2, data is key for developing digitally-enabled prescription solutions. Both Bayer and Monsanto collect data from several sources including public, third parties, customers and internal sources (i.e. proprietary data). The superior access to raw data may lead to more finely tuned digitally-enabled prescriptions.

(2716) Bayer owns a knowledge database. [Know-how].

(2717) With regard to the latter, Bayer has its own proprietary data [know-how].

(2718) [Know-how]. Low resolution satellite data (to an accuracy of 10 metres) is available free of charge, but high resolution imagery (for example, accurate to 30 centimetres) and other satellite data are available for a fee. [Know-how].

(2719) [Know-how].

(2720) As regards Monsanto, Climate FieldView also brings together data streams obtained from multiple sources, including Monsanto's in-house research and proprietary data. Monsanto's in-house research means information developed by Monsanto's internal

1806 Questionnaire to Digital Agriculture Competitors (Q11), question 47.
1807 Questionnaire to Digital Agriculture Competitors (Q11), question 47.
1808 Questionnaire to Digital Agriculture Competitors (Q11), question 49.

breeding, production and R&D organisation. For example, it includes information such as performance of different seed hybrids at different planting densities, under different weather or soil conditions and with different types of nutrients; and information on crop protection products obtained from its product portfolio, cooperation agreements and its R&D activities.

(2721) Climate FieldView also incorporates data directly input by the farmer manually or automatically from Climate FieldView Drive sensors which are mounted on the farmers' agricultural equipment.

(2722) Moreover, Climate FieldView integrates data from third parties (weather data, satellite imagery, etc.) that is either publically available or acquired through agreements such as API agreements. Monsanto has API agreements with several companies including key agricultural equipment manufacturers covering the U.S. and the EEA such as John Deere, AGCO and others (see Section XII.2.1.4). According to a competitor, these agreements are very important since: "*John Deere has such a large global share of grower agricultural equipment combined with a platform for the collection and storage of grower data, it is extremely difficult to establish a comprehensive system of data ingestion and analytic output without them*."[1809]

(2723) Furthermore, Figure 503, from a Monsanto's internal presentation, lists various datasets used in Monsanto's Climate FieldView and suggests that some of them are uniquely available to Monsanto.

Figure 503 – [Know-how]

[…]

Source: MI 342794.00001 [internal document], ID10246-416, slide 5.

(2724) Additionally, each Party has invested heavily into setting up a global network of field testing sites enabling extensive field trials, which provides them with further proprietary data and are essential to ensure that the agronomic advice is as accurate and comprehensive as possible. According to Bayer, field trials are the biggest time and cost challenge in the development of agronomic advisory products based on data and algorithms.[1810]

(2725) Moreover, according to the market investigation, the majority of competitors and customers consider that collecting large amounts of agronomic data to improve services and be competitive is of great importance.[1811]

(2726) Competitors stated that "*[d]ata is critical to help validate and improve recommendations and decision support results. Any information that is controlled only by a single supplier gives them a clear advantage over other suppliers of services*";[1812] "*[t]he more data (and the more specific data) you have, the more robust your algorithms will be and the more proven results you will have as references to your potential customers. More data most likely also means covering more crop varieties, more climate areas, more soil types, etc. thus, also allows you to*

1809 Questionnaire to Digital Agriculture Competitors (Q11), question 22.1.

1810 Parties' response to the Commission's request for information RFI 27, question 13.

1811 Questionnaire to Digital Agriculture Competitors (Q11), question 35; Questionnaire to Digital Agriculture Customers (Q12), question 32.

1812 Questionnaire to Digital Agriculture Competitors (Q11), question 34.1.

expand your offering to other areas and cultures";[1813] and "*[b]ecause it is a complex system that constantly evolves, it is important to have different independent and broadly representative sources of information to build the necessary expertise.*"[1814]

(2727) Furthermore, the majority of competitors and customers indicated that Monsanto has a significant advantage in collecting large amounts of agronomical data from its digital agriculture customers that sets it aside from its competitors in its ability to (i) offer services, (ii) improve services, and (iii) develop new services.[1815] With regard to Bayer, the replies of competitors were inconclusive, but the majority of customers considered that Bayer also has a significant advantage in collecting large amounts of agronomical data from its digital agriculture customers that, as in the case of Monsanto, sets it aside from its competitors in its ability to offer and improve and develop new services.[1816]

(2728) The Parties have contested that Monsanto or Bayer have unique access to significant proprietary and third-party data and have submitted that their access to data does not provide them with an advantage over other players.[1817] The Commission however is of the view that the Parties have special capabilities that put them at an advantage vis-à-vis their competitors, in particular given the results of the market investigation cited in recitals (2725)-(2727), and the evidence in recitals (2715)-(2724), including the proprietary data, field testing data and data collection capabilities that the Parties have. Moreover, Bayer and Monsanto invested significantly in the collection of data from different sources including automatic collection through, for example, sensors, which plays an important role in digital agriculture, and it is likely to play a bigger one in the future.

(C) Bayer and Monsanto have powerful agronomic engines and a comprehensive system of data processing

(2729) As discussed in Section XII.1.2.1.2, both Parties have developed a comprehensive system of data processing and analytic output, in particular, the Parties have (i) data pipelines capable of ingesting and enhancing large amounts of different types of data from different sources, which ensures data quality; and (ii) analytics engines or digital software tools which are capable of applying appropriate algorithms to provide accurate and diverse agronomic advice.

(2730) Moreover, Monsanto considers (see Figure 512) that it has built an engineering infrastructure and an analytics engine which is [pipeline product].[1818]

(2731) Bayer also has a powerful agronomic engine ([know-how]) which combines Bayer's knowledge database together with the artificial intelligence which processes the data to provide agronomic advice as an output (see recital (2458) above)

(2732) These elements allow both Parties to develop complex and precise digital agriculture tools for which more data layers and complex algorithms will be required,[1819] and

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1813 Questionnaire to Digital Agriculture Competitors (Q11), question 34.1.

1814 Questionnaire to Digital Agriculture Competitors (Q11), question 34.1.

1815 Questionnaire to Digital Agriculture Competitors (Q11), question 38; Questionnaire to Digital Agriculture Customers (Q12), question 34.

1816 Questionnaire to Digital Agriculture Competitors (Q11), question 39; Questionnaire to Digital Agriculture Customers (Q12), question 35.

1817 Parties' response to the Statement of Objections, section XII.4.2.4.

1818 MI 11 "Madison Management Presentation", ID1635-280, slide 61.

1819 Parties' response to the Commission's request for information RFI 27, question 12.

that are able to produce accurate, granular, integrated and customised agronomic advice.

(2733) For example, a complex digital agriculture tool aiming to provide advice on timing for fungicide applications and zone spray features in winter wheat such as FIELD MANAGER, would require a substantial number of data layers including seed variety, variety characteristics, planting date, location, local weather data, satellite images, country specific regulations on crop protection products, characteristics of crop protection products, previous crops planted on the farmers specific field and the tillage system that the farmer has implemented on his field.[1820] The raw data will need to be obtained, cleaned, processed to create the required data layers, which will have to be analysed through a powerful agronomic engine able to ingest all those data layers and provide accurate, granular, integrated and customised agronomic advice, such as digitally-enabled prescriptions.

(2734) Therefore, the Commission considers that not all digitally-enabled prescriptions are created equal and that those generated by Bayer and Monsanto are likely to be more comprehensive, accurate, granular, integrated and customised than the digitally-enabled prescriptions of their competitors.

4.3.2.3. Conclusion

(2735) Bayer is a leading player in digital agriculture in the EEA and it is ahead of its competitors in digitally-enabled prescriptions of crop protection products. Monsanto is a leader in digital agriculture and it is likely to become a leading player in the EEA providing services such as digitally-enabled prescriptions of fungicides.

(2736) Moreover, Bayer and Monsanto have broad capabilities that allow them to combine important and vast proprietary data, with extensive famers' data and a broad variety of information from third parties, collected either directly, through partnership agreements or by acquisitions.

(2737) Furthermore, both Parties have comprehensive data processing capabilities and powerful agronomic engines allowing them to provide complex agronomic services such as digitally-enabled prescriptions.

(2738) Therefore, the Commission considers that, absent the Transaction, the Parties are likely to compete closely with each other and act as important competitive constraints on each other and on other competitors. Conversely, as a result of the Transaction, a close potential competitor and an important competitive constraint would be eliminated from the market.

4.3.3. Bayer and Monsanto are only comparable to a limited number of competitors which are unlikely to exercise a sufficient degree of competitive pressure post-Transaction regarding digitally-enabled prescriptions of fungicides for broad acre crops in the EEA

4.3.3.1. The Commission conducted a thorough and wide investigation of the competitive landscape

(2739) The Commission conducted a thorough and wide investigation of the companies active in digital agriculture and their activities. Bayer and Monsanto claimed that there were more than 100 competitors active in digital agriculture worldwide and

[1820] Parties' response to the Commission's request for information RFI 27, question 12.

provided contact details for 53 companies. As part of the initial market investigation, the Commission sent questionnaires to those companies.

(2740) Following the analysis and assessment of the replies to the questionnaire and the information provided by Bayer and Monsanto in response to several requests for information, the Commission identified a limited number of companies active in digital agriculture in the EEA and focusing on recommendations regarding crop protection products. The Commission sent specific requests for information to 19 companies.

(2741) The Commission also conducted several conference calls with companies active in digital agriculture to clarify the replies provided and to understand to which extent those companies were either active or planning to enter the market of digitally-enabled prescriptions for crop protection products.

(2742) Moreover, the Commission researched, based on public available data, companies that were indicated by customers and competitors as active in the market for digitally-enabled prescriptions. Furthermore, at Bayer's invitation, the Commission attended the trade fair Agritechnica[1821] on 16 November 2017, during which it had the opportunity to discuss with several companies that Bayer claimed to be competitors in digitally-enabled prescriptions, as well as others that were presenting their digital agriculture products at the fair.

(2743) The Commission informed Bayer at the fair that it had not identified additional competitors active in digitally-enabled prescriptions in the EEA and invited Bayer and Monsanto to research further and submit the names of companies active in the relevant market. On 24 November 2017, Bayer made a submission on crop protection variable rate application players in the EEA in which it identified three companies: Agricon, FarmStar and Omnia.[1822]

(2744) The assessment of competitors conducted below takes into account all the information provided by Bayer and Monsanto, and obtained by the Commission through its market investigation and public available data. Based on that analysis, the Commission concludes that only a limited number of competitors are able to exercise a sufficient degree of competitive pressure post-Transaction over the merged entity for the reasons explained below.

4.3.3.2. The provision of digitally-enabled prescription services requires broad capabilities that only a limited number of companies have or are able to acquire

(2745) As explained in Section XII.1.2 above, digitally-enabled prescription services go beyond analogue recommendations on which agronomic inputs could be used by a farmer.

(2746) Digitally-enabled prescription combine and process the information provided by the customer, as well as other farmers that the company has collected during several growing seasons; with proprietary data of the relevant company on its agronomic products, the results of the field tests and other information (such as weather, satellite images, soil data, etc.) either publically available or bought by the company. The aim is to provide the farmer with an accurate, integrated, tailored and granular

1821 Agritechnica 2017's website at https://www.agritechnica.com/en/ (ID11907).

1822 Parties' submission entitled "Crop protection variable rate applications players in the EEA", dated 24 November 2017 (ID8769).

prescription that indicates the specific agronomic input that should be applied to a given crop, as well as when and where in the filed it should be applied.

(2747) Therefore, a relevant competitor in the market of digitally-enabled prescriptions should have or be able to develop or acquire proprietary data on agronomic input products about which it intends to provide prescription. Also, it should have comprehensive data processing capabilities and an agronomic engine able to absorb and process large amounts of data; as well as the resources to conduct field testing. Regulatory capabilities are also key given the numerous regulations to which agronomic products are subject.

(2748) A company interested in providing digitally-enabled prescriptions but lacking one or several of the capabilities indicated above would need to make large investments to acquire or develop them. Bayer acquired key capabilities through the acquisition of proPlant; while Monsanto invested almost USD 1 billion to buy the Climate Corporation. Additionally, both companies continue to make significant investments in their digital agriculture divisions following those acquisitions.

(2749) According to the market investigation, the number of companies that already have the required broad capabilities to offer digitally-enabled crop protection prescriptions or have the financial resources to make the necessary and usually large investments to acquire them are limited and they are primarily large integrated crop protection players such as Bayer and Monsanto.

(2750) The market investigation showed that smaller non-integrated companies such as agricultural input distributors, software companies, agricultural equipment companies or start-ups, lack the required broad capabilities such as the underlying input knowledge (e.g. crop protection products), scale and/or scope, to provide digitally-enabled prescriptions preventing them from exercising an effective competitive pressure on the Parties.

(2751) In the response to the Statement of Objections, the Notifying Party claims that broad capabilities are not required to develop digitally-enabled prescriptions services and that being an integrated player is not a necessity for the development of digitally-enabled prescriptions services.[1823]

(2752) The Notifying Party recognises that players in this market should know which data layers are needed for the algorithm and the variables involved; however, according to Bayer, knowledge of the input products is not required, field trials can be outsourced through partnerships and collaborations,[1824] and non-integrated players can compete effectively with companies that have existing crop protection knowledge.[1825]

(2753) The evidence available to the Commission does not support these claims. Bayer's internal documents, see Figure 504, show that in 2016 when assessing the likely evolution of the provision of digitally-enabled prescription services Bayer estimated that only the four large crop protection players will have the ability to compete in a market of second generation digital agriculture tools, which refers to tailored and granular digital agriculture services such as digitally-enabled prescriptions. Bayer considered that competitors in these markets would need very broad organizational

[1823] Parties' response to Statement of Objections, section XII.4.3.1.
[1824] Parties' response to Statement of Objections, paragraph 805.
[1825] Parties' response to Statement of Objections, sections 4.3.1 and 4.3.3.2.

capabilities including agronomic testing, regulatory capabilities, and the ability to deploy or interact with sensors placed in the fields.

Figure 504 – Bayer's view on the likely evolution of digital agronomic advisory services (April 2016)

[…]

Source: Parties' response to the Commission's request for information RFI 10, Part 5, Annex 72, [internal document], ID1084-71, slide 19.

(2754) The Notifying Party provided a large number of non-integrated companies active in digital agriculture, which the Commission included in their market investigation. Yet, with regard to digitally-enabled prescription agriculture, the Notifying Party was only able to identify three non-integrated companies allegedly active in the relevant market in the EEA: Agricon, FarmStar and Omnia Precision.[1826]

(2755) However, the Commission considers that these companies are unlikely to exercise a sufficient degree of competitive pressure on the merged entity since these companies were either not identified (FarmStar, Omnia) or marginally identified (i.e. Agricon was identified by one respondent out of more than 50)[1827] by other digital agriculture companies as either an existing or a potential top EEA competitor in the broader field of digital agriculture.

(2756) In its own submission, the Notifying Party highlights differences and shortcomings of these three companies when compared to Bayer's own digitally-enabled prescriptions. Agricon relies on real-time information detected by the sensor as the sprayer passes through the field; and neither FarmStar nor Omnia provide services regarding fungicides. Additionally, the variety of crops and diseases included in their services is limited when compared to Bayer's services.

(2757) Moreover, despite the claim of the Notifying Party that knowledge of the input products is not required and field trials can be outsourced through partnerships and collaborations; when Monsanto considered partnerships to develop its digitally-enabled prescription of fungicides, it chose BASF, another large integrated company with broad capabilities including extensive knowledge on input products and field trial capabilities, which is also in line with Monsanto's aspirations to be the leader competitor in digital agriculture (see Section XII.4.3.2).

(2758) Therefore, the Commission concludes that the provision of digitally-enabled prescriptions of fungicides comparable to the ones offered or being develop by the Parties require broad capabilities that only a limited number of companies have or are able to acquire, primarily large integrated crop protection players such as DowDuPont, ChemChina-Syngenta or BASF.

4.3.3.3. Non-integrated companies are unlikely to exercise a sufficient degree of competitive pressure post-Transaction regarding digitally-enabled prescriptions of fungicides for broad acre crops in the EEA

(2759) According to the market investigation, smaller non-integrated companies lack one or several of the broad capabilities that large integrated companies have and which give

[1826] Parties' response to Statement of Objections, section XII.4.3.3.2 and Parties' submission entitled "Crop protection variable rate applications players in the EEA", dated 24 November 2017.

[1827] Competitor's response to the Commission's request for information to competitors on Digital Agriculture (RFI Q19), question 5 (ID6191).

them a significant advantage to develop digitally-enabled prescriptions of fungicides for broad acre crops.

(2760) DowDuPont is more specific about the competitive advantage of having seeds and crop protection in the portfolio for a digital agriculture company: *"[I]t is possible for a company which does not produce seeds, to provide seeds recommendations; however, specific knowledge about an agronomic input gives a distinctive advantage to the company providing the recommendation. A recommendation provided by a seed producer is likely to have a higher quality than that provided by a non-seed producer. Seed producers have, for example, competitive advantages such as knowledge about the seeds genetics. Another advantage are field testing of the products".*[1828]

(2761) In the response to the Statement of Objections, the Notifying Party claims that digital agriculture players from various industries benefit from different advantages.[1829] Bayer specifically refers to distributors, agricultural equipment manufacturers and software companies.

(2762) However, the market investigation and the evidences available to the Commission show that while some of these companies may have some of the capabilities described in Section XII.4.3.3.2, those capabilities are generally not broad enough and are not sufficient to overcome the lack of other broad capabilities in order to offer digitally-enabled prescriptions services comparable to those of the Parties.

(2763) Distributors. The Commission focused its investigation in large distributors which could have a considerable geographic reach and financial resources to exercise competitive pressure on the merged entity post-Transaction. The investigation included calls and requests for information to several distributors, such as InVivo (SMAG), BayWa (FarmFacts), Agravis, CPS (Agrium), or Becks.

(2764) The Notifying Party considers that distributors have an advantage to source data since they have direct access to farmers and portfolios that encompass agrochemicals products from multiple input providers. Bayer claims that distributors are [competitor capabilities].[1830]

(2765) The market investigation showed that some of these distributors were only active in the U.S. and had no interest in the EEA market.[1831] With regard to those active in the EEA, the Commission found that their focus was either a specific country and/or functionalities other than digitally-enabled prescriptions of crop protection products. Others were able to provide recommendations but without the support of an algorithm or an agronomic engine[1832] or they provided tools for a farmer to create its own manual prescription.

(2766) Moreover, distributors do not have access to agronomic input data of forthcoming and/or pipeline products. During the market investigation, DowDuPont stated that *"[i]n particular, crop protection producers have a distinctive advantage to provide*

1828 Agreed non-confidential minutes of a call with DowDuPont, 25 October 2017, paragraph 22 (ID9499).

1829 Parties' response to Statement of Objections, section XII.4.3.2.

1830 Parties' response to Statement of Objections, paragraph 811.

1831 Agreed non-confidential minutes of a call with Becks, 6 November 2017 (ID9583); Competitor's response to the Commission's request for information to competitors on Digital Agriculture (RFI Q19) (ID6621).

1832 Agreed non-confidential minutes of a call with Agravis, 3 November 2017 (ID9683).

recommendations of future crop protection products, since this portfolio is more stable and does not change as quickly as the seeds portfolio".[1833]

(2767) Furthermore, the more limited geographic scope of distributors compared to large integrated companies that are active in the whole EEA and worldwide, gives distributors access to a more limited selection of products and data.

(2768) Therefore, in light of the evidence available to the Commission, the capabilities of distributors active in the EEA are not comparable to those of the Parties with respect to digitally-enabled prescriptions of fungicides in broad acre crops in the EEA and they would not be able to exercise a sufficient degree of competitive pressure post-Transaction on the merged entity.

(2769) Agricultural equipment companies. During the market investigation, the Commission also assessed the capabilities of some agricultural equipment companies that were identified by the Parties and other companies as active in the broader digital agriculture, such as Deere & Company (myjohndeere), Trimble or Claas (365FarmNet).

(2770) According to ChemChina-Syngenta, "*[a]gricultural machinery players like John Deere are likely to be partners and enablers of Digital Agriculture rather than competitors. Machinery cos. [companies] lack the agronomic know-how to deliver prescriptions / advice and are more focused on 'digitizing' the farm by enabling connectivity*". Moreover, ChemChina-Syngenta also pointed out that while "*[n]on-crop protection/seeds producers could provide prescriptions of crop protection and/or seeds if they partner with other companies […] some of them are missing agronomic experience and growers' reach, which are key to access the market*".[1834] Furthermore, Dow/DuPont considers that crop protection players "*have a distinctive advantage to provide recommendations of future crop protection products*".[1835]

(2771) In the response to the Statement of Objections, the Notifying Party considers that these companies have been able to acquire data science expertise and vast quantities of data and are able to provide cloud-based delivery models. Moreover, the Notifying Party claims that they have priority access to farmers' data.[1836] Bayer identifies Deere as a key competitor in digital agriculture and contests that agricultural equipment manufacturers are likely to be partners and enablers rather than competitors since Deere has a strong platform that also provides applications.[1837] The Notifying Party considers that Deere is "*at least as well positioned as Monsanto to compete in digitally-enabled prescriptions in the EEA*".[1838]

(2772) However, in the response to the second Letter of Facts, Bayer acknowledges that agricultural equipment companies may have a lack of direct access to agronomic data that they could obtain by offering their products for free for testing or by partnering with agronomists or distributors.[1839]

1833 Agreed non-confidential minutes of a call with DowDuPont, 25 October 2017, paragraph 24 (ID9499).

1834 Agreed non-confidential minutes of a call with ChemChina-Syngenta, 30 October 2017, paragraph 18 (ID9480).

1835 Agreed non-confidential minutes of a call with DowDuPont, 25 October 2017, paragraph 22 (ID9499).

1836 Parties' response to Statement of Objection, section 4.3.2.2.

1837 Parties' response to the second Letter of Facts, section 5.2; and Parties' response to Statement of Objections, section XII.4.3.2.2.

1838 Parties' response to Statement of Objections, paragraph 817.

1839 Parties' response to the second Letter of Facts, section 5.2.

(2773) The market investigation showed that several agricultural equipment companies were active in the broader digital agriculture field in the EEA. Some of them such as Deere, Claas and Trimble have developed digital agriculture platforms from which they provide services to farmers and to other digital agriculture companies such as Bayer.

(2774) These companies seem to focus on data collection, data processing and data provision to farmers and to other digital agriculture companies instead of on digitally-enabled prescription services. In particular, John Deere clearly stated during the market investigation that it "*[…] does not provide recommendations or prescriptions of crop protection products, seeds or fertilisers to farmers. [John Deere] does not advice farmers on which crop protection products they should apply. In addition, providing farmers which such advice is not foreseen in JD's pipeline*".[1840]

(2775) Moreover, contrary to the Notifying Party's view that both Monsanto and John Deere compete as platform providers, Deere considers that "*[b]oth companies* [Deere and Monsanto] *focus on different areas*" and it "*does not consider Monsanto a competitor in digital agriculture but as a partner*";[1841] and that "*[a]s long as neither Bayer nor Monsanto enter the agronomic machinery market, JD will perceive these two companies as potential/actual partners*".[1842]

(2776) Furthermore, Monsanto's internal documents confirm that [competitor capabilities] (see Figure 505 below).

Figure 505 – [Business strategy]

[…]

Source: MI 280820.00001 [internal document], ID6438-28081, slide 37.

(2777) With regard to partnerships, the Notifying party uses the example of Airbus's FarmStar partnering with Arvalis and Terres Innovia. However, as indicated in recital (2755) above, FarmStar was not identified by either customers or competitors as a player in the broader digital agriculture sector, much less in the market for the provision of digitally-enabled prescriptions. Therefore, partnering with other companies that do not have broad capabilities comparable to those of large integrated players is unlikely to generate players that would exercise a sufficient degree of competitive pressure on the Parties post-Transaction in the relevant market.

(2778) Finally, during the visit to Agritechnica, the representatives of Claas' 365FarmNet platform orally confirmed that they do not offer digitally-enabled prescriptions of crop protection products.[1843] In the case of Trimble, they indicated during the market investigation that they do not generate prescriptions for crop protection products themselves.[1844]

(2779) Therefore, in light of the market investigation and the evidence available to it, the Commission considers that agricultural equipment companies are not competing or planning to compete in the market for the provision of digitally-enabled prescriptions

1840 Agreed non-confidential minutes of a call with John Deere, 19 October 2017, paragraph 1 (ID9530).
1841 Agreed non-confidential minutes of a call with John Deere, 19 October 2017, paragraph 12.a (ID9530).
1842 Agreed non-confidential minutes of a call with John Deere, 19 October 2017, paragraph 12.b (ID9530).
1843 Note to the Commission file, Visit to Agritechnica of 16 November 2017 (ID11976).
1844 Agreed non-confidential minutes of a call with Trimble, 18 October 2017, paragraph 4 (ID9492).

of fungicides in broad acre crops in the EEA, so they would not exercise a sufficient degree of competitive pressure post-Transaction on the merged entity.

(2780) Software companies. The Commission also included in its market investigation software companies active in the broader digital agriculture field, such as SST Development or Accenture.

(2781) According to the response to Statement of Objections[1845] and to the second Letter of Facts[1846], the Notifying Party considers that the key advantage of software companies is their greater expertise in and capacity for processing large volumes of data and cloud-based delivery models and that these companies face the same challenges to obtain farmer data as agrochemical companies, start-ups and cooperatives.

(2782) However, based on the market investigation, the Commission considers that most of these companies provide just software and data services to other companies active in the broader field of digital agriculture, instead of directly providing digital agriculture services to farmers, such as digitally-enabled prescriptions. In particular, SST Development indicated that "*our typical route to market is through the agronomic service providers such as retailers of crop inputs and independent crop consultancies*".[1847]

(2783) Moreover, software companies must overcome more challenges to obtain agronomic input data and farmers' data than large integrated crop protection companies, since they might not be active at all in the agricultural domain and even if they are, they are further remove from the farmers. Agricultural companies have a direct relation with farmers, which provides these companies with feedback and data on their products performance. Moreover, agricultural companies research and develop their products and conduct field tests, which give them a level of knowledge that software companies are unlikely to match on their own.

(2784) Furthermore, as in the case of agricultural equipment companies, partnering with other companies that do not have broad capabilities comparable to those of large integrated players is unlikely to allow them to exercise a sufficient degree of competitive pressure on the Parties post-Transaction.

(2785) Bayer's internal document show that before the Transaction, Bayer shared this view and considered that for a [quote from internal doucment] it will take longer to compete in the market due to lack of agronomy knowledge and the need to [quote from internal doucment]. This provides opportunities for cooperating with companies with limited or no agronomic knowledge, rather than having to compete with them (see Figure 506).

Figure 506 – Bayer's view on the role of potential new entrants

[…]

Source: Form CO, part 5, Annex 72 [internal document], page 22.

1845 Parties' response to Statement of Objections, section XII.4.3.2.3.

1846 Parties' response to the second Letter of Facts, paragraph 81.

1847 Questionnaire to digital Agriculture Competitors (Q11), question 1.

(2786) Therefore, in light of the evidence available to the Commission, software companies do not have the broad capabilities needed to compete in the market for the provision of digitally-enabled prescriptions of fungicides in broad acre crops in the EEA, in particular in terms of *inter alia* agronomic input data, access to farmers' data and field testing, so they would be unlikely to exercise a sufficient degree of competitive pressure post-Transaction on the merged entity.

4.3.3.4. The Parties are only comparable to a limited number of large integrated players in particular, DowDuPont, ChemChina-Syngenta and BASF, which are unlikely to exercise a sufficient degree of competitive pressure post-Transaction

(2787) Based on the market investigation, the Commission considers that in the market for the provision of digitally-enabled prescriptions of fungicides for broad acre crops in the EEA only a limited number of companies are comparable to the Parties.

(2788) Those companies are primarily large integrated crop protection players, namely DowDuPont, ChemChina-Syngenta and BASF. The review and assessment of these companies' activities and their geographic scope indicate that the competitive pressure they would exercise post-Transaction on the merged entity is unlikely to be sufficient for the reasons explain below.

(A) DowDuPont, ChemChina-Syngenta and BASF: Products and investments

(2789) The Commission investigated the activities in the broader digital agriculture field and in the market for digitally-enabled prescriptions of several companies active in crop protection and seeds, narrowing the number of companies present in the market of digitally-enabled prescriptions for crop protection to primarily three companies potentially comparable to the Parties, i.e. DowDuPont, ChemChina-Syngenta and BASF.

(2790) DowDuPont. In February 2014, the agricultural seed unit of DuPont, DuPont Pionner launched Encirca® services ("Encirca"), a suite of whole-farm decision services. Encirca combines the latest technology for weather, soils, agronomy and analytics to help farmers maximize crop yields and reduce risk, providing estimates and management suggestions based on statistical and agronomic models.

(2791) According to public available data,[1848] Encirca brings to the farmer DuPont Pioneer's agronomy science which includes more than 150 technical product and agronomy professionals who lead more than 10 000 on-farm trials and collaborate with dozens of universities across the United States and Canada to conduct agronomy trials. Moreover, DuPont Pioneer has created powerful analytics models, which combine decades of agronomy research with new technologies like wireless data transfer. According to Encirca's product sheet, "*[t]his work is needed to understand the complex relationships between genetics, environment and advanced management practices*".[1849]

(2792) In last decade, DowDuPont has acquired several digital agriculture companies, investing more than USD 300 million. In 2009, DuPont acquired ownership of MapShots, a software development company specialized in tools for managing large

[1848] DuPont Pioneer's product sheet, "EncircaSM services", available at: https://mediaresource.pioneer.com/media/1761/encirca-brand-flyer-final-1.pdf (ID11914).

[1849] DuPont Pioneer's product sheet, "EncircaSM services", available at: https://mediaresource.pioneer.com/media/1761/encirca-brand-flyer-final-1.pdf (ID11914).

amounts of agronomic crop production data;[1850] and in August 2017, it acquired the U.S.-based company Granular, Inc., a provider of farm management software and analytics tools founded in 2014 and active in the U.S., Canada and Australia. Granular's products include a Farm Management Software and AcreValue.com, a digital marketplace for farmland real estate.[1851]

(2793) The market investigation and the information provided by the Parties indicate that DowDuPont is not active in the broader digital agriculture or in digitally-enabled prescriptions in the EEA. In in the U.S., DowDuPont provides variable-rate seeding prescriptions[1852] and fertility services[1853] through Encirca. DuPont Pioneer indicates that its researchers have conducted thousands of population trials at hundreds of locations across the U.S. and the resulting data provides the basis for its seeding rate recommendations.[1854]

(2794) BASF. Its global digital farming offer is branded under Maglis® that was launched in March 2016.[1855] Maglis is a suite of online tools that helps farmers use the information at hand in a more efficient way for better crop management decisions.

(2795) Maglis is composed of three tools: (i) Maglis Customer Navigator, which helps BASF's sales force engage and exchange information with farmers in the field to analyse and generate tailored plans that address farmers' individual crop priorities. It is available in the U.S. and currently being tested in Czech Republic, Ukraine and Brazil;[1856] (ii) Maglis Crop Plan, which is a convenient and efficient way for farmers to monitor and manage field activities. It is currently available in pilot phase in Canada;[1857] (iii) Maglis Sustainability Assessment, which demonstrates the impact of different agricultural practices on main sustainability factors from planning through harvest. It is currently available in pilot phase in Canada.[1858] The Notifying Party indicated that at Agritechnica (November 2017), BASF announced the launch of its Maglis product in the EEA for the 2018 growing season.

1850 Agreed non-confidential minutes of a call with Dow/DuPont, 25 October 2017, paragraph 12 (ID9499).

1851 Press release entitled "DuPont Acquires Ag Software Company Granular to Accelerate Digital Ag Strategy and Help Farmers Operate More Profitable Businesses", 9 August 2017, at: http://www.dupont.com/corporate-functions/media-center/press-releases/dupont-acquires-ag-software-company-granular-to-accelerate-digital-ag-strategy.html (ID11923); press release entitled "DuPont Acquires Farm Management Software Granular for $300", 9 August 2017, at https://agfundernews.com/dupont-acquires-farm-management-software-granular-300m html (ID11929).

1852 DuPont Pioneer, "Putting Variable-Rate Seeding to Work on Your Farms", available at https://www.pioneer.com/home/site/us/agronomy/library/variable-rate-seeding/ (ID11913).

1853 DuPont Pioneer, "Introduction to the Encirca® Fertility Service", available at: https://www.pioneer.com/home/site/us/agronomy/library/encirca-fertility-service/#summary2 (ID11915).

1854 DuPont Pioneer, "Putting Variable-Rate Seeding to Work on Your Farms", available at https://www.pioneer.com/home/site/us/agronomy/library/variable-rate-seeding/ (ID11913).

1855 Questionnaire to Digital Agriculture Competitors (Q.11), question 1.

1856 BASF's website, Maglis Customer Navigator, available at: https://agriculture.basf.com/en/Crop-Protection/Decision-Support-Maglis.html (ID11909).

1857 BASF's website, Maglis Crop Plan, available at: https://agriculture.basf.com/en/Crop-Protection/Decision-Support-Maglis.html (ID11908).

1858 BASF's website, Maglis Sustainability Assessment, available at: https://agriculture.basf.com/en/Crop-Protection/Decision-Support-Maglis.html (ID11910).

(2796) BASF also have some local digital offers focused on providing insights regarding diseases/pests/weeds; however, BASF does not make recommendations on concrete crop protection products.[1859]

(2797) As DowDuPont, BASF has also invested in the acquisition of other digital agriculture companies. In 2017, BASF acquired an U.S.-based company, ZedX, specialized in the development of weather algorithms, and with which BASF had a previous long standing cooperation.

(2798) At Agritechnica, BASF's representative indicated that BASF, in collaboration with ZedX, was developing an algorithm to recommend farmers the appropriate BASF herbicide product and the time for spraying it. A light pilot version, including less than 3 000 growers, could be launched in Canada in the future.

(2799) ChemChina-Syngenta.[1860] In 2017, Syngenta created a dedicated team and strategy for digital agriculture; since then its initiatives in this domain have increased. In the U.S., Syngenta offers AgriEdge, a farm management system that enables data integration coming from different sources in order to bring added value to its users and its largest tool (covering >13 million acres). Syngenta considers that with the exception of AgriEdge, most of the other programs it has are modest in size (<1 million acres), such as Integrare, a yield guarantee product based on an algorithm of satellite-, soil- and weather-based yield predictions offered in Latin America and other tools offered at a national level in the EEA.

(2800) In most countries, ChemChina-Syngenta uses digital agriculture tools for R&D activities and in certain countries, it offers digital agriculture tools as a part of a product offer or integrated solution. ChemChina-Syngenta indicated that there is currently no market in which it sells stand-alone digital products, nor is there the intention to create such offers in the near future.

(2801) ChemChina-Syngenta considers that historically its investments in digital agriculture have been relatively minor, compared to competitors such as Bayer and Monsanto. In October 2015, ChemChina-Syngenta acquired the U.S.-based company Ag Connections, a farm management software solutions that worked extensively with ChemChina-Syngenta's AgriEdge Excelsior® program; and with which ChemChina-Syngenta had a previous 14-year relationship.[1861]

(2802) In terms of digitally-enabled prescriptions in the EEA, ChemChina-Syngenta offers for vineyards in France: Alert Septo and Botryrisk, which recommend the farmer the appropriate ChemChina-Syngenta's fungicide against Septoria and Tritici (Alert Septo), and against botrytis (Botryrisk). ChemChina-Syngenta also offers for potatoes in Germany: Phytophthora Model Potato, which recommends the farmer the appropriate ChemChina-Syngenta's fungicide against alternaria and phytophthora. ChemChina-Syngenta indicates to the farmer the optimal date to spray the products at a field-zone level; however, it can only prescribe its own products and not those of third parties.

1859 Agreed non-confidential minutes of a call with BASF, 18 October 2017, paragraph 17 (ID9495).

1860 Questionnaire to Digital Agriculture Competitors (Q.11), question 1.

1861 Press release entitled "Syngenta acquires Ag Connections to enhance whole-farm management for growers", 16 October 2015, available at: https://www.prnewswire.com/news-releases/syngenta-acquires-ag-connections-to-enhance-whole-farm-management-for-growers-300161138 html (ID11925).

(B) DowDuPont, ChemChina-Syngenta and BASF are unlikely to exercise a sufficient degree of competitive pressure post-Transaction in digitally-enabled prescriptions of fungicides for broad acre crops in the EEA

(2803) During the market investigation, DowDuPont, ChemChina-Syngenta and BASF were unanimous in considering that Monsanto and Bayer have a clear competitive advantage. DowDuPont stated that "*[t]he clear leader in digital agriculture is Monsanto, predominantly in the United States (and Bayer in Europe)*".[1862] ChemChina-Syngenta was of the view that "*Bayer/Monsanto are dominant players in digital agriculture*".[1863] KWS also conveyed a similar view stating that "*[t]here is a significant gap between Bayer and Monsanto and the rest of the top players, such as DowDuPont, Syngenta, BASF and distributors*."[1864]

(2804) BASF, for its part, it indicated that "*Monsanto is BASF's number 1 competitor with regard to, digital farming in general and on a global level due to the size of its investment in digital agriculture and the acquisition of Climate FieldView*".[1865] Moreover, a BASF's internal document (see Figure 507 below) points out that digital agriculture is seen as a "*strategic priority*" by Bayer and Monsanto and concludes that […]. Additionally, the competitive position of DowDuPont, BASF and ChemChina-Syngenta is also assessed and considered lower than the Parties' position.

Figure 507 – BASF competitive assessment in digital agriculture

[…]

Source: BASF's [internal document], ID10432, slide 1.

(2805) In the response to the Statement of Objections, the Notifying Party claims that Monsanto is not an integrated player and that it lacks the knowledge, field testing and proprietary data, which the Commission identifies as necessary;[1866] and it discards BASF's slide (see Figure 507 above) alleging that Monsanto's and the Climate Corporation's key focus is not on digital agriculture solutions for crop protection products.[1867]

(2806) However, as described Sections XI.1, XI.2 and XI.3 of this Decision, Monsanto is active in the crop protection domain. In fact, one of Monsanto's key products is a herbicide called Roundup (glyphosate). Moreover, since approximately 2013, Monsanto has been developing in collaboration with other companies, fungicides and insecticides.

(2807) The Notifying Party also claims that there are multiple comparable competitors, including BASF, DowDuPont and ChemChina-Syngenta and that the competitive constraints in digitally-enabled prescriptions of fungicides broad acre crops in the EEA will not be reduced by the Transaction. In particular, the Notifying Party considers that the Commission (i) unduly discounted the likelihood that other players

1862 Agreed non-confidential minutes of a call with DowDuPont, 25 October 2017, paragraph 21(a) (ID9499).

1863 Agreed non-confidential minutes of a call with ChemChina-Syngenta, 30 October 2017, paragraph 15 (ID9480).

1864 Agreed non-confidential minutes of a call with KWS, 3 November 2017, paragraph 14 (ID9693).

1865 Agreed non-confidential minutes of a call with BASF, 18 October 2017, paragraph 25 (ID9495).

1866 Parties' response to the Statement of Objections, section XII.4.3.1.

1867 Parties' response to the second Letter of Facts, section 5.1, paragraph 77.

will develop digitally-enabled prescriptions themselves, and that the Commission (ii) failed to consider the incentives of other players such as BASF, DowDuPont and ChemChina-Syngenta to enter into partnerships or collaborations.

(2808) As described above, the Commission conducted an in-depth market investigation, in particular, concerning the activities of DowDuPont, BASF and ChemChina-Syngenta regarding digitally-enabled prescriptions of crop protection products.

(2809) With regard to BASF, an internal document from Bayer from 2016 (see Figure 508, red squares added) [competitor capabilities].

Figure 508 – [Competitor capabilities]

[…]

Source: Form CO, part 5, Annex 73 [internal document], page 25 (red squares added).

(2810) The Notifying Party indicated that BASF announced at the Agritechnica fair that it will launch a fungicide advisory product in Germany for the 2018 growing season.[1868]

(2811) According to the in-depth market investigation, as of November 2017,[1869] BASF does not seem to offer digitally-enabled prescriptions.

(2812) With regard to DowDuPont, the company has developed digitally-enabled prescriptions for seeds and fertilisers. The Commission considers that DowDuPont has the required broad capabilities to acquire or develop digitally-enabled prescriptions of other inputs, in particular crop protection products. However, the Commission estimates that Monsanto is likely to be ahead of DowDuPont and is likely to bring its digitally-enabled prescriptions of crop protection products before DowDuPont.

(2813) First, both companies will need to collect the necessary agronomic data in its primary market, i.e. the U.S. in which Monsanto is the leader covering more than [business strategy] acres worldwide [business strategy].

(2814) Second, as indicated in recital (2793) above, DowDuPont is not active in either digital agriculture or digitally-enabled prescriptions in the EEA. Therefore, it would have to start from scratch collecting EEA agronomic data to eventually develop a digitally-enabled prescription of crop protection products. In contrast, Monsanto has already been present in the EEA through VitalFields (since 2015), AquaTEK (since 2009) and, more importantly, the ongoing pilot programs of Climate FieldView in France and Germany. Hence, Monsanto is already likely to have a potentially substantial amount of agronomic data about different EEA countries. This data is very likely to increase with the commercial pre-launch of Climate FieldView in France and Germany in the 2018 growing season.

(2815) Third, Monsanto has already signed, [collaborations] agreements with several agricultural equipment companies present in the EEA, including Deere & Company, [collaborations], AGCO, [collaborations].

(2816) Consequently, the Commission does not consider that DowDuPont and Monsanto are equally positioned to develop digitally-enabled prescriptions of crop protection

[1868] Parties' response to the second Letter of Facts, section 5.1, paragraph 79.

[1869] Parties' response to the second Letter of Facts, section 5.1, paragraph 78.

products for the EEA. The Commission estimates that Monsanto is ahead and likely to enter the EEA market before DowDuPont.

(2817) Moreover, by the time DowDuPont develops a digitally-enabled prescription of crop protection products for the U.S., and collects the necessary EEA agronomic data, adapts the prescription and brings it to the EEA, the merged entity and, absent the Transaction, Bayer and Monsanto, are likely to have the first mover advantage and potentially other advantages derived from eventual network effects which would raise further the barriers to entry. This is likely to impede DowDuPont from exercising a sufficient degree of competitive pressure on the merged entity with regard to digitally enabled prescriptions of fungicides for broad acre crops in the EEA.

(2818) With regard to ChemChina-Syngenta, in December 2016, an internal document of BASF (see Figure 509, yellow highlight added) reporting the view of the external consultant […].

Figure 509 – BASF view of Syngenta position in digital agriculture

[…]

Source: BASF's [internal document], ID10446, slide 3 (yellow highlight added).

(2819) Following the acquisition of Syngenta by ChemChina in 2017, ChemChina-Syngenta has become more active in digital agriculture and it currently offers digitally-enabled prescriptions of its own fungicides for three diseases for vineyards in France, and for two diseases for potatoes in Germany. Through the merger, ChemChina-Syngenta has broadened their capabilities and resources, boosting its efforts in digital agriculture.

(2820) However, the Commission does not consider that ChemChina-Syngenta and Bayer are currently equally positioned with regard to digitally-enabled prescriptions of fungicides in the EEA

(2821) First, Monsanto and Bayer are considered leaders in digital agriculture ahead of the remaining competitors worldwide and in the EEA, respectively; while ChemChina-Syngenta was in the "experimenting phase" in 2015 and has only become more active in digital agriculture as of 2017.

(2822) Second, Bayer's existing digitally-enabled prescriptions cover a broader list of diseases than ChemChina-Syngenta, including but not limited to disease risk models in (i) winter wheat for: septoria tritici, septoria nodorum, leaf spot, fusarium, yellow rust, brown rust, powdery mildew, and eye spot; in (ii) barley for: powdery mildew, net blodge, leafe blodge, brown rust, and ramularia; in (iii) sugar beet for: cercospora leaf blodge, ramularia leaf blodge, mildew, and rust; in (iv) potato for: late blight, and early blight; and in (v) oil seed rape for: phoma, rape stem weevil, cabbage stem weevil, pollen beetle, cabbage seed weevil, and pod midge.

(2823) Third, the variety of crops for which Bayer is currently able to provide prescriptions of fungicides is also significantly larger than the two crops covered by ChemChina-Syngenta's products, including but not limited to winter wheat, corn, soy, barley, sugar beet, potato; and oil seed rape. Moreover, ChemChina-Syngenta does not offer digitally-enabled prescriptions of fungicides for broad acre crops in the EEA.

(2824) Fourth, Bayer is currently offering digitally-enabled prescriptions for crops that have far superior scalability chances than those of ChemChina-Syngenta in the EEA. In 2015, the number of hectares dedicated to cultivate cereals in the EEA was more than 50 million hectares, while for vineyards was approximately 3.2 million and for potatoes was less than 1.7 million hectares.[1870] Scalability has been identified as a key element to ensure competitiveness and viability of a company in digital agriculture.[1871] Bayer's scalability potential is likely to allow it to expand faster to the different EEA countries.

(2825) Fifth, Bayer also has an extensive and significant pipeline project portfolio [business strategy].

(2826) Sixth, Bayer is likely to have the first mover advantage and potentially other advantages derived from eventual network effects which would raise further the barriers to entry.

(2827) Therefore, post-Transaction, Bayer and the number one competitor worldwide in digital agriculture, Monsanto, will join forces, capabilities and data, likely acquiring a nearly incontestable market position in the market for digitally-enabled prescriptions of fungicides for broad acre crops in the EEA.

(2828) In terms of partnerships, the Commission also took into consideration the existing and potential partnerships in digital agriculture, for example between Bayer or DuPont and John Deere, Microsoft and SST Software or Airbus' FarmStar and Arvalis. However, according to the market investigation, these partnerships do not seem to generate relevant players in digitally-enabled prescriptions of crop protection products unless a large integrated crop protection company is in the mix. Therefore, partnering with companies that do not have broad capabilities comparable to those of large integrated crop protection companies is unlikely to generate players comparable to the Parties in digitally-enabled prescriptions of fungicides for broad acre crops.

4.3.3.5. Conclusion

(2829) In light of the evidence available to the Commission and the results of the market investigation, the Commission considers the Parties are only comparable to a limited number of large integrated players in particular, DowDuPont, ChemChina-Syngenta and BASF; however, these companies would be unlikely to exercise a sufficient degree of competitive pressure post-Transaction on the merged entity in the EEA with regard to digitally-enabled prescriptions of fungicides for broad acre crops in the EEA, since Bayer and Monsanto have a broader, more scalable digitally-enabled prescription products for fungicides or are ahead in the development of such product, as explained in the Sections above.

1870 Eurostat, Main annual crop statistics: tables and figures, available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/Main_annual_crop_statistics (ID11937 and ID11938); Eurostat, Structure of vineyards in 2015, dated 4 April 2017, http://ec.europa.eu/eurostat/documents/2995521/7964277/5-04042017-BP-EN.pdf/149e5e9a-4ae6-466b-baec-0273fe0c08a4 (ID11936).

1871 Responses from competitors and customers to Questionnaire Market Test, question 37.1.

4.3.4. Digital agriculture, including digitally-enabled prescriptions, is characterised by first mover advantage which is likely to further limit the extent of the competitive constraint exercised by the Parties' competitors post-Transaction

(2830) As explained in this Section, the Commission's investigation suggests that digital agriculture is characterised by the first mover advantage, which is likely to further strengthen the position of Bayer and Monsanto that have made an early move into this sector and have taken leading positions in their respective geographies (see Section XII.4.3.2.1). Also, digital agriculture appears to be characterised by network effects. The first mover advantage and network effects are likely to equally apply to digitally-enabled prescriptions given the similar characteristics and dynamics of this specific area of digital agriculture, notably in terms of attracting farmers, the importance of data, algorithms, etc.

(2831) A number of elements from the Parties' internal documents provide evidence that the first mover advantage and network effects exist in this industry and that the Parties plan to capitalise on them.

(2832) Figure 510 (yellow highlight added) below, dated 4 November 2017, reports Bayer's view on the required business model [R&D and business strategy].

Figure 510 – [R&D and business strategy]

[…]

Source: Form CO, part 5, Annex 72 [internal document], page 56 (yellow highlight added).

(2833) This view is confirmed and reinforced by Figure 511, which shows that in Bayer's view [development of digital agriculture]. The Commission considers each of the Parties to have these qualities for the reasons explained in Section XII.4.3.2 on the activities and importance of the Parties in digital agriculture.

Figure 511 – [Development of digital agriculture]

[…]

Source: Form CO, part 5, Annex 72 [internal document], page 46.

(2834) A slide of Monsanto in Figure 512 confirms that there is the first mover advantage in digital agriculture. It shows how Monsanto, being the first mover in this industry, benefits from such an advantage. Monsanto has built an engineering infrastructure and an analytics engine which is [know-how].

Figure 512 – [Development of digital agriculture]

[…]

Source: MI 11 [internal document], ID1635-280, page 73.

(2835) Figure 513 from Bayer's internal documents provides more details on Bayer's view on network effects. The slide, among other information, provides a clear explanation as to why network effects are a [development of digital agriculture].

Figure 513 – [Development of digital agriculture]

[…]

Source: BI-EDISC-65877 [internal document], ID5413-19877, slide 7.

(2836) Bayer's view on network effects and how they create a competitive advantage are further explained in Figure 514 and Figure 515. Figure 514 shows that the more users

subscribe to the digital agriculture products of Bayer, the more accurate the products become. This, in turn, will attract even more customers, thus creating a network effect. The same concept of "feedback loop" is further explained in Figure 515.

Figure 514 – [Development of digital agriculture]

[…]

Source: BI-EDISC-65877 [internal document], ID5413-19877, slide 16.

Figure 515 – [Development of digital agriculture]

[…]

Source: BI-EDISC-824501 [internal document], ID5921-40637, slide 14 (red square added).

(2837) The Commission considers Figure 514 and Figure 515 to support the view that network effects can help first movers, who are first to attract users, to create barriers to entry. Since the number of users has a positive impact on the platform quality, first movers can create a quality gap with late-comers' platforms. Consequently, farmers/users will have limited or no incentive to switch to newer platforms, which lack the quality related to the large amount of users' data. *De facto*, such a situation may create barriers to entry.

(2838) Bayer distinguishes different types of data (public, proprietary, farmers' data, etc.), and recognises that the [development of digital agriculture] is the data that farmers/users bring, and that requires high adoption rate (see bottom of the Figure 516, blue arrow).

Figure 516 – [Ddevelopment of digital agriculture]

[…]

Source: BI-EDISC-824501 [internal document], ID5921-40637, slide 15.

(2839) In addition to the adoption rate (i.e. the *quantity* of data), Bayer also stresses the importance of the *quality* of data (e.g. real life field data). In particular, [know-how][1872] is further emphasised in Figure 517. Such approach would allow Bayer to [know-how].

Figure 517 – [Development of digital agriculture]

[…]

Source: BI-EDISC-65877 [internal document], ID5413-19877, slide 2.

[1872] Crowd sourcing is one of the approaches used in big data for tackling the issue of data veracity. It consists in relying on a network of people (i.e. the crowd). In this case, crowdsourcing data are generated and gathered by an "ecosystem of mobile apps and devices/ sensors" located in farmers' fields.

(2840) Monsanto's view on data network effects is illustrated in Figure 518. The main data requirements for creating network effects include quantity and quality of data and leveraging data. The reasons to input data include, in particular profit evaluation, improved yield analytics, and yield-based scripts.

Figure 518 – [Development of digital agriculture]

[…]

Source: MI 2106 [internal document], ID930-5373, slide 19.

(2841) Additional evidence of the importance of data quantity for Monsanto is provided in the notes to a presentation in Figure 519, where it is stated, [R&D strategy].

Figure 519 – Monsanto's note to a digital agriculture presentation slide

[…]

Source: MI 2106 [internal document], ID930-5373 notes to slide 8 (yellow highlight added).

(2842) Table 170 provides additional evidence gathered from individual calls with KWS and DowDuPont, regarding network effects in digital agriculture and the difficulty to switch between platforms from a farmer's perspective. The table underlines that once a leading position is established and a large number of users subscribe to a platform, it is difficult for those users to switch to another platform which increases switching costs for users.

Table 170 – Quotes from minutes of calls with KWS and DowDuPont

Company	Quote from the minutes
KWS	"*It is difficult to switch from one platform to another, since the industry is not able to agree on one common data protocol (joint data format), therefore there is high incentive for the farmer to decide on only one platform. Even though farmers keep the ownership of provided data and they can contractually request that their data are returned to them, from the technical point of view, such data are not compatible with another platform and can therefore not be easily transferred to another platform from a practical point of view.*"[1873]
DowDuPont	"*Platform switching would be currently a relative intensive process for the grower.*"[1874]

(2843) Based on the above-mentioned evidence, the Commission considers that the first mover advantage and network effects exist in the digital agriculture industry, as recognised by the Parties and other market players.

(2844) The Commission does not agree with the Notifying Party's argument that Bayer is not a first mover in this sector.[1875] The Commission notes that Bayer has started to

1873 Agreed non-confidential minutes of a call with KWS, 3 November 2017, paragraph 10 (ID9693).

1874 Agreed non-confidential minutes of a call with DowDuPont, 25 October 2017, paragraph 13 (ID9499).

1875 Parties' response to the second Letter of Facts, paragraph 87.

develop its offerings in digital agriculture early on as one of its priorities and has achieved a leading position in Europe (see Section XII.4.3.2). It plans to continually improve its technology and products. The Commission further considers that Bayer may not yet have the scale required to benefit fully from network effects,[1876] although Bayer is striving to reach it, in particular using its first mover advantage, access to the market and extensive partnerships.

(2845) Also Monsanto is the first mover and the global leader in digital agriculture currently having launched its expansion also to the EEA. Thanks to its significant acre coverage, Monsanto is already able to improve the quality of its digital agriculture products in terms of algorithms, artificial intelligence learnings, etc.

(2846) The combination of the Parties will bring together their leading capabilities in digital agriculture and further capitalise on their first mover advantage in an area where network effects are expected by the Parties to play an important role. Consequently, the Commission considers it likely that post-Transaction competitors would find it significantly more difficult to constrain the merged entity.

4.3.5. Following the Transaction, Bayer's innovation efforts in digital agriculture are likely to be in whole or in part discontinued

(2847) According to the outcome of the market investigation and the internal documents provided by the Parties, the Commission's view is that after the Transaction, Bayer's innovation efforts are likely to be in whole or in part discontinued.

(2848) The Commission conducted a review of the internal documents submitted by the Parties to respond to several request for information. The review uncovered several internal documents from Bayer assessing the synergies of the proposed Transaction.

(2849) In September 2015, Bayer identified a series of synergies which would result from the acquisition of Monsanto. Bayer estimated that the cost savings derived from the synergies in digital agriculture would be up to […] by 2018. In order to reach those figures, Bayer would have to [R&D strategy] (see Figure 520).

Figure 520 – [R&D and business strategy]

[…]

Source: BI 86 [internal document], ID1634-91, slide 23.

(2850) The [R&D and business strategy] was included again in a presentation deck created in May 2016 (see Figure 521). The presentation clearly stated that the [R&D and business strategy].[1877]

Figure 521 – [R&D and business strategy]

[…]

Source: Form CO, Bayer 4(c)-9 document, [internal document], ID162-46, slides 28 and 117.

(2851) As a result, a few months later, in July 2016, a presentation from Bayer shows [R&D and business strategy]. Figure 522 reads [R&D and business strategy] to indicate the projects [R&D and business strategy]. The Parties to the Transaction used the codename [R&D and business strategy] to refer to the proposed acquisition of

[1876] Parties' response to the second Letter of Facts, paragraph 89.

[1877] Parties' 4(c)-9 document, ID162-46, slides 28 and 117.

Monsanto, thus pointing to a direct link between [R&D and business strategy] these digital agriculture projects and the acquisition of Monsanto. Moreover, most of the [R&D and business strategy] projects relate to [R&D and business strategy] in which Monsanto is very active and likely more advanced than Bayer.

Figure 522 – [R&D and business strategy]

[…]

Source: BI-EDISC-172940 [internal document], ID5893-1982, slide 34.

(2852) A fourth presentation deck from Bayer created several months later in October 2016 (see Figure 523), re-confirms the [R&D and business strategy] on several Bayer's digital agriculture projects concerning areas such as [pipeline targets]. Again, Bayer used [R&D and business strategy].

Figure 523 – [R&D and business strategy]

[…]

Source: BI 3268 [internal document], ID2312-298, slide 38.

(2853) The Notifying Party argues in its response to the Statement of Objections[1878] and to the second Letter of Facts[1879] that there are no evidence that Bayer intends to discontinue innovation in digital agriculture. Bayer has a strong digital agriculture R&D pipeline[1880] with a clear budget allocation for 2018 of […] (roughly […]% more than in 2017).[1881]

(2854) Bayer claims that it has incentives to continue to pursue its digital agriculture activities post-Transaction,[1882] in particular the commercialisation and further development of FIELD MANAGER and Bayer's Scouting products, since digital agriculture is a nascent, dynamic and unpredictable space in which it must keep as many opportunities open as possible.

(2855) Moreover, according to Bayer, there is nothing in Monsanto's pipeline which would cannibalise Bayer's own pipeline products[1883] and Bayer will not benefit from any cost savings in innovation in digital agriculture as a result of the Transaction.[1884]

(2856) In its assessment, the Commission took into account the results of the market investigation, the Parties' claims and the content of the four separate presentations cited in this Section, which are considered evidence, and the fact that (i) at least one of these presentation decks was prepared after the announcement that Bayer and Monsanto had signed a definitive merger agreement (September 2016) and that (ii) all of them were created long before the Parties started the pre-notification of the Transaction before the Commission (Q1 2017), i.e. before the Parties were aware that digital agriculture would become one of the focuses of the Commission's assessment of the Transaction. Hence, their evidentiary value of Bayer's estimated savings and plans post-Transaction carries an important weight.

1878 Parties' response to the Statement of Objections, sections 3.4 and 3.6.
1879 Parties' response to the second Letter of Facts, sections 7.1 and 7.2.
1880 Parties' response to the Statement of Objections, section XII.3.1.
1881 Parties' response to the Statement of Objections, section XII.3.2.
1882 Parties' response to the Statement of Objections, section XII.3.3.
1883 Parties' response to the Statement of Objections, section XII.3.3., in particular 3.3.2.
1884 Parties' response to the Statement of Objections, section XII.3.5.

(2857) The Notifying Party argues that one of the projects included in the evidence provided by the Commission, NitrogenIT, has been completed and commercialised in November 2017,[1885] probing that these evidence are not up-to-date and do not reflect Bayer's internal decisions. Bayer also claims that FIELD MANAGER and Scouting were also launched in November 2017 which is further evidence of Bayer's continuing to innovate and develop its products.

(2858) The Commission notes that in its response to the Statement of Objections, the Notifying Party acknowledges that Crop Nutrient Status Tester and Harvester Link, also cited in the Commission's evidence, have been halted; Soil OM and Digital Soil Testing are on hold; and Yield App and Grain Quality Estimation require either more enabling data or further analysis and development to continue.[1886]

(2859) Moreover, during the market investigation, following a request from the Commission the Parties provided a list of their pipeline projects in digital agriculture.[1887] In the context of the remedy discussions, this annex was revised and updated.[1888] In the latest version available to the Commission, [R&D and business strategy].

(2860) While the pipeline projects of Bayer and Monsanto might not be identical, they do focus on common areas such as crop protection, fertility and seeds. Bayer's budget for 2018 […] and the Notifying Party acknowledges that there will be efforts to avoid redundant capabilities to build up. Therefore, it would be fair to understand that Bayer is unlikely to carry on or develop new projects that overlap in whole or in part with those crops and/or functionalities already offered by Monsanto, such as digitally-enabled seeding prescriptions, [pipeline product].

(2861) In the short or medium term, this is unlikely to significantly affect the leading position of the merged entity in the market since both companies are considered to be ahead of the remaining players in digital agriculture and Monsanto's capabilities will be added to Bayer's keeping them ahead of other companies.

(2862) Therefore, in light of the results of the market investigation and the evidence available, the Commission considers that post-Transaction Bayer's innovation efforts are likely to be discontinued in whole or in part further contributing to the negative competitive effects of eliminating a strong potential competitor from the market of digitally-enabled prescriptions of fungicides for broad acre crops in the EEA.

4.3.6. The Commission relied on a broad body of evidence

(2863) In the response to the Statement of Objections, the Notifying Party claims that the responses to the market investigation are an unreliable source of evidence and do not support the Commission's conclusions.[1889] In particular, the Notifying Party asserts that the opinions of consumers and competitors were misconstrued[1890] and response rates to the market investigation were insignificant;[1891] that many responses to the market investigation demonstrated that the Transaction was pro-competitive or did

1885 Parties' response to the Statement of Objections, paragraph 763 and Table 2, and Parties' response to the second Letter of Facts, paragraph 96a.
1886 Parties' response to the Statement of Objections, paragraph 763.
1887 Parties' response to the Commission's request for information RFI 27, Annex 27.5.
1888 Parties' response to the Commission's request for information RFI 125, Annex 125.4. and Annex to the Commitments Schedule on digital agriculture (pipeline tab).
1889 Parties' response to the Statement of Objections, section XII.4.4.
1890 Parties' response to the Statement of Objections, section XII.4.4.1.
1891 Parties' response to the Statement of Objections, section XII.4.4.4.

not raise any concerns;[1892] and that consumer and competitors are not privy to the same information as the Commission concerning the Parties' innovation incentives or objectives.[1893]

(2864) The Commission finds that the claims of the Notifying Party focus on the questionnaires sent at the beginning of Phase I. However, the body of evidence on which the Commission relied to reach the conclusions described in this Section of the Decision are not confined to those questionnaires.

(2865) As described in Section XII.4.3.3.1, the Commission conducted a thorough and wide investigation of the customers and companies active in digital agriculture and their activities, including digitally-enabled prescriptions of fungicides for broad acre crops in the EEA.

(2866) As part of the initial market investigation, the Commission sent questionnaires to more than 200 companies (53 competitors and 152 customers).[1894] These questionnaires were prepared on the basis of the information provided by the Parties in the Form CO and in response to requests for information from the Commission.

(2867) During the market investigation, the Commission sent further requests for information to 19 companies that seemed to be active in digital agriculture in the EEA and enquired about their activities, including recommendations of crop protection products.

(2868) The Commission also conducted several conference calls and interviews at the Agritechnica fair with different companies including DowDuPont, ChemChina-Syngenta and BASF to further clarify to which extent those companies were either active or planning to enter the market of digitally-enabled prescriptions of crop protection products, in particular of fungicides for broad acre crops in the EEA.

(2869) The Notifying Party takes issue with customers not being asked about the Parties' closest competitors in terms of their ability to innovate,[1895] only to claim in the following section that customers are not privy to the same information as the Commission concerning the Parties' innovation incentives or objectives,[1896] but the customers' view about the positive impact of the Transaction on innovation indeed should be taken into account.

(2870) Besides the contradictory arguments of the Notifying Party, the Commission considered that digitally-enabled prescription of crop protection products is a product that will soon reach the market. Therefore, companies either about to provide or developing these services are likely to be a better source of information on the impact of the Transaction.

(2871) In conclusion, for the assessment of the impact of the Transaction in the market for digitally-enabled prescriptions of fungicides for broad crop in the EEA, the Commission not only relied on the responses to the market investigation but in the complete body of evidence collected during pre-notification, Phase I and Phase II of

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1892 Parties' response to the Statement of Objections, section XII.4.4.3.

1893 Parties' response to the Statement of Objections, section XII.4.4.2.

1894 Questionnaire to Digital Agriculture Competitors (Q11) and Questionnaire to Digital Agriculture Customers (Q12).

1895 Parties' response to the Statement of Objections, section XII.4.4.1.

1896 Parties' response to the Statement of Objections, section XII.4.4.2.

the merger control procedure in order to reach the conclusions included in Section XII of this Decision.

5. CONCLUSION: DIGITALLY-ENABLED ARGONOMIC PRESCRIPTIONS

(2872) On the basis of the available evidence and the results of the market investigation as explained in Sections XII.1 to XII.4 above, the Commission considers that the Transaction would be likely to lead to a significant impediment to effective competition due to the elimination of an important competitive constraint in the market for the provision of digitally-enabled prescriptions of fungicides for broad acre crops in all EEA Member States, where the Parties have the ability and incentive to roll out digitally-enabled prescriptions.

SECTION XIII: INTEGRATION OF SEEDS AND CROP PROTECTION PRODUCTS

1. SCOPE OF THE COMMISSION'S ASSESSMENT

(2873) Monsanto and Bayer are each active in crop protection, seeds, traits and digital agriculture globally. The Parties' global strengths however rest in somewhat complementary areas. Indeed, Bayer is a leading crop protection player whereas Monsanto is a leading traits, seeds and digital farming player. In the present Section, the Commission assesses whether the Transaction would significantly impede effective competition in relation to conglomerate effects with regard to the bundling of the Parties' seeds and crop protection products.

(2874) In its Article 6(1)(c) Decision, the Commission found on the basis of the initial investigation in phase I that the Transaction raised serious doubts as to its compatibility with the internal market and with the functioning of the EEA Agreement in relation to conglomerate effects at the distributor and at the grower levels by way of the bundling of seeds and crop protection products and that this issue therefore needed to be investigated in phase II in more depth.

(2875) Regarding bundling at the distributor level, this preliminary finding in phase I was made on the basis of (i) the merged entity's possibly increased ability to engage in bundling strategies, (ii) the merged entity's possibly increased incentive to engage in bundling strategies, and (iii) the possibly negative impact on prices and choice which these bundling strategies would have.

(2876) Regarding bundling at the grower level, this preliminary finding was made on the basis of (i) the merged entity's possibly increased ability to engage in guarantee schemes, (ii) the merged entity's possibly increased incentive to engage in guarantee schemes, and (iii) the possibly negative impact on prices and choice which these bundling strategies would have.

(2877) In its response to the Article 6(1)(c) Decision, Bayer contested the preliminary findings of the Commission. Bayer in essence argued that the merged entity would not have the ability or the incentive to foreclose competitors through bundling practices both at the distributor and grower levels, because:

(a) industry features are not conducive to the commercial bundling of seeds and crop protection products, notably the fact that grower requirements are diverse and distributors aim to satisfy these requirements by offering the best products available among a competitive offer from producers;

(b) distributors have buyer power would and resist any attempt by the merged entity to influence their purchasing decisions;

(c) growers are sceptical about attempts by firms to bundle products: they want to keep their freedom to choose the best product combinations for their specific needs;

(d) past attempts at bundling seeds and crop protection products have not been successful;

(e) the Parties' current attempts at bundling are mainly at distributor level, are very limited and do not leverage significant market positions;

(f) digital agriculture and industry consolidation will not increase the scope for bundling;

(g) the Transaction would not significantly increase the Parties' ability or incentives to engage in bundling, notably in view of the limited market power increments brought about by the Transaction in the EEA;

(h) even if bundling were possible post-Transaction, significant competitors such as BASF or Syngenta on the crop protection side and KWS or Limagrain on the seeds side could not be foreclosed from the market; and

(i) moreover, both integrated competitors and non-integrated competitors cooperating with each other could adopt similar bundling strategies, which would limit any hypothetical effect on competition of the possible bundling strategies of the merged entity.[1897]

2. LEGAL FRAMEWORK

(2878) The Commission considers that the potential effects of the offering of rebates or guarantee schemes for the combined purchase by distributors or growers of Monsanto's broad acre crop seeds with Bayer's crop protection products should be examined under the framework established in the Commission's guidelines on the assessment of non-horizontal mergers (the "Non-Horizontal Merger Guidelines") and, in particular, on the basis of the provisions applying to conglomerate mergers.[1898]

(2879) Conglomerate mergers are mergers between firms that are in a relationship which is neither purely horizontal (as competitors in the same relevant market) nor vertical (as supplier and customer).[1899] In the present case, while the relationship between Bayer and Monsanto gives rise to some horizontal and vertical overlaps in the EEA,[1900] the risk of foreclosure that could arise from the offering of rebates or guarantees for the combined purchase by distributors or growers of Monsanto's broad acre crop seeds with Bayer's crop protection products is predominantly a conglomerate concern.

1897 Form CO, part 9, paragraphs 73-151; Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 439-450.

1898 Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings, OJ C 265, 18.10.2008, p. 7. ("Non-Horizontal Merger Guidelines").

1899 Non-Horizontal Merger Guidelines, paragraph 91.

1900 See Sections VIII to XII.

(2880) The Non-Horizontal Merger Guidelines recognise that "*conglomerate mergers in the majority of circumstances will not lead to any competition problems*," while noting that "*in certain specific cases there may be harm to competition*".[1901] In particular, the Non-Horizontal Merger Guidelines indicate that the "*main concern in the context of conglomerate mergers is that of foreclosure*" and that bundling is one of the typical practices through which foreclosure is achieved.[1902]

(2881) The Non-Horizontal Merger Guidelines stress that bundling as such is "*a common practice that often ha[s] no anticompetitive consequences*" because companies engage in "*bundling in order to provide their customers with better products or offerings in cost-effective ways*".[1903]

(2882) Nevertheless, in certain circumstances, this practice "*may lead to a reduction in actual or potential rivals' ability or incentive to compete. This may reduce the competitive pressure on the merged entity, allowing it to increase prices*".[1904] "*In order to be able to foreclose competitors, the new entity must have a significant degree of market power, which does not necessarily amount to dominance, in one of the markets concerned*".[1905]

(2883) In assessing the likelihood of foreclosure the Commission examines, first, whether the merged entity would have the ability to foreclose its rivals,[1906] second, whether it would have the economic incentive to do so[1907] and, third, whether a foreclosure strategy would have a significant detrimental effect on competition, thus causing harm to consumers.[1908]

(2884) In practice, these factors are often examined together as they are closely intertwined.[1909] Accordingly, the Commission's assessment in the present Decision focuses on ability but also considers elements from the other two factors and in particular foreclosure effects.

(2885) Regarding the effect on competition, "*[i]t is only when a sufficiently large fraction of market output is affected by foreclosure resulting from the merger that the merger may significantly impede effective competition. If there remain effective single-product players in either market, competition is unlikely to deteriorate following a conglomerate merger. The same holds when few single-product rivals remain, but these have the ability and incentive to expand output*".[1910]

(2886) The Court of First Instance clarified that "*[i]n particular, the Commission must establish that there is a high probability that anti-competitive effects will occur and not merely that they might occur, it must quantify those effects and show that they will result from the merger rather than from pre-existing market conditions. That requirement is particularly important in cases such as the present, in which the*

1901 Non-Horizontal Merger Guidelines, paragraph 92.
1902 Non-Horizontal Merger Guidelines, paragraph 93.
1903 Non-Horizontal Merger Guidelines, paragraph 93.
1904 Non-Horizontal Merger Guidelines, paragraphs 91 and 93.
1905 Non-Horizontal Merger Guidelines, paragraph 99.
1906 Non-Horizontal Merger Guidelines, paragraphs 95-104.
1907 Non-Horizontal Merger Guidelines, paragraphs 105-110.
1908 Non-Horizontal Merger Guidelines, paragraphs 111-118.
1909 Non-Horizontal Merger Guidelines, paragraph 94.
1910 Non-Horizontal Merger Guidelines, paragraph 113.

merger is conglomerate, since it is accepted that such mergers rarely have anti-competitive effects."[1911]

(2887) This "*effect on competition needs to be assessed in light of countervailing factors such as the presence of countervailing buyer power or the likelihood that entry would maintain effective competition in the upstream or downstream markets*".[1912]

(2888) "*Further, the effect on competition needs to be assessed in light of the efficiencies substantiated by the merging parties*".[1913]

3. CONCERNS EXPRESSED IN THE COURSE OF THE INVESTIGATION

(2889) In the course of its investigation, the Commission received complaints from market participants about the Transaction's alleged conglomerate non-coordinated effects.[1914] For instance, over 30 customers and competitors raised some concerns on conglomerate effects in one form or the other mainly in their responses to the phase I questionnaires. Citizens and Members of the European Parliament also voiced some form of conglomerate concerns at a general level.

(2890) Third parties in essence raised the concern that, post-Transaction, the merged entity would engage in a mixed bundling strategy – namely a commercial strategy by which products are available separately, but the sum of the stand-alone prices is higher than the bundled price – which would foreclose competitors. In practice, such a strategy would consist in the offering of rebates or guarantee schemes for the combined purchase by distributors or growers of Monsanto's broad acre crop seeds with Bayer's crop protection products, which could be facilitated by the development of digital agriculture tools.

(2891) Some respondents to the Commission's market investigation identified the risk of foreclosure due to bundling at the distributor level.[1915] For instance, one crop protection competitor noted that "*[t]he combined entity in some countries and important crops will have high market share which will provide them the ability to foreclose competitors from accessing distributors of these crops*".[1916]

1911 Judgment of 14 December 2005, *General Electric Company v Commission,* T-210/01, EU:T:2005:456, paragraph 78.

1912 Non-Horizontal Merger Guidelines, paragraph 114.

1913 Non-Horizontal Merger Guidelines, paragraph 52.

1914 See for example ABL comments on the Statement of Objections, ID10094, pages 25-27 (see also the response of a competitor to Questionnaire Market Test, question 19.1, ID11387); IPES comments on the Statement of Objections, ID10488, pages 9-10; Avaaz comments on the Statement of Objections, ID10167, pages 6-7; Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), questions 124, 128-130, 132 and 136; Questionnaire to Distributors and Institutes (Q2), questions 117-121, 125-127, 129 and 133; Questionnaire to Crop Protection Competitors (Q4), questions 65, 69-70, 73 and 77; Questionnaire to Row Crop Competitors (Q5), questions 140, 144-146, 148 and 151.

1915 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), questions 124, 128-130, 132 and 136; Questionnaire to Distributors and Institutes (Q2), questions 117-121, 125-127, 129 and 133; Questionnaire to Crop Protection Competitors (Q4), questions 65, 69-70, 73 and 77; Questionnaire to Row Crop Competitors (Q5), questions 140, 144-146, 148 and 151.

1916 Questionnaire to Crop Protection Competitors (Q4), ID9269, question 65.

(2892) The same competitor also seemed to refer more to bundling at the grower level: "*[s]uch a bundling at grower level will have significant negative effect on the pure seed players*" and "*[p]ure crop protection players would be negatively affected*".[1917]

(2893) One interested third party claimed that "*the vertical integration of the agri-food value chain would enable the new entity to strategically foreclose existing and potential competitors by offering packaged solutions in the seed and traits value chain, thus increasing prices and reducing consumer choices*" and that "*the integration of the whole value chain would increase the control of access to essential input. The Bayer-Monsanto merger might significantly impede effective competition through input foreclosure since it would be likely to restrict access to the products that it supplied or would have supplied without the merger*".[1918]

(2894) More specifically, one competitor noted in January 2018 that "*[r]ecent market behaviour by Monsanto confirms concerns about extension of dominance and use of bundling involving digital agriculture.*"[1919] This competitor stated that "*Monsanto is leveraging its position in downstream products to drive sales of its digital agriculture product*"[1920] by requiring retailers to sell a minimum number of paid version of Monsanto's FieldView product to qualify for rebates on other products of Monsanto's portfolio. The competitor further claimed that this would show "*Monsanto's willingness and ability to tie and bundle its products in order to exert leverage over retailers and to disadvantage competitor by seizing disproportionate amounts if shelf space.*"[1921] According to the competitor, these anticompetitive effects on price, grower's choice and innovation would only be exacerbated by the Transaction.[1922]

(2895) As regards this specific claim, the Commission notes that this information was extracted from an editorial piece published on the Internet at www.croplife.com,[1923] in which the author does not express a formal documented complaint but rather an opinion on an alleged behaviour of Monsanto taking place in the United States. In this respect, the Commission's investigation did not uncover factual evidence to corroborate these claims or to confirm whether they are also taking place in the EEA.

(2896) In relation to the concerns expressed by market participants more broadly, the Commission notes, first, that many of those expressing concerns phrased them in general and relatively abstract ways. In particular, the concerns regarding conglomerate effects at the grower level were formulated most of the time in vague terms. The Commission has in the course of the in-depth investigation tried to follow up on those concerns in phone calls. However, even during those phone calls

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1917 Questionnaire to Crop Protection Competitors (Q4), ID9269, questions 70 and 71.

1918 IPES comments on the Statement of Objections, ID10488, pages 9-10. In Europe, vegetable seeds are sold through different sales channels than crop protection products and broad acre crop seeds which instead are sold by the same distributors. Therefore, the areas in which the effects of combining the complementary strengths of Bayer and Monsanto would likely arise are broad acre crops and crop protection products.

1919 DowDuPont's comments on the Statement of Objections, 15 January 2018, ID10083, page 6. See also the Annex to the response to the Market Test of one competitor, ID11334, paragraphs 36-37.

1920 DowDuPont's comments on the Statement of Objections, 15 January 2018, ID10083, page 7.

1921 DowDuPont's comments on the Statement of Objections, 15 January 2018, ID10083, page 7.

1922 DowDuPont's comments on the Statement of Objections, 15 January 2018, ID10083, page 7.

1923 Schrimp, Paul, "*Rebate Requirement Reveals the Dark Side of FieldView*", dated 8 January 2018, available at: http://www.croplife.com/editorial/the-fieldview-dilemma/.

respondents referred more to the abstract possibility of future bundling than to specific areas where such bundling would likely be successfully implemented.

(2897) For instance, one seeds and crop protection competitor stated that "*[a]fter the transaction, Bayer/Monsanto would be able to combine the possibility of suggesting the prescription of a product with the availability of integrated solutions and a leading position in distribution channels. This combination would allow Bayer/Monsanto to influence both distributors' and farmers' judgement on their purchasing choices. Thanks to this system, Bayer/Monsanto would reach a preferred position to bias farmers towards their products, locking out competitors' products. Bayer/Monsanto would likely even be in a position to gradually supply farmers directly, progressively eliminating intermediaries like distributors. They would thus both internalise the former distributor's margin, but also eliminate competitors' route to market. While in the short term this may bring added benefits to farmers with improved solutions, in the longer run it would result in less innovation, less diversity and less choice for farmers*".[1924]

(2898) Another seed competitor asserted in general terms that "*[t]he new entity will be able to offer integrated solutions to farmers including seeds, crop protection products and digital farming services. Syngenta attempted to offer integrated solutions, without much success, because they did not have the best genetics. However, now, with Bayer acquiring Monsanto, it may be different*".[1925] The Commission considers this claim to lack specificity and to be unsubstantiated.

(2899) In similar general terms, one grower association stated that "*[l]a FNSEA n'a pas analysé l'impact de la transaction, mais elle a des inquiétudes sur les sujets suivants: la diversité et la disponibilité des produits, la protection de structures plus petites, le développement d'offres intégrées et l'impact sur les prix. L'opération ne fait pas l'objet d'une attention particulière de la part des adhérents*".[1926] The Commission considers that also this claim lacks specificity and is unsubstantiated.

(2900) One distributor however seemed to counter the possibility of such general concerns explaining that "*[t]he transaction may enable Bayer and Monsanto to create a combined and integrated offer of seed and crop protection products. However farmers do not tend to prefer a producer on the basis the width of its portfolio, they rather compare different types of products on the basis of their effectiveness*".[1927]

(2901) Secondly, the Commission notes that crop protection and seeds industry features are such in the EEA that very few sales – if any at all, notably in light of regulatory restrictions – are made directly from producers to growers. On the contrary, sales are in essence made through distributors.

(2902) Competitor (customer) foreclosure at the grower level can thus only take the form of: (i) recommendations of given crop protection products for specific seeds; or

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1924 Agreed non-confidential minutes of a call with a competitor, 29 March 2017 (ID1289). See also the agreed non-confidential minutes of a call with a competitor, 25 April 2017 (ID1274); and the agreed non-confidential minutes of a call with a competitor, 10 March 2017 (ID838).

1925 Agreed non-confidential minutes of a call with a competitor, 20 April 2017 (ID4382). See also the agreed non-confidential minutes of a call with a competitor, 16 March 2017 (ID1474); and the agreed non-confidential minutes of a call with a competitor, 3 April 2017 (ID1077).

1926 Agreed non-confidential minutes of a call with a grower association, 14 February 2017 (ID1020).

1927 Agreed non-confidential minutes of a call with a customer, 15 February 2017 (ID1282). See also the agreed non-confidential minutes of a call with a competitor, 9 February 2017 (ID668).

(ii) commercial advantages, for instance yield or revenue guarantee schemes, for the purchase of bundles of seeds and crop protection products offered together by producers or distributors as "integrated solutions". It follows that the concerns about the effectiveness of the bundling strategies at the grower level would only apply in rather specific contexts and circumstances.

(2903) By contrast, at the distributor level, foreclosure could typically occur, but only on the basis of the commercial incentives (for instance, rebates) which producers provide to distributors to increase their sales. It follows that these forms of rebates could be justified in the context of tailored "integrated solutions" that may also be used more broadly across crop protection product sales or even sales of both seeds and crop protection products.

(2904) Therefore, in assessing in the present Section XIII the effects in the EEA that the Transaction would likely have in relation to the combination of seeds and crop protection products, the Commission should distinguish practices at the distributor level (see Section XIII.6) from practices at the grower level (see Section XIII.7).

4. THE PARTIES' HAVE LIMITED MARKET POWER IN THE MOST LIKELY RELEVANT PRODUCT MARKETS

(2905) Pursuant to the Non-Horizontal Merger Guidelines, in order to be able to foreclose competitors, the merged entity must have a significant degree of market power in one of the markets concerned.[1928]

(2906) Although the Parties are leading players in the agricultural industry worldwide, they typically do not have a significantly stronger position than their competitors or a significant degree of market power in the EEA on the markets for which the bundling of seeds and crop protection products would be most likely. In the EEA given the market positions of the Parties, the Transaction would essentially enable bundling mainly in the markets for OSR seeds and OSR fungicides as well as the markets for corn seeds and corn herbicides.

(2907) For instance, at the worldwide level, Bayer is the second largest supplier of crop protection products preceded by ChemChina-Syngenta and followed by DowDuPont and BASF.[1929] In the EEA, Bayer is also strong in several product and geographic markets. However, other players such as Syngenta, BASF and DowDuPont are often similarly strong or even stronger.

(2908) Similarly, Monsanto is the largest seed company worldwide followed by DowDuPont, ChemChina-Syngenta and Vilmorin.[1930] However, in the EEA, Monsanto is a much smaller and less relevant player than in the rest of the world, notably compared with the United States.

(2909) In OSR seeds Monsanto has a significant (sometimes even dominant) share only in a few large EEA markets (share above 40% in […]).[1931] Similarly, in corn seeds Monsanto's share is never above 40% in any EEA country and is above 30% only

1928 Non-Horizontal Merger Guidelines, paragraph 99.

1929 Bayer's internal document BI 02914 [internal document], ID1174.

1930 Phillips McDougall Seed Service Report 2017, page 14 (as the Parties' response to the Commission's request for information RFI 30, Annex 30.4).

1931 Parties' response to the Commission's request for information RFI 68, Annex RFI 68.2.

[…].[1932] Regarding crop protection products, Monsanto only sells glyphosate-based NSH in the EEA, which are genericised and broadly available products.[1933]

(2910) Importantly, Monsanto is unable to leverage its dominant position in GM traits in the EEA, where they are only marginally accepted for cultivation. This likely explains why Monsanto does not currently engage in bundling of seeds and crop protection in the EEA, where it only sells two broad acre crops (corn and OSR) and only one crop protection AI (glyphosate).

(2911) Moreover, the Parties disagreed with the Commission's arguments in the Article 6(1)(c) Decision that the fact that the Parties have a significant proportion of the top selling products in the EEA would be indicative of the existence of any "must-have" products or of significant market power.[1934] The Parties on the contrary highlighted that seeds and crop protection markets in the EEA are competitive, and that distributors and growers purchase products primarily on the basis of their needs.[1935] In that context, rebates would be unable to significantly alter purchasing decisions.[1936]

(2912) A strong majority of respondents to the Commission's market investigation confirmed that neither Bayer nor Monsanto have been able to foreclose competitors from distribution in view of their must-have products or the breadth of their portfolios.[1937] In the words of one crop protection competitor, "*B[a]yer has a broad portfolio, but no must-have products*".[1938]

(2913) Another reason put forward by the Parties for the limited existence of bundling offers is that purchasing decisions for seeds and crop protection products are typically made at different times, with the decision to purchase seeds being the main driver in the grower's overall expected revenues. The fact that purchasing decisions for seeds and crop protection would be independent and made at separate points in time is apparent from a number of presentations made by the Parties to the Commission,[1939] and is confirmed by the Parties' ordinary course of business documents, illustrations of which are provided in Figure 524 to Figure 526.

Figure 524 – [Business strategy]

[…]

Source: BI 00001, [internal document], ID292-000001, slide 11.

Figure 525 – [Business strategy]

[…]

Source: BI 00001 [internal document], ID292-000001, slide 14.

1932 Parties' response to the Commission's request for information RFI 68, Annex RFI 68.2.

1933 See Section XI.1.

1934 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 441-443.

1935 See Section XIII.7.1.

1936 Form CO, part 9, paragraphs 143-146.

1937 Questionnaire to Distributors and Institutes (Q2), questions 117-120.

1938 Questionnaire to Distributors and Institutes (Q2), ID3544, question 117.1.

1939 See Bayer's presentations to the Commission of 1 June 2017 entitled "Customized Agronomic Solutions Meeting EU Commission (Bayer)", ID1343, notably pages 3, 6 and 8-9, as well as the presentation BI 09059 "EU Channel Overview", ID6775-11, notably page 9. While the evidentiary value of these documents prepared for the Commission may be limited, their content is confirmed by the Parties' ordinary course of business documents.

Figure 526 – [Business strategy]

[…]

Source: BI 00001 [internal document], ID292-000001, slide 27.

(2914) Therefore, growers purchase seeds on the basis of their intrinsic qualities rather than in light of bundling rebates granted on crop protection products, which the grower is at that point in time not certain will be needed.[1940]

(2915) In addition, the Parties explained that the Transaction would only moderately change the proportion of distributors' requirements which the Parties satisfy. There would therefore not be any significant Transaction-specific effect regarding the ability and incentive of the merged entity to bundle seeds and crop protection products.[1941]

5. THE PARTIES' CURRENT BUNDLING ACTIVITIES IN THE EEA ARE LIMITED

(2916) Pre-Transaction, Bayer and Monsanto appear to have only limited and different commercial strategies in relation to rebates and guarantee schemes.

(2917) On the one hand, Monsanto, as other seed players, [business and marketing strategy].[1942] [Business and marketing strategy].[1943]

(2918) On the other hand, Bayer offers [business and marketing strategy].[1944] [Business and marketing strategy].[1945]

(2919) However, Bayer only makes limited use of bundled rebates in Europe across seeds and crop protection products. [Business and marketing strategy].[1946] The financial incentives offered are described in Table 171 and appear to be of limited value (less than […] per country).

Table 171 – Bayer's current rebate practices in the EEA

[…]

Source: Form CO, part 9, Table 7.

(2920) It follows from the above that the Parties currently only have limited activities in the EEA regarding the bundling of seeds and crop protection products. If the merged entity wished to engage in a large-scale bundling strategy post-Transaction, it would have to significantly change its commercial strategy and win acceptance from distributors and growers for the bundling of seeds and crop protection products.

1940 Form CO, part 9, paragraphs 77-85. See also Section XIII.7.1.
1941 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 444.
1942 Parties' response to the Commission's request for information RFI 48, question 14, Annex 48.17.
1943 Form CO, part 9, paragraphs 128-131.
1944 Parties' response to the Commission's request for information RFI 29, Annex 29.6.
1945 Bayer's internal document BI 03265 [internal document], ID2312-295, slides 4 and 8.
1946 Form CO, part 9.

6. THE MERGED ENTITY WOULD POST-TRANSACTION LIKELY NOT HAVE THE ABILITY TO FORECLOSE RIVALS AT THE DISTRIBUTOR LEVEL, WITH IN ANY EVENT A LIMITED EFFECT ON COMPETITION

6.1. Already today bundling activities are repelled by distributors

(2921) Distribution structures vary widely in different EEA countries. However, in many of the largest agricultural markets such as France, Germany and the United Kingdom, distribution has consolidated and is currently very concentrated, with the top 4 or 5 distributors accounting for more than […]% or even […]% of sales, as illustrated in Figure 527 and Figure 528. Accordingly, distributors in these countries have significant buyer power.

Figure 527 – Distributors' power (1)

[…]

Source: BI 09059 [internal document], ID6775-11, page 3 (yellow highlight added).

Figure 528 – Distributors' power (2)

[…]

Source: BI 09059 [internal document], ID6775-11, page 5.

(2922) In fact, the Parties explained that distributors tend to reject any attempts at bundling by producers, in essence because they wish to preserve their ability to offer and be perceived as – credibly – offering impartial recommendations to growers, which are their constituents (in the case of cooperatives) and clients. The importance of distributors in providing advice to growers is illustrated in Figure 529 to Figure 531.

Figure 529 – Distributors' power (3)

[…]

Source: BI 09059 [internal document], ID6775-11, page 7 (yellow highlight added).

Figure 530 – Distributors' power (4)

[…]

Source: Bayer's presentation to the Commission of 1 June 2017 entitled [internal document], ID1343, page 7.

Figure 531 – Distributors' power (5)

[…]

Source: BI 09059 [internal document], ID6775-11, page 8 (yellow highlight added).

(2923) In particular, distributors would resent and strongly reject being by-passed by producers attempting to reach growers directly, as illustrated in Figure 532.[1947]

Figure 532 – Distributor's power (6)

[…]

Source: BI 09059 [internal document], ID6775-11, page 11 (yellow highlight added).

(2924) In that regard, the Commission notes that Bayer's sales of crop protection products are much larger than Monsanto's sales of seeds. Therefore, the merged entity's

[1947] Form CO, part 9, paragraphs 90-97 and 102.

incentives to start bundling Monsanto seeds with Bayer crop protection products post-Transaction would likely not be high, considering distributors' resistance. Distributors' incentives to reject bundling of Monsanto seeds and Bayer pesticides entails the risk that the merged entity could, by retaliation of the distributors, lose large crop protection sales in the hope of making limited additional seed sales.[1948]

(2925) Some participants to the Commission's investigation confirmed that distributors would likely oppose a strategy by the merged entity aiming at incentivising the joint sale of seeds and crop protection products, in particular because distributors often also act as advisors to the farmers and wish to maintain their ability to recommend the crop protection products and seeds that they consider most suited for each circumstance.

(2926) For instance, one large distributor indicated that "*[w]e push back on attempts to link sales of seeds and crop protection. We want to maintain the ability to make independent decisions on which seeds and crop protection to purchase and recommend to our customers*".[1949] Another confirmed that "*[n]os coopératives font bien leur travail sur le terrain. On ne laissera pas les fournisseurs venir sur le terrain directement*".[1950]

(2927) Some participants to the Commission's investigation also pointed out that farmers do not view favourably commercial offers that restrict their or their distributors' choice of seeds and crop protection products. One distributor considered that, while suppliers attempt to link the sales of seeds and crop protection products, "*farmers take their own decisions based in their own interest*".[1951] In a similar fashion, another distributor pointed out that "*generally farmers do not like this [bundling] mechanism for business and it restricts the choice of the distributor*".[1952]

(2928) Similarly, one competitor considered that there is "*limited farmer acceptability for such bundling offer at EU level giving still opportunities for pure seed players*".[1953] As to the merged entity's ability and incentives to engage in bundling, the same competitor explained that "*[t]his is very much unlikely in EEA. They will see resistance from most players (competitors, distributors) but also from a political point of view. This type of bundling will be under very close scrutiny by NGO's*".[1954]

(2929) Another competitor noted overall that "*[s]uch attempts have been made, but have not been successful in Europe as distributors, retailers and growers are resisting attempts to block their freedom to operate. No technology has been strong enough in Europe to lead to bundled offers being a prevalent practice*" and that "*in the medium term [the increase of bundling practices] is unlikely as plant protection distributors will make all efforts to prevent it in the EEA. The relationships between companies and ag chem distribution has remain balanced to protect everyone's role*".[1955]

(2930) The fact that farmers and distributors can and do resist bundled offers is reflected in Bayer's internal documents. For instance, one Bayer employee – when reporting on

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1948 See the Parties' response to the Commission's request for information RFI 48.
1949 Agreed non-confidential minutes of a call with a customer, 22 September 2017 (ID9595).
1950 Questionnaire to Distributors and Institutes (Q2), ID2893, question 125.
1951 Questionnaire to Distributors and Institutes (Q2) question 122.
1952 Questionnaire to Distributors and Institutes (Q2), question 123.
1953 Questionnaire to Crop Protection Competitors (Q4), question 70.
1954 Questionnaire to Crop Protection Competitors (Q4), ID3052, question 69.
1955 Questionnaire to Crop Protection Competitors (Q4), ID3052, questions 66 and 67.

Bayer's offer to a distributor of a rebate aimed at increasing the sales of a crop protection product – stated that [outcome of negotiations with a distributor].[1956]

(2931) It follows from the above that current attempts by producers to bundle seeds and crop protection products at the distributor level are actively resisted by distributors – which are large and sophisticated players and the key doorway to growers in many countries – and would likely continue to be resisted post-Transaction.

6.2. Looking forward, the Parties lack a significant proportion of common customers for which they could create bundles

(2932) Pursuant to the Non-Horizontal Merger Guidelines, in order for foreclosure to be a potential concern there must be a large common pool of customers for the individual products concerned.[1957]

(2933) The EEA has varying distribution structures in different countries, some being very concentrated while others are quite fragmented.[1958] It is clear that in countries where distribution is fragmented, the likelihood that the Parties would have a significant proportion of common customers is low.

(2934) However, according to the Notifying Party, this is likely also be the case even in countries where distribution is strongly concentrated: "*while in most countries a single distribution channel exists for seeds and CP products, there can be a de facto lack of common customers because distributors often have different points of contact responsible for seeds and for CP products, and keep different inventories and management systems*".[1959]

(2935) In assessing whether and to what extent distributors purchase both seeds and crop protection and are common customers of Bayer and Monsanto, the Commission focused on the market situation in France, Germany and the United Kingdom because these are three of the largest agricultural markets in the EEA and some of the largest European distributors are based there. Moreover, distribution in France, Germany and the United Kingdom is particularly concentrated and it is most likely that common customers would be identified there.

1956 Bayer's internal document [internal document], ID7521-26415.

1957 Non-Horizontal Merger Guidelines, paragraph 100.

1958 See Sections XIII.6.1 and XIII.7.1.

1959 Form CO, part 9, paragraph 97.

(2936) As can be seen in Table 172, the main crop protection distributors in each of France, Germany and the United Kingdom all also sell seeds.[1960]

Table 172 – Common seeds and crop protection distributors in France, Germany and the United Kingdom

Country	Distributor	CP	Seeds	Share of total national CP sales
Germany	Beiselen GmbH	Yes	Yes	[20-30]%
Germany	BSL Kiel	Yes	Yes	[10-20]%
Germany	Agravis Raiffeisen AG	Yes	Yes	[10-20]%
Germany	BayWa	Yes	Yes	[10-20]%
Germany	RWZ Köln	Yes	Yes	[5-10]%
Germany	Agro Holdorf	Yes	Yes	[0-5]%
TOTAL Germany				[70-80]%
France	Agrihub Sas	Yes	Yes	[20-30]%
France	Actura	Yes	Yes	[20-30]%
France	Area	Yes	Yes	[10-20]%
France	Union Terres De France	Yes	Yes	[10-20]%
France	Sicapa Sas	Yes	Yes	[10-20]%
France	Axereal Sica Sas	Yes	Yes	[10-20]%
TOTAL France				[90-100]%
United Kingdom	Masstock Arable (UK) Ltd, T/A Agrii	Yes	Yes	[20-30]%
United Kingdom	HL Hutchinson Ltd	Yes	Yes	[10-20]%
United Kingdom	Frontier Agriculture Ltd	Yes	Yes	[10-20]%
United Kingdom	Agrovista UK Ltd	Yes	Yes	[10-20]%
United Kingdom	Pro Cam CP Ltd	Yes	Yes	[5-10]%
TOTAL United Kingdom				[70-80]%

Source: Parties' response to the Commission's request for information RFI 48, Annex 48.3.

[1960] Parties' response to the Commission's request for information RFI 48, Annex 48.3.

(2937) However, Table 173 shows that Bayer and Monsanto rely to a large extent on different distributors for the sale of their crop protection products and seeds, respectively. In particular, [marketing strategy][1961] [marketing strategy].[1962] [Marketing strategy].[1963]

Table 173 – Parties' share of wallet with top seed distributors in France, Germany and the United Kingdom

Country	Distributor	Estimated Bayer Share of Wallet at Distributor level	Estimated Monsanto Share of Wallet at Distributor level	Estimated Combined (Bayer and Monsanto) Share of Wallet at Distributor level
France	Union Terres De France	[0-5]%	[0-5]%	[0-5]%
France	Sicapa Sas	[0-5]%	[0-5]%	[0-5]%
France	Actura	[0-5]%	[0-5]%	[0-5]%
Germany	BSL, Kiel	[0-5]%	[0-5]%	[0-5]%
Germany	Agravis Raiffeisen AG	[0-5]%	[5-10]%	[5-10]%
Germany	ATR Landhandel GmbH&Co.KG	[0-5]%	[0-5]%	[0-5]%
Germany	L. Stroetmann Saat GmbH & Co. KG	[0-5]%	[5-10]%	[5-10]%
Germany	Beiselen GmbH	[0-5]%	[5-10]%	[5-10]%
Germany	Nordkorn Saaten GmbH	[0-5]%	[0-5]%	[0-5]%
Germany	Dehner Agrar GmbH & Co. KG	[0-5]%	[5-10]%	[5-10]%
Germany	Raiffeisen Waren-Zentrale	[0-5]%	[5-10]%	[5-10]%
United Kingdom	Frontier Agriculture Ltd	[0-5]%	[10-20]%	[10-20]%
United Kingdom	Masstock Arable (UK) Ltd, t/a Agrii	[0-5]%	[0-5]%	[0-5]%
United Kingdom	Agrovista UK Ltd	[0-5]%	[0-5]%	[0-5]%
United Kingdom	Woodheads Seeds Ltd	[0-5]%	[0-5]%	[0-5]%

Source: Parties' response to the Commission's request for information RFI 29, Annex 29.3.

(2938) Table 173 also shows that even very large players such as the Parties are overall responsible only for a relatively limited part of the purchases of distributors (low "share of wallet"), which confirms the finding above that their market power vis-à-vis distributors is relatively limited.

(2939) Therefore, while there appears to be some commonality of customers between Bayer and Monsanto in France, Germany and the United Kingdom, Monsanto's and Bayer's customer bases only overlap to a limited extent. It follows that, should the merged entity engage in a bundling strategy aimed at granting rebates across Bayer's crop protection products and Monsanto's broad acre crop seeds, it would likely need

1961 [Marketing strategy].

1962 Parties' response to the Commission's request for information RFI 29, including Annex 29.1.

1963 Parties' response to the Commission's request for information RFI 29, including Annex 29.3.

to be able to make distributors to significantly modify their existing sourcing strategies.

(2940) Moreover, as explained above, evidence in the file indicates that distributors would in any event likely resist such a strategy, and the Parties' own revenue synergy calculations suggest that they do not expect that the Transaction would lead to significant additional sales in the EEA.

6.3. The Parties plan only limited sales increases in the EEA post-Transaction, likely only part of which would be from bundling at the distributor level with a limited effect on competition

6.3.1. The Parties' planned sales increases in the EEA post-Transaction are limited and possibly not all attributable to bundling at the distributor level

(2941) It appears from Figure 533 that one of the rationales of the Transaction at a general level is [rationale].[1964] Indeed, in its assessment of the likely benefits of the Transaction, Bayer indicated that the Transaction would allow the merged entity to have [rationale].[1965]

Figure 533 – [Marketing strategy]

[…]

Source: BI-EDISC-190560 [internal document], ID5893-19602, slide 8.

(2942) Bayer and Monsanto estimated that the Transaction would allow the merged entity to achieve some increases in sales. In particular, [rationale].[1966] [Rationale].[1967]

Figure 534 – [Marketing strategy]

[…]

Source: Monsanto 4(d)-2 document [internal document], 22 July 2016, ID156.

(2943) In September 2016, Bayer in its own synergy calculations identified opportunities for growth in Europe in seeds and crop protection.[1968] At the time, Bayer expected [rationale] sales [rationale] only for Monsanto's seed portfolio and [rationale] only for its own crop protection offering, as illustrated in Figure 535.[1969]

Figure 535 – [Rationale]

[…]

Source: BI 08735 [internal document], ID6051-56.

(2944) In the following year, Bayer developed more detailed revenue synergy calculations and identified the product categories in which it expected to generate additional sales post-Transaction. In July 2017, Bayer thus estimated that total revenue synergies arising from the Transaction would amount to […] worldwide, of which […] were identified at the time.[1970]

1964 Bayer's internal document BI-EDISC-190560 [internal document], ID5893-19602, ID162-46, slide 8.
1965 Bayer's internal document BI-EDISC-190560 [internal document], ID5893-19602, ID162-46, slide 8.
1966 Monsanto's internal document [internal document], 22 July 2016, ID156.
1967 Monsanto's internal document [internal document], 22 July 2016, ID156.
1968 Bayer's internal document BI 08735 [internal document], ID6051-56.
1969 Bayer's internal document BI 08735 [internal document], ID6051-56.
1970 Bayer's internal document BI 08738 [internal document], ID6214.

(2945) As can be seen in Figure 536, revenues in the EMEA I and EMEA II regions – which broadly correspond to, but are larger than, the EEA – were estimated to amount to only […] and were concentrated in two broad acre crops seeds, corn and to a more limited extent in OSR, and in crop protection products for these two crops. Revenue synergies were expected to be on the crop protection side approximately […] for corn and […] for OSR only, while on the seed side they were expected to be approximately […] for corn and […] for OSR only.

Figure 536 – [Rationale]

[…]

Source: BI 08738 [internal document], ID6214.

(2946) The Commission notes, first, that such revenue synergy calculations do not explicitly indicate that these incremental sales would be achieved, or would only be achieved, through the bundling of Monsanto's broad acre crop seeds and Bayer's crop protection products. The Commission's investigation did not reveal a single document stating that the merged entity would have specifically planned to engage in the commercial bundling of seeds and crop protection products as such post-Transaction.

(2947) Secondly, the revenue synergies to which the internal documents of the Parties refer could also be achieved through recommendations, branding, better products and/or improved commercial access to each other's prior distribution footprint.

(2948) Moreover, even assuming that all such additional sales could be generated through a bundling strategy, the Commission finds from the above-referred evidence that Bayer's expectations appear to be quite low – also taking into account the size of the relevant EEA product markets – and would likely result only in a modest increment of the merged entity's overall sales.[1971]

(2949) The Commission therefore concludes that it is unlikely that the Parties expected to effectively achieve sufficient increases in sales in the EEA through bundling practices.

6.3.2. Any effects would likely not meet the foreclosure threshold of the Non-Horizontal Merger Guidelines

(2950) Most importantly, the Commission finds it in any event very unlikely that the expected synergy gains from the possible bundling strategies would be sufficient to meet the foreclosure threshold of the Non-Horizontal Merger Guidelines.

(2951) The Commission is mindful of the fact that according to paragraph 113 of the Non-Horizontal Merger Guidelines, a significant impediment to effective competition occurs only when "*a sufficiently large fraction of market output*" is affected by foreclosure.

(2952) In the present case, even under the Parties' most optimistic projections of possible gains deriving from implementing bundling strategies, market share increases would be at most modest. As can be seen in Figure 536, additional revenues in the EEA were estimated to amount to approximately […] for crop protection, while on the

[1971] Parties' response to the Commission's request for information RFI 48, question 10, Annex 48.13.1 - Broad Acre Seeds Market Shares and Annex 48.1.4 (All CP by Crop).

seed side they were expected to be approximately […]. These increments represent only a small fraction of the corresponding markets.

(2953) Moreover, also according to paragraph 113 of the Non-Horizontal Merger Guidelines, "*[i]f there remain effective single-product players in either market, competition is unlikely to deteriorate following a conglomerate merger.*"[1972]

(2954) In the present case, some of those expressing concerns on conglomerate effects said that single product firms may find it more difficult to compete against the merged entity. However, no respondent suggested that the Transaction would have the effect of forcing one or more of the current main competitors of the Parties out of the market or significantly reducing their activities. Indeed, KWS and Limagrain on the seeds side and BASF, Syngenta or FMC on the crop protection side are strong global players with significant resources and good access to the market. The Transaction is not likely to force them to disappear from the market or to significantly reduce their activities.

(2955) Finally, also according to paragraph 113 of the Non-Horizontal Merger Guidelines, competition is unlikely to deteriorate if the remaining single product players have the ability and incentive to expand output.[1973] As explained in the next Section XIII.6.4, all players mentioned in recital (2954) and other players will continue to have sufficient ability and incentive to compete with the merged entity.

(2956) The Commission therefore concludes that it is unlikely that the foreclosure threshold of the Non-Horizontal Merger Guidelines would be met by the synergy gains that the Parties expected to achieve through bundling strategies.

6.4. Both integrated and non-integrated rivals would continue to constitute a significant competitive constraint on the merged entity post-Transaction

(2957) The Commission is mindful that pursuant to the Non-Horizontal Merger Guidelines, it should adequately take into account in its assessment whether there are effective and timely counter-strategies that rival firms may deploy.[1974]

(2958) In this respect, the Commission finds that while Bayer and Monsanto are among the leading crop protection and broad acre crop seed players globally, respectively, the merged entity post-Transaction would continue to face significant competitors in the EEA offering both crop protection products and seeds, such as DowDuPont and ChemChina-Syngenta, as well as players active in only one of these segments, such as BASF, FMC, Vilmorin and KWS.[1975]

(2959) Integrated rivals that already have both broad acre crop seeds and crop protection products in their portfolios could readily match bundled offers by the merged entity by also selling bundles. Moreover, also non-integrated rivals could readily team up to offer similar bundles if this proved to be a successful strategy in the market, in addition to exerting a continued competitive constraint on the merged entity in their respective segments.

(2960) As explained by one crop protection competitor, "*[w]e do not believe the merger will have an impact on our ability to participate in the crop protection market or to bring*

1972 Non-Horizontal Merger Guidelines, paragraph 113.
1973 Non-Horizontal Merger Guidelines, paragraph 113.
1974 Non-Horizontal Merger Guidelines, paragraph 103.
1975 Form CO, part 9, paragraphs 147-151.

innovative products to the market to address growers' needs".[1976] Another seed competitor also explained that the merged entity would likely not have an increased ability or incentive to foreclose competitors from distribution "*as any distributor would like to have at least 2 or 3 offers*".[1977]

(2961) In conclusion, based on the above, the Commission considers that both integrated and non-integrated rivals would likely continue to constitute a significant competitive constraint on the merged entity post-Transaction if it attempted to foreclose rivals through bundling.[1978]

6.5. Conclusion: the Transaction is not likely to give rise to a significant impediment to effective competition with regard to bundling at the distributor level in the EEA

(2962) Both the case law[1979] and the Commission's guidelines recognise that conglomerate mergers are only anticompetitive in specific and limited contexts and circumstances. In such limited cases, a significant impediment to effective competition would only materialise if a number of conditions are fulfilled. The Commission must show a high probability of anticompetitive effects and not just some possibility or limited likelihood. Moreover, the Commission cannot find a significant impediment of effective competition just because it considers it likely that the Parties would engage in bundling conduct. It must prove that such conduct would in the specific context of the industry also likely cause significant anticompetitive effects.

(2963) In the present case, it is not evident that the Parties have sufficient market power in general and specifically over the distributors to engage successfully in bundling strategies. Besides, the distributors themselves appear to have a certain degree of buying power that would allow them to specifically repel bundling strategies attempted at their expense. Moreover, since GM traits are cultivated to a limited extent in Europe, the additional market power brought about by the Transaction would in any event be limited.

(2964) In any event, the Parties project, if at all, limited increases in sales. Even if the Parties were able to realise these sale synergy objectives and even if those increased sales and shares were achieved by bundling strategies, the share of the market foreclosed for single product players would be small and a sufficient number of rivals would still remain.

(2965) Furthermore, the remaining rivals would likely have the ability and incentive to react.

(2966) On balance therefore, while the merged entity may try to engage in some bundling strategies in the future, it is not possible for the Commission to conclude that the Transaction would have a high probability of having significant anticompetitive effects due to bundling.

(2967) On the basis of the above, the Commission concludes that the merged entity would likely not have the ability to foreclose competitors within the meaning of the Non-Horizontal Merger Guidelines. Therefore, in light of the evidence available to it, the

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1976 Questionnaire to Crop Protection Competitors (Q4), ID3297, question 73.

1977 Questionnaire to Row Crop Competitors (Q5), ID3630, question 144.

1978 See the Non-Horizontal Merger Guidelines, paragraph 113.

1979 See recital (2886).

Commission considers that the Transaction would not significantly impede effective competition in relation to the bundling of seeds and crop protection products at the distributor level.

7. THE MERGED ENTITY WOULD POST-TRANSACTION LIKELY NOT HAVE THE ABILITY TO FORECLOSE RIVALS AT THE GROWER LEVEL, WITH IN ANY EVENT A LIMITED EFFECT ON COMPETITION

7.1. Bundling at the grower level has so far not been successful and would likely only succeed if it were welfare enhancing for growers

(2968) First of all, bundling at the grower level faces the key challenge that industry players typically have limited direct access to growers, with a large proportion of sales being made through distributors, as illustrated in Figure 532, Figure 537 and Figure 538.

Figure 537 – [Marketing strategy]

[…]

Source: BI 09059 [internal document], ID6775-11, page 14 (yellow highlight added).

Figure 538 – [Marketing strategy]

[…]

Source: BI 09059 [internal document], ID6775-11, page 20 (yellow highlight added).

(2969) Similarly, the fact that industry players typically have limited direct access to growers is also confirmed by respondents to the market investigation (see recitals (2922) to (2930)) and the Parties' ordinary course of business documents in Figure 524 to Figure 526.

(2970) Where such access does exist, seeds are the typical entry point to reach growers directly, since they are the grower's first key purchasing decision, and more tailored to specific conditions in a field than the purchase of crop protection products, as illustrated in Figure 539.[1980] Accordingly, growers often have more frequent contacts with seed companies than with crop protection companies.

Figure 539 – [Marketing strategy]

[…]

Source: [Internal document], ID1343, page 5.

(2971) In that regard, Bayer and Monsanto are weaker seed players in the EEA than they are globally, in particular Monsanto when compared to its market position in the United States for instance.

(2972) Accordingly, bundling at the grower level would likely take one of two possible forms: (i) recommendations of given crop protection products for specific seeds; or (ii) commercial advantages, for instance yield or revenue guarantee schemes, for the purchase of bundles of seeds and crop protection products presented as "integrated solutions".

(2973) Recommendations would only work if they provided the best possible technical advice in an objective way, and would be welfare enhancing for growers. This is for

[1980] See also the agreed non-confidential minutes of a call with a competitor, 10 March 2017 (ID838).

example what distributors and other technical advisors do. However, there is no possibility to foreclose competitors with these recommendations.

(2974) Regarding guarantees on integrated solutions, at this stage these are at most a potential or emerging business model. Indeed, as detailed in Section XIII.4, [marketing strategy],[1981] likely in light of growers' scepticism on advice coming from crop protection players, which growers may perceive as being biased.

(2975) Moreover, the Parties emphasised that Bayer's only existing yield guarantee scheme does "*not appear to leverage market positions*" since it relates to the use of a [marketing strategy], where Bayer is a recent entrant with a very low market share.[1982]

(2976) Looking forward, the Parties' internal documents suggest that [marketing strategy] could have been planned as one of the key drivers of the Transaction, as illustrated in Figure 540 to Figure 545.

Figure 540 – [Marketing strategy]

[…]

Source: Bayer's internal document [internal document], ID86, page 17.

Figure 541 – [Marketing strategy]

[…]

Source: Bayer's internal document [internal document], ID86, page 201 (yellow highlight added).

Figure 542 – [Marketing strategy]

[…]

Source: Bayer's internal document [internal document], ID86, page 204 (yellow highlight added).

Figure 543 – [Marketing strategy]

[…]

Source: BI-EDISC-0005660 [internal document], ID5412-5660, page 5.

Figure 544 – [Marketing strategy]

[…]

Source: BI-EDISC-0005660 [internal document], ID5412-5660, page 48.

Figure 545 – [Marketing strategy]

[…]

Source: BI-EDISC-0005660 [internal document], ID5412-5660,, page 49.

(2977) However, these plans are presented merely as possible options to develop new products and business models in the Parties' internal documents, and the Commission did not find any indication that these expectations had been detailed into concrete actions, or that final decisions had been made.

1981 See the Parties' responses to the Commission's requests for information RFI 29 and RFI 48.

1982 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraph 447.

(2978) Moreover, if the Parties attempted to launch such [marketing strategy] at the grower level, they would likely be faced with scepticism in light of growers' aversion to input suppliers' attempts to limit their freedom to choose the products most suitable to their needs.[1983] As explained by two competitors, there is "*[o]nly partial, limited farmer acceptability for such bundling offer at EU level giving still opportunities for pure seed players*" and that "*[n]o, [bundling at the grower level] would not have significant foreclosure effects on pure seed players*".[1984]

(2979) Similar explanations were provided regarding the possible foreclosure of crop protection competitors, including from a different competitor explaining that "*[a]s noted above, it is our experience that growers prefer to have an independent choice in seed and crop protection, and we believe pure crop protection players can be successful*".[1985]

(2980) Indeed, costs of inputs such as seeds and crop protection products – while significant – are modest in comparison with their importance in maximising yield and corresponding grower revenues. Accordingly, growers are typically – and duly taking into account that growers have varying business models – reluctant to "take a chance" and buy second-best products to make marginal savings on input costs which could have a significant detrimental impact on output.[1986]

(2981) In fact, recent attempts by DuPont and Syngenta to offer integrated solutions appear to have failed because of this scepticism and resistance from growers and distributors, as illustrated in Figure 546 and Figure 547.[1987]

Figure 546 – [Marketing strategy]

[…]

Source: Bayer's presentation to the Commission of 1 June 2017 entitled [internal document], ID1343, page 12.

Figure 547 – [Marketing strategy]

[…]

Source: Bayer's presentation to the Commission of 1 June 2017 entitled [internal document], ID1343, page 14.

(2982) In practice, integrated solutions would thus likely be successful only to the extent that they would bundle the best technical solutions, with a discount, and therefore be welfare enhancing for growers.[1988] For instance, the Parties explained that [marketing strategy].[1989]

1983 Form CO, part 9, paragraphs 132-142.

1984 Questionnaire to Crop Protection Competitors (Q4), ID3306 and ID3052, question 70. See also the agreed non-confidential minutes of a call with an institute, 19 July 2017 (ID4672).

1985 Questionnaire to Crop Protection Competitors (Q4), ID3306, ID3297 and ID3052, question 71.

1986 Form CO, part 9, paragraphs 78-85. See also Figure 524 to Figure 526.

1987 Form CO, part 9, paragraphs 99-105.

1988 Form CO, part 9, paragraphs 88-89.

1989 Parties' response to the Article 6(1)(c) Decision, ID5016-3, paragraphs 448-449. See also the Non-Horizontal Merger Guidelines, paragraph 93.

7.2. Both integrated and non-integrated rivals would continue to constitute a significant competitive constraint on the merged entity post-Transaction

(2983) As already explained in Section XIII.6.4 for bundling at the distributor level, both integrated and non-integrated rivals would likely be able to offer similar bundles to growers than those offered by the merged entity post-Transaction.[1990]

(2984) In fact, regarding bundling at the grower level, distributors could become important players and be more effective in that regard than the merged entity because they may be able to benefit from and leverage their credibility as independent technical advisers. By contrast, crop protection and seed players could be perceived as being biased towards their own products, if only because of greater knowledge compared with their competitors' products.

(2985) It follows from the above that both integrated and non-integrated rivals, as well as distributors, would likely continue to constitute a significant competitive constraint on the merged entity post-Transaction.

7.3. Any possible foreclosure effects would need to be balanced against the welfare enhancing effects for growers

(2986) In addition to the fact that possible foreclosure effects post-Transaction resulting from the merged entity's bundling at the grower level would appear to be limited, these would need to be balanced against the possibly consumer-welfare-enhancing effects integrated solutions may offer.

(2987) Indeed, as explained in recital (2982), bundling at the grower level would in practice possibly result in novel commercial products, and would likely only be successful if this bundling combined the best available technical solutions at a discount.

(2988) As such, these bundles would therefore provide the best – perhaps novel – technical combinations at a lower price, which growers could at least partly pass on downstream.

7.4. The stage of development of digital agriculture in the EEA does not allow the Commission to enforce a conglomerate theory of harm

(2989) Many respondents to the Commission's market investigation raised at a general level a concern that the advent of digital agriculture – where the Parties are leading players – could increase the merged entity's ability to foreclose competitors through bundling.[1991]

(2990) For instance, an interested third party commented that "*the integration of the whole value chain on the agri-food sector and the offer of packaged farming solutions to farmers would create a likelihood of constrained choice for farmers who will be locked in integrated platform. Indeed, the Bayer-Monsanto merger would create a de facto exclusive relationship with farmer, who will be dependent on the company for all inputs with virtually no alternative. In fact, the firms have already developed their own IT platforms with the effect to make farmers technically dependent. This situation of economic and technical dependence would be considerably increased*

1990 Form CO, part 9, paragraphs 147-151.

1991 Questionnaire to Seeds & Traits & Crop Protection Competitors (Q1), questions 124, 128-130, 132 and 136; Questionnaire to Distributors and Institutes (Q2), questions 117-121, 125-127, 129 and 133; Questionnaire to Crop Protection Competitors (Q4), questions 65, 69-70, 73 and 77; Questionnaire to Row Crop Competitors (Q5), questions 140, 144-146, 148 and 151.

with the creation of a Bayer-Monsanto fully-integrated service provider, thus increasing the risk of foreclosure of competitors. Following the merger, Bayer-Monsanto would be in such a dominant position that it would be easy for them to abuse this position by imposing exclusivity to the farmers".[1992]

(2991) As detailed in Section XII, digital agriculture is currently in its infancy. In the EEA, the industry is still considering the more efficient and attractive ways to monetise the provision of digital services to farmers. Consequently, business models in digital agriculture are not stable. Section XII provides examples of the different business models of Bayer and Monsanto.

(2992) Moreover, different companies follow different business strategies. For example, in the United States, Monsanto provides its digital agriculture services through its Climate FieldView platform. In the EEA, Monsanto will roll-out some functionalities of its platform in France and Germany in the 2018 growing season. However, Bayer does not have a digital agriculture platform as defined in the present Decision (see Section XII.1.2.1) in the EEA. Bayer has several vertical digital products through which it offers its digital agriculture services.

(2993) Furthermore, according to the market investigation and the information in the Commission's file, only a few companies seem to provide guarantees linked to the use of its digital agriculture services.

(2994) Accordingly, the Commission considers that assessing the likely impact of these digital agriculture services on the merged entity's ability to use bundling (facilitated by these digital services) to significantly foreclose competitors in the EEA is at this stage premature and too speculative and would be based on abstract possibilities only.

(2995) Even more importantly, even if the Parties were able in the foreseeable future to rely on digital agriculture services to engage in some bundling practices, it is at this early stage of the technology not clear whether such a bundling strategy would have any foreclosure effects at all, given the possibility of others to also develop such services, in particular in view of the Digital Agriculture Licence under the Final Commitments (see Section XV), and/or to market their products through more traditional channels. Furthermore and in any event, the Commission finds that it is unlikely that such digitally-enabled services would enable the merged entity to trigger the significant foreclosure effects required by the Merger Regulation and paragraph 113 of the Non-Horizontal Merger Guidelines as also discussed in Sections XIII.6 and XIII.7 at least in the short to medium term.

7.5. Conclusion: the Transaction is not likely to give rise to a significant impediment to effective competition with regard to bundling at the grower level in the EEA

(2996) As mentioned in recital (2962), both the case law[1993] and the Commission's guidelines recognise that conglomerate mergers are rarely anticompetitive. A significant impediment to effective competition, if any, would only materialise if a number of conditions are present. The Commission must therefore show a high probability of anticompetitive effects and not just some possibility or limited likelihood. Moreover, the Commission cannot find a significant impediment of effective competition just because it considers it likely that the Parties would engage

[1992] IPES comments on the Statement of Objections, ID10488, page 10.

[1993] See recital (2886).

in bundling conduct. It must prove that such conduct would in the specific context of the industry also likely cause significant anticompetitive effects.

(2997) In the present case, while the merged entity may try to engage in bundling strategies at the grower level, it is not clear whether the Parties have sufficient market power in general and power over growers – who appear to be reluctant to receive recommendations and suggestions for bundles from input providers – specifically to do so successfully.

(2998) Indeed, the investigation rather shows it to be unlikely that the Parties would even have significant access to growers, who typically only deal with distributors, which themselves appear to have a strong degree of buyer power and a key role in offering products and making recommendations to growers.

(2999) Moreover, since GM traits are hardly cultivated in Europe, the additional market power brought about by the Transaction is limited.

(3000) In any event, the Parties project, if at all, limited increases in sales. Even if the Parties were able to realise these sale synergy objectives and even if those increased sales and shares were achieved by bundling strategies, the share of the market foreclosed for single product players would be small and a sufficient number of rivals would still remain.

(3001) Furthermore, the remaining rivals would likely have the ability and incentive to react.

(3002) On balance, the Commission therefore considers that, while the merged entity may try to engage in some bundling strategies in the future (possibly facilitated by its digital agriculture capabilities), it is not possible to conclude that the Transaction would have a high probability of having significant anticompetitive effects due to bundling at the grower level.

8. CONCLUSION: THE TRANSACTION IS NOT LIKELY TO GIVE RISE TO A SIGNIFICANT IMPEDIMENT TO EFFECTIVE COMPETITION WITH REGARD TO BUNDLING BOTH AT DISTRIBUTOR LEVEL AND AT GROWER LEVEL IN THE EEA

(3003) In sum, the Commission finds that bundling practices both at the distributor and at the grower levels are currently limited in the EEA and resisted by distributors and growers alike. Moreover, any future attempts by the merged entity to engage in such practices post-Transaction would likely continue to be met by scepticism from target customers as well as the ability of competitors to engage in similar bundling practices, thereby limiting potential effects on competition. In any event, any effects would likely be limited and insufficient to effectively foreclose competitors.

(3004) Therefore, on balance and in light of the evidence available to it, the Commission considers that the Transaction would not significantly impede effective competition in relation to the possible bundling of seeds and crop protection products both at the distributor level and at the grower level.

SECTION XIV: NON-COMPETITION CONCERNS

1. THIRD PARTIES VIEWS

(3005) During the merger review proceedings, a number of third parties expressed to the Commission several concerns not related to the protection of effective competition ("non-competition concerns") regarding the Transaction.

(3006) Avaaz, IPES-Food and Arbeitsgemeinschaft bäuerliche Landwirtschaft e.V. ("ABL"), all interested third parties for the purposes of Article 18(4) of the Merger Regulation, claim that, in its Statement of Objections, the Commission did not give enough weight to other objectives enshrined in the TFEU, namely the protection of the environment, food safety, sustainable development and public health, as well as objectives related to the agriculture sector.[1994]

(3007) In particular, those interested third parties contend that the Commission should assess the impact of the merger not only in terms of higher prices, loss of innovation and loss of products (seeds, traits, etc.) choice, but also in terms of loss of biodiversity as a harm to environment. They further argue that the assessment of innovation competition should not only address the question whether the Parties would continue investing in new products but whether these investments would be directed towards quality products. The risk in terms of innovation would lie not only in a reduction of innovation efforts but also in a misuse of innovation. According to IPES-Food, the merged entity would have very little, if any incentive, to innovate towards the use of less chemical products or towards healthier farming products. Finally, when assessing the risks that the concentration bears, the Commission should take into consideration the direct link that exists between safe food - and hence safe agriculture – and public health.[1995]

(3008) Moreover, ABL also relies on Articles 39 and 42 TFEU to claim that the Transaction is incompatible with the objectives of the common agricultural policy.

(3009) Similar views have also been expressed by Members of the European Parliament, Members of the German Bundestag[1996] and private citizens who addressed themselves to the Commission in connection with the Transaction. Most prominently, over a million citizens signed a petition stating that "[t]he proposed Bayer-Monsanto, DowDuPont, and ChemChina-Syngenta mergers are each anticompetitive, not in the public interest, and will not serve the public good. The Commission's] action now can protect our *food*, our *farming*, our *ecosystem* and our *health*".[1997]

2. COMMISSION ASSESSMENT

(3010) The TFEU requires the Commission to take into consideration a plurality of objectives including human health, environment and consumer protection, in defining and implementing the Union policies and activities. This follows in

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1994 IPES-Food comments on the Statement of Objections, p. 3; Avaaz comments on the Statement of Objections, p. 7, and ABL comments on the Statement of Objections, ID10094, pages 25 – 27.

1995 IPES-Food comments on the Statement of Objections, p. 6-7; Avaaz comments on the Statement of Objections, p. 7; ABL comments on the Statement of Objections, ID10094, pages 25 – 27.

1996 ID5515.

1997 See https://secure.avaaz.org/campaign/en/stop_monsanto_monster_merger_3d/.

particular from Article 7 TFEU, in connection with Article 9 TFEU *("[i]n defining and implementing its policies and activities, the Union shall take into account requirements linked to … the protection of human health*"), Article 11 TFEU ("*[e]nvironmental protection requirements must be integrated into the definition and implementation of the Union's policies and activities, in particular with a view to promoting sustainable development*") and Article 12 TFEU ("*[c]onsumer protection requirements shall be taken into account in defining and implementing other Union policies and activities*").

(3011) In the light of recital 23 of the Merger Regulation, the Commission has placed its competitive assessment of the Transaction within the general framework of the achievement of the fundamental objectives referred to in the EU Treaties. In particular, the Commission is mindful of the potential implications of a possible reduction of competition caused by the Transaction on human health, food safety, consumer protection, environmental protection and climate. The Commission has, in particular, paid specific attention in its review to ensure that post-Transaction innovation in the agroindustry sector is preserved as the key for the emergence of more effective, healthier, safer and more environmentally-friendly products.

(3012) For these reasons, the Commission has carried out a thorough and rigorous assessment of the likely effects of the Transaction not only on current and potential price and product competition, but also on innovation competition, including, in particular, both the incentives to discontinue, delay or reorient ongoing pipeline projects, and the incentives to develop new and better quality products in the future (see Sections VIII to XIII above).

(3013) On the basis of this analysis, the Commission considered that the Transaction could not be approved without the Parties submitting remedies to ensure that the Transaction does not impede effective competition in any relevant market, including in the innovation fields identified as problematic (i.e., broad acre crop traits, non-selective herbicides). Because of the objections raised by the Commission during the merger proceedings, the Parties have presented two successive packages of remedies and the Final Commitments submitted on 16 February 2018, critically improving the scope of the remedies initially presented. The Commission considers that the Final Commitments ensure that sufficient competition remains by keeping the same level of competition in the markets where the Commission had expressed concerns, both in terms of actual and potential product and price competition, as well as in terms of innovation competition, and to enable the eventual buyers of the divestment packages to replace the competitive constraint that the Parties exerted over each other prior to the Transaction (see Section XV on Remedies below).

(3014) In placing its appraisal of the competition concerns of a notified merger and of the remedies proposed to address them within the framework of the fundamental objectives of the EU, the Commission must act within the boundaries of the powers conferred upon it by the EU Treaties. In this regard, the Commission notes that, as laid down in Article 7 TFEU, "[t]he Union shall ensure consistency between its policies and activities, taking all of its objectives into account and *in accordance with the principle of conferral of powers*" (emphasis added). By virtue of the same conferral principle, each EU institution can only act within the limits of the competences that have been conferred upon it by the EU Treaties and secondary legislation.

(3015) The TFEU confers specific powers on the EU for the attainment of the public policy objectives mentioned above, including those specified in Article 39 (on agriculture) Articles 168 (on health protection), 169 (on consumer protection) and 192 (on environment) TFEU. According to their respective competences, the EU institutions and national authorities have adopted and are implementing specific rules in the areas mentioned above and indeed including rules to protect food safety, the environment and climate as well as public health as it is also acknowledged by some of the interested third parties in their submissions.[1998]

(3016) The Merger Regulation was however adopted on the basis of Article 83 (now Article 103 TFEU) and Article 308 of the EC Treaty (now 352 TFEU) as a "*specific legal instrument*", in order to achieve, and "not go beyond", the objective of ensuring that competition in the internal market is not distorted.[1999]

(3017) Thus, the Merger Regulation does not empower the Commission to intervene against a merger on grounds other than the protection of competition. Indeed, according to Article 2(1) of the Merger Regulation concentrations within the scope of the Merger Regulation must be appraised in accordance with "*…the objectives of this Regulation…*".

(3018) It follows from the legal basis used for the adoption of the Merger Regulation as well as from recitals 2 to 7 and 24 thereof that the objective of the Merger Regulation is to protect competition in the internal market and more specifically to permit "*the effective control of all concentrations in terms of their effect on the structure of competition in the Community"* (see recital 6 of the preamble of the Merger Regulation).

(3019) Whereas, in accordance with the second sentence of recital 23 of the Merger Regulation the Commission must place its appraisal within the general framework of the achievement of the fundamental objectives of the EU Treaties, it needs to do so within the boundaries of the powers conferred by the EU Treaties and secondary legislation. Indeed, the first sentence of recital 23 of the Merger Regulation clarifies that the Commission should base its assessment on competition grounds, namely the need to maintain and develop effective competition in the internal market. Further, recital 24 of the Merger Regulation clearly underlines that the objective of EU merger control is the protection of undistorted competition and that the control of mergers must be carried out only from the point of view of their effects on competition.

(3020) The legal test laid down in the Merger Regulation to appraise the compatibility of mergers with the internal market is therefore consistent with the objectives of the Merger Regulation, as explained in its preamble. After establishing that mergers must be appraised in accordance with "*…the objectives of this Regulation…*", Article 2(1), second paragraph, of the Merger Regulation lays down in more detail the factors that the Commission shall take into account in making its appraisal, which are all of them competition-related. Accordingly, Article 2(2) of the Merger Regulation provides that "*[a] concentration which would not significantly impede effective competition in the market or in a substantial part of it, in particular as a*

[1998] See e.g. IPES-Food comments on the Statement of Objections, page 12 ("seed market is a highly regulated one"); Avaaz comments on the Statement of Objections, page 5 ("very strict regulation on GM in the EU").

[1999] Recital 6 of the Merger Regulation.

result of the creation or strengthening of a dominant position, shall be declared compatible with the common market". Therefore, whilst the general framework of the achievement of the other mentioned criteria not related strictly to competition is taken into account in the competitive appraisal, the Commission is nevertheless bound to apply to notified mergers the criteria mentioned in Article 2 of the Merger Regulation. The Commission is thus obliged to clear a merger when its competition appraisal, taking into account all relevant criteria, concludes that it does not significantly impede effective competition.

(3021) In addition, Article 21, in particular the second and third paragraphs, of the Merger Regulation confirm that the Commission can intervene against mergers only on competition grounds. Article 21(4) of the Merger Regulation distinguishes between, on the one hand, other "*legitimate public interests*" such as "*public security, plurality of the media and prudential rules*" and, on the other hand, the protection of undistorted competition ensured by the Merger Regulation. As regards the protection of competition, Article 21 of the Merger Regulation gives the Commission exclusive jurisdiction to intervene against mergers with a Community dimension. As regards "*other legitimate public interests*", it is not for the Commission, but for Member States, and on the basis of their national legislations being not "*legislation on competition*" (see Article 21(3) of the Merger Regulation) to possibly take appropriate measures (see Article 21(4) of the Merger Regulation) to protect other interests also in accordance with EU law.

(3022) It follows from the above that the Commission would exceed the powers conferred on it by the Merger Regulation should it intervene against mergers on the basis of non-competition-related grounds.

(3023) Furthermore, as stated in recital (3008) above, ABL claims that the Commission should prohibit the Transaction on the basis of the general claim that it would be incompatible with the objectives of the common agricultural policy laid down in Article 39 TFEU. However, the Commission notes that ABL does not indicate the attainment of which specific objectives among the many referred to in Article 39 TFEU would be impeded by the Transaction, nor it explains why or how the attainment of such objectives would be put at risk.

(3024) Besides ABL not explaining which objectives of the common agricultural policy the Transaction would impair and in which way, the Commission notes the following.

(3025) First, Article 42 TFEU empowers the European Parliament and the Council to determine, on the basis of the procedure foreseen by Article 43(2) TFEU, to what extent the competition rules should apply to production of and trade in agricultural products. In this respect, the Single CMO Regulation,[2000] in the section dedicated to the competition rules (Part IV), does not provide for any exclusion of agriculture from EU merger control rules.

(3026) Second, recital 7 of the Merger Regulation clarifies that as regards merger control the Council relied on Article 308 of the EC Treaty (now Article 352 TFEU), and, therefore, not on Article 43(2) TFUE, to determine to what extent the Merger Regulation applies to agricultural products. In this regard, Article 1 of the Merger

[2000] Regulation (EU) No 1308/2013 of the European Parliament and of the Council of 17 December 2013 establishing a common organisation of the markets in agricultural products, OJ L 347, 20.12.2013, p. 671.

Regulation states that it applies to "*all*" concentrations independently of the sector, therefore not excluding agriculture, and recital 7 thereof clarifies that the Merger Regulation also applies to the agricultural products listed in Annex I of the Treaty. No rule within the Merger Regulation allows or obliges the Commission to apply to mergers affecting agricultural products other rules and standards than to mergers affecting other sectors. Therefore, according to the principle of conferral of power discussed above, the Commission cannot intervene against a merger that does not significantly impede effective competition merely on the allegation that it might negatively affect one or several of the objectives of the common agricultural policy as laid down in Article 39 TFEU.

(3027) In any event, and notwithstanding the lack of specificity in ABL's claims, it appears that the concern expressed by ABL relates in essence to the fact that the Transaction would allegedly lead to more market concentration which could negatively affect farmers.[2001] The Commission's assessment of the competitive impact of the Transaction under the Merger Regulation addresses this concern when evaluating whether the Transaction would result in anti-competitive effects in the relevant markets. In the Commission's view, the Final Commitments offered by the Notifying Party remedy the anti-competitive effects of the Transaction, as identified in this Decision. The Final Commitments thus ensure that effective competition will remain in any of the markets affected by the Transaction such that all customers, including primary agricultural producers, will continue to benefit from sufficient choice between alternative competitive offerings.

(3028) In sum, in the present case the Commission has assessed the compatibility of the Transaction with the internal market on the basis of the test established in Article 2(2) of the Merger Regulation, while taking into account in its competition appraisal, as far as appropriate, the general framework of the achievement of the other EU policy objectives mentioned above.

(3029) In any event, the Commission considers that the non-competition concerns expressed by interested third parties are protected by other EU or national rules on human health, food safety, consumer protection and environmental and climate protection to which the merged entity will continue to be subject post-Transaction. The enforcement of those rules takes place outside the context of the enforcement of the Merger Regulation and is ensured by the Commission or the national competent authorities.

SECTION XV: REMEDIES

1. INTRODUCTION

(3030) In order to remove the serious doubts identified by the Commission in its Phase I investigation, the Notifying Party submitted commitments on 31 July 2017, during the Commission's Phase I investigation, pursuant to Article 6(2) of the Merger Regulation. However, these commitments did not address all the areas of serious doubts identified by the Commission at that stage of the proceedings, and accordingly were not market tested.

[2001] ABL comments on the Statement of Objections, page 26, last paragraph.

(3031) On 12 and 13 October 2017, the Notifying Party informed the Commission that it had entered into several agreements with BASF. Through those agreements, Bayer intends to sell certain crop science businesses and assets to BASF, including Bayer's global glufosinate ammonium business and certain broad acre crop seeds including the global cotton business (excluding India and South Africa), the North American and European OSR business and the soybean business. The agreements state that this would be done in order to obtain antitrust clearance for Bayer's acquisition of Monsanto[2002] and the agreements are subject to the condition precedent that the Transaction (that is Bayer's acquisition of Monsanto) is effectively completed.

(3032) On 2 February 2018, the Notifying Party submitted new commitments that were much broader in scope than the ones submitted on 31 July 2017. On 5 February 2018, a slightly revised version of those commitments was submitted. The Commission market tested the commitments submitted on 5 February 2018 (the "First Commitments").

(3033) In order to address a number of issues that emerged from the market test, the Notifying Party eventually submitted a final set of commitments on 16 February 2018 (the "Final Commitments").

(3034) Both the First and Final Commitments submitted by the Notifying Party have two main components: (i) a commitment to divest businesses and assets relating to broad acre crop seeds and traits, crop protection and digital agriculture to BASF (the "BASF Divestment Package") and (ii) a commitment to divest Bayer's global vegetable seeds business (the "Vegetable Seeds Divestment Business").

2. GENERAL PRINCIPLES FOR THE ASSESSMENT OF COMMITMENTS

(3035) As set out in the Remedies Notice,[2003] the following principles apply where parties to a merger choose to offer commitments.

(3036) Where a concentration raises competition concerns in that it could significantly impede effective competition, the parties may seek to modify the concentration in order to resolve the competition concerns and thereby gain clearance of their merger.[2004]

(3037) The Commission only has power to accept commitments that are capable of rendering the concentration compatible with the internal market so that they will prevent a significant impediment to effective competition in all relevant markets where competition concerns were identified.[2005]

(3038) To that end, the commitments have to eliminate the competition concerns entirely and have to be comprehensive and effective from all points of view.[2006] In assessing whether proposed commitments are likely to eliminate its competition concerns, the Commission considers all relevant factors including *inter alia* the type, scale and scope of the commitments, judged by reference to the structure and particular

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2002 See, e.g., Haley/Elara/Carme Asset Purchase Agreement, recital 5 (Form RM submitted on 5 February 2018, [Annex p1.2 relating to broad acre crop seeds and traits].

2003 Commission's Notice on Remedies acceptable under Council Regulation (EC) No 139/2004 and under Commission Regulation (EC) No 802/2004 ("Remedies Notice"), OJ C 267, 22.10.2008, p. 1.

2004 Remedies Notice, paragraph 5.

2005 Remedies Notice, paragraph 9.

2006 Remedies Notice, paragraphs 9.

characteristics of the market in which those concerns arise, including the position of the parties and other participants on the market.[2007]

(3039) Moreover, commitments must be capable of being implemented effectively within a short period of time.[2008] In case of implementation risks and implementation uncertainties for instance related to third party consents, it is incumbent on the parties to remove such uncertainties.[2009]

(3040) Where a proposed concentration threatens to significantly impede effective competition, the most effective way to maintain effective competition, apart from prohibition of the concentration, is to create the conditions for the emergence of a new competitive entity or for the strengthening of existing competitors via divestitures by the merging parties.[2010]

(3041) The divested activities must consist of a viable business that, if operated by a suitable purchaser, can compete effectively with the merged entity on a lasting basis and that is divested as a going concern. The business must include all the assets which contribute to its current operation or which are necessary to ensure its viability and competitiveness and all personnel which are currently employed or which are necessary to ensure the business' viability and competitiveness.[2011]

(3042) Personnel and assets which are currently shared between the business to be divested and other businesses of the parties, but which contribute to the operation of the business or which are necessary to ensure its viability and competitiveness, must also be included. Otherwise, the viability and competitiveness of the business to be divested would be endangered.[2012]

(3043) Normally, a viable business is a business that can operate on a stand-alone basis, which means independently of the merging parties as regards the supply of input materials or other forms of cooperation other than during a transitory period.[2013]

(3044) The intended effect of the divestiture will only be achieved if and once the business is transferred to a suitable purchaser in whose hands it will become an active competitive force in the market. The potential of a business to attract a suitable purchaser is an important element of the Commission's assessment of the appropriateness of the proposed commitment.[2014]

3. FIRST COMMITMENTS

(3045) The First Commitments consist of two main components: the "BASF Divestment Package" (as described in Section XV.3.1.1) and the "Vegetable Seeds Divestment Business" (as described in Section XV.3.1.2).

2007 Remedies Notice, paragraph 12.
2008 Remedies Notice, paragraph 9.
2009 Remedies Notice, paragraph 11.
2010 Remedies Notice, paragraph 22.
2011 Remedies Notice, paragraphs 23-25.
2012 Remedies Notice, paragraph 26.
2013 Remedies Notice, paragraph 32.
2014 Remedies Notice, paragraph 47.

3.1. Description of the First Commitments

3.1.1. The BASF Divestment Package

(3046) The BASF Divestment Package consists of businesses and assets relating to broad acre crop seeds and traits, crop protection and digital agriculture. The Notifying Party commits to divest those businesses and assets to BASF.

(3047) The BASF Divestment Package comprises six components, namely: (i) the Broad Acre Divestment Businesses, (ii) the GA Divestment Business, (iii) the Glyphosate Assets, (iv) the NemaStrike Assets, (v) the Ketoenole, NOC and SPH Data Transfers and Licences and (vi) the Digital Agriculture Licence. These six components are described in turn in Sections XV.3.1.1.1 to XV.3.1.1.6.

3.1.1.1. The Broad Acre Divestment Businesses

(3048) The Broad Acre Divestment Businesses consists of Bayer's global broad acre crop seeds and traits business, with certain limited reverse carve-outs. The Broad Acre Divestment Businesses include:

(a) Bayer's global LibertyLink (glufosinate ammonium tolerance) traits business except in rice in Asia ([R&D strategy]);

(b) Bayer's trait research activities (including both GM and non-GM traits) in cotton, corn, OSR and soybean, its global R&D activities directed to wheat, and its canola-quality juncea research programme worldwide, its GM trait research facilities in Morrisville, North Carolina, USA, its US headquarters and all greenhouse facilities in Research Triangle Park in Raleigh, North Carolina USA, and its trait research facility in Ghent, Belgium;

(c) Bayer's global seeds and traits business for oilseed rape, soybean, corn and cotton.[2015]

(3049) For each of the Broad Acre Divestment Businesses, Bayer will transfer to BASF, in particular:

(a) all tangible and intangible assets (including intellectual property rights);

(b) all transferrable licences (that is to say, licences that are legally capable of being transferred to a new owner), permits, and authorisations issued by any governmental organisation for the benefit of the elements of the Broad Acre Divestment Businesses;

(c) Bayer will assist BASF with acquiring any non-transferrable licences within 12 months of the transfer to BASF of all legal entities, assets, and employees and the entering into licensing and other agreements (the "BASF Closing") (subject to complications outside the control of Bayer) and until such time provide BASF with the ability to benefit from the licence to independently operate the Broad Acre Divestment Business. Bayer will agree a detailed schedule of timing with the Independent Adviser and/or Monitoring Trustee (as defined in the commitments) for assisting BASF with securing non-transferrable licences;

[2015] The Broad Acre Divestment Businesses do not include Bayer's cotton seeds and traits business in India and South Africa. The latter is being divested to a local purchaser pursuant to conditions imposed by the South African Competition Commission.

(d) All contracts, leases, commitments and customer orders of the elements of the Broad Acre Divestment Businesses;

(e) all customer, credit and other records of the elements of the Broad Acre Divestment Businesses;

(f) Bayer will arrange for transitional IT systems to be provided by a third-party service provider; and

(g) all of the Personnel currently working on the Broad Acre Divestment Businesses will be transferred to BASF (subject to agreement with the German employee representatives).

(3050) The Broad Acre Divestment Businesses includes 13 employees identified as Key Personnel.

(3051) The Broad Acre Divestment Businesses also include a number of transitional services agreements to be provided by Bayer for the first […] or longer. Where those agreements envisage the supply of products or services, these will be provided by Bayer at cost for the first […] after the BASF Closing and on the basis of commercial terms agreed for any such products and services provided after that period.

3.1.1.2. The GA Divestment Business

(3052) The GA Divestment Business comprises Bayer's entire global glufosinate ammonium business, without carve-outs. The GA Divestment Business includes:

(a) Bayer's entire glufosinate ammonium-based herbicide product portfolio, as well as all current glufosinate ammonium-related development products, comprising more than 18 patent families related to specific glufosinate ammonium formulations, mixtures and methods, and all data and support necessary for registrations and all relevant local registrations;

(b) four of Bayer's facilities in Germany (Frankfurt and Knapsack) and the United States (Mobile and Muskegon), which account for the production of all of Bayer's glufosinate ammonium worldwide;

(c) formulation and packaging capabilities as part of the Muskegon facilities mentioned above in point (b) and the Regina site, and (for as long as requested by BASF) provided by Bayer through its global formulation and filling network by way of arm's-length tolling agreements;

(d) all of Bayer's dedicated intellectual property; shared intellectual property will be allocated to the main user (Bayer or the Divestment Businesses) with licences, or covenants not to assert, put in place to ensure access by the other party;

(e) all of Bayer's dedicated supplier and customer contracts; shared contracts will be split if feasible; otherwise, Bayer will use its best efforts to assist BASF with the creation of new contracts to be in place immediately post-closing;

(f) all transferrable licences, permits, and authorisations issued by any governmental organisation for the benefit of the elements of the GA Divestment Businesses; Bayer will use its best efforts to assist BASF with acquiring any non-transferrable licences within 36 months of the BASF Closing (subject to complications outside the control of Bayer) and until such time provide BASF with the ability to benefit from the licence to independently

operate the GA Divestment Business. Bayer will agree a detailed schedule of timing with the Independent Adviser and/or Monitoring Trustee for assisting BASF with securing non-transferrable licences. If the non-transferrable licences are not acquired within this period, appropriate measures will be agreed with the Monitoring Trustee;

(g) Bayer will arrange for transitional IT systems to be provided by a third-party service provider; and

(h) all of the Personnel currently working on the GA Divestment Business will be transferred to BASF (subject to agreement with the German employee representatives).

(3053) The GA Divestment Business will require a supply agreement for indaziflam for as long as this active ingredient is patent protected and cannot be sourced from anyone other than Bayer. The initial term of this agreement is […] supply years, and the agreement will automatically renew for a further term of […] years unless BASF terminates at least […] prior to the end of the initial term.

(3054) The GA Divestment Business includes 6 employees as Key Personnel.

(3055) The GA Divestment Business also includes a number of transitional services agreements to be provided by Bayer for the first […] or longer. Where those agreements envisage the supply of products or services, these will be provided by Bayer at cost for the first […] after the BASF Closing and on the basis of commercial terms agreed for any such products and services provided after this period.

3.1.1.3. The Glyphosate Assets

(3056) The Glyphosate Assets comprise assets pertaining to Bayer's non-agricultural glyphosate-based products in the EEA,[2016] and the Zarpa-brand family of agricultural glyphosate products in the EEA.[2017] The assets that Bayer commits to divest include:

(a) Bayer's non-agricultural glyphosate-based herbicide product portfolio, comprising all trademarks, formulations, mixtures and methods, all data and support necessary for registrations, and all relevant local registrations; this includes a further six registered brand names;[2018]

(b) Bayer's Zarpa-brand family of agricultural glyphosate products, including all trademarks, formulations, mixtures and methods, all data and support necessary for registrations, and all relevant local registrations;

(c) all pipeline projects and the associated IP relating to Bayer's non-agricultural glyphosate-based products in the EEA,[2019] and, for Spain and Portugal, to the Zarpa-brand family of agricultural glyphosate products in the EEA;

[2016] There are no assets or employees to be transferred in Germany as there are only application services there which services are retained.

[2017] In the EEA, Zarpa is sold in only Spain and Portugal. All Zarpa pipeline projects are mixtures of […] and glyphosate.

[2018] The trademarks Mustang, Arent, Tersol Trio, Destrol, and Suztol will transfer, but are not currently in use or are being phased out by Bayer.

[2019] There are no assets or employees to be transferred in Germany as there are only application services there which services are retained.

(d) all dedicated supplier contracts, customer contracts and distribution agreements; shared contracts will be split if feasible; otherwise, Bayer will use its best efforts to assist BASF with the creation of new contracts to be in place immediately post-closing; and

(e) all the Personnel of the Glyphosate Assets, subject to the work council process in France (for French employees only).

(3057) The Glyphosate Assets do not include any Key Personnel.

(3058) Bayer also commits to enter into any such transitional agreements (TSAs) deemed necessary by the Independent Adviser or Monitoring Trustee. Where those TSAs envisage the supply of products or services, these will be provided by Bayer at cost for the first 12 months after the BASF Closing and on the basis of commercial terms agreed for any products and services provided after this period. Bayer's commitment to enter into the transitional agreements deemed necessary by the Independent Adviser or Monitoring Trustee does not detract from the Commission's powers in relation to the transitional agreements at the stage of the purchaser assessment. At that point in time, the Commission will verify whether all staff and assets, including transitional agreements, that are necessary to ensure the viability and competitiveness of the divested assets are provided or transferred, and whether the transitional agreements are consistent with this Decision and the commitments.

(3059) Bayer will retain all physical assets relating to its glyphosate business, its agricultural and non-agricultural glyphosate-products outside of the EEA, its glyphosate application services worldwide and its entire glyphosate-free business.

3.1.1.4. The NemaStrike Assets

(3060) The NemaStrike Assets include all of Monsanto's worldwide patents, trademarks, and copyrights exclusive to NemaStrike as well as all know-how specific to NemaStrike and NemaStrike application; where such property is currently used exclusively or predominantly by the NemaStrike Assets they will be transferred, or (if a transfer is not possible) exclusively licensed, to BASF, with a right for Bayer to obtain a licence-back (in case of assets used predominantly but not exclusively by the NemaStrike Assets).

(3061) The NemaStrike Assets further include all product registrations and pending regulatory submissions related to NemaStrike, all current commercial formulations and those in development, all data from NemaStrike field trials, including ongoing trials and studies, all tolling and other relevant third-party agreements relevant to NemaStrike and all sales and marketing assets, including the NemaStrike website URL and NemaStrike social media sites.

(3062) The NemaStrike Assets also include a number of TSAs to be provided by Bayer for the first […] or longer. Where those TSAs envisage the supply of products or services, these will be provided by Bayer at cost for the first […] after the BASF Closing and on the basis of commercial terms agreed for any such products and services provided after this period.

(3063) The First Commitments also stated that Bayer and Monsanto intend to enter into a […] agreement with BASF under which BASF will supply Bayer/Monsanto with NemaStrike.

(3064) Under the First Commitments, the Notifying Party did not include any personnel or Key Personnel in the NemaStrike Assets.

3.1.1.5. The [NSH lines of research 1, 2 and 3] Data Transfers and Licences

(3065) According to the [NSH lines of research 1, 2 and 3] Data Transfers and Licences, Bayer commits to:

(a) transfer to BASF all data and know-how gathered by Bayer up to the date of adoption of this Decision from field trials conducted on [NSH lines of research 1, 2 and 3] Chemistries (as well as in vitro assays as relating to the usability of such data with Bayer's HT traits for the [NSH line of research 2] Data Transfer and Licence only) as relating to all non-selective uses as well as information on the structure, and Samples, of the relevant molecules;

(b) grant to BASF a perpetual, exclusive, worldwide licence of all Bayer IP rights and know-how relating to Bayer's [NSH lines of research 1, 2 and 3] Chemistries existing at the Effective Date for all non-commercial and commercial applications in the field of non-selective uses, including:

(1) for the control of unwanted vegetation for example in permanent crops and plantation crops (such as trees, nuts and vines), on roadsides, squares, industrial sites, airports or railway tracks;

(2) for the burn-down application, for example in farm crops;

(3) for the application on herbicide tolerant field crops (HT crops) in which the tolerance is conferred by man-made mutation or transgenic modification.

(3066) Explicitly excluded from the licences referred to in recital (3065)(b) is any selective use in any plant which is tolerant by nature.

(3067) The [NSH lines of research 1, 2 and 3] Data Transfers and Licences will require an exclusive licence or licences for the relevant data and know-how. There are no other transitional or long-term agreements required between Bayer and BASF.

(3068) There are no Key Personnel in relation to the [NSH lines of research 1, 2 and 3] Data Transfers and Licences.

3.1.1.6. The Digital Agriculture Licence

(3069) The Digital Agriculture Licence is a package of intellectual property rights, and certain enablement services, relating to Bayer's digital agriculture portfolio to which Bayer commits to give BASF non-exclusive rights to employ in its own business. The objective of this package is to enable BASF to replicate the competitive position held by Bayer in the EEA absent the Transaction.

(3070) The Digital Agriculture Licence will comprise a binding, perpetual, irrevocable, and sole licence for the use of the code, data and algorithms for the entirety of Bayer Digital Farming's portfolio in the EEA.

(3071) Bayer will also provide the entirety of its digital agriculture pipeline for projects useable in the EEA which are alpha projects (that is to say, first development phase where a pipeline project ceases to be a mere concept) or are more advanced on the Effective Date, as well as all relevant literature, documentation milestone reports, algorithms, architecture and source code pertaining to the pipeline projects.

(3072) The pipeline and existing products comprised in the Digital Agriculture Licence are together referred as "Licensed Materials". All the Licensed Materials will be

provided on a "white label" basis and will not include any right to use the brands or product names of Bayer.

(3073) The Digital Agriculture Licence will also include copies of all master datasets relevant for each product for which Bayer has the legal right to grant a licence to BASF, and the Notifying Party will provide, without any delay, any updates to these master datasets that become available within a period of 12 months of the BASF Closing.

(3074) The Digital Agriculture Licence also includes the option for BASF to offer employment to up to two full time employees of Bayer. The Digital Agriculture Licence does not include Key Personnel or Bayer Digital Farming products which are available only in countries outside the EEA.

(3075) The Digital Agriculture Licence also includes a number of other measures to enable effective transfer, including three-man years of support from professionals trained on the Licensed Materials and, at the option of BASF, two workshops, each one day in length, with leadership personnel from Bayer.

(3076) In addition, since BASF will likely require support from third-party suppliers, Bayer commits to provide support to BASF to enable it to fully understand these data and service providers, to provide contacts of potential suppliers, to help with technical implementation if necessary and to use its best efforts to assist BASF with securing contracts or identifying alternative suppliers.

3.1.1.7. The First Commitments identify BASF as purchaser of the BASF Divestment Package

(3077) The Notifying Party commits to divest the BASF Divestment Package to BASF. The First Commitments also contain an upfront buyer clause, which means that the Transaction will not be implemented before the Commission has approved (1) BASF as the purchaser of the BASF Divestment Package and (2) the final sale and purchase agreement (as well as ancillary agreements). The First Commitments therefore combine an element of a fix-it-first remedy, namely the fact that the Notifying Party has already identified BASF as the possible buyer of the BASF Divestment Package, with an upfront buyer remedy.

(3078) The process through which the Commission can approve or reject BASF as purchaser is set out in paragraph 28 of the First Commitments and is consistent with the standard purchaser assessment process that is part of the Commission's Model Text for Divestiture Commitments.[2020]

(3079) In order to be approved by the Commission as the Purchaser of the BASF Divestment Package, BASF must fulfil the following criteria:

(a) BASF must be independent of and unconnected to Bayer and its Affiliated Undertakings (this being assessed having regard to the situation following the divestiture);

[2020] Explanatory Note – Best Practice Guidelines: The Commission's Model Texts for Divestiture Commitments and the Trustee Mandate under the EC Merger Regulation, 5 December 2013, available on http://ec.europa.eu/competition/mergers/legislation/best_practice_commitments_trustee_en.pdf.

(b) BASF must have the financial resources, proven expertise and incentive to maintain and develop the BASF Divestment Package as a viable and active competitive force in competition with the Parties and other competitors;

(c) the acquisition of the BASF Divestment Package by BASF must neither be likely to create *prima facie* competition concerns nor give rise to a risk that the implementation of the commitments will be delayed; and

(d) BASF must have all required assets and employees to support the BASF Divestment Package, particularly (but not exclusively) those elements which are not being sold as standalone businesses.

3.1.2. The Vegetable Seeds Divestment Business

(3080) The Vegetable Seeds Divestment Business consists of Bayer's global vegetable seeds business. The Notifying Party commits to divest the Vegetable Seeds Divestment Business to a suitable purchaser.

(3081) The Vegetable Seeds Divestment Business includes, in particular:

(a) all legal entities held by Bayer Vegetable Seeds ("BVS");

(b) all sites and locations (either owned or leased) held by BVS and, sites and locations shared with other parts of Bayer where BVS is the main user;

(c) all fixed assets, intangible assets, and goodwill held by BVS;

(d) all employees and all platform employees of Bayer working on BVS projects, including 6 employees identified as "Key Personnel";

(e) all BVS products across different life cycles;

(f) Nunhems and HILD brands, including all sub-brands and registered trademarks;

(g) all agreements dedicated to BVS

(h) BVS expertise and know-how;

(i) all IP held by BVS legal entities (for example, germplasm, markers, cell biology information, traits, patent rights, trademarks, licensing agreements, plant variety protection rights, know-how);

(j) Bayer's position in an existing joint venture in China;

(k) customer lists and customer records.

(3082) For legal entities, sites, contracts and IP, which are shared with other parts of Bayer, the First Commitments set out the arrangements for the following:

(a) shared legal entities through which BVS operates, and for which Bayer commits to either establish a new legal entity and transfer the relevant employees and assets, or transfer the relevant employees and assets to an entity specified by the Purchaser;

(b) shared sites where BVS is not the main user, for which Bayer commits to work with the Purchaser to ensure continuity of existing facilities post-closing until the Purchaser can make its own arrangements;

(c) shared contracts which will either be split if feasible, or for which Bayer commits to use its best efforts to assist the Purchaser with the creation of new contracts to be in place immediately post-closing;

(d) shared IP, for which Bayer commits, where feasible, to either license the IP to the Purchaser by non-exclusive licence, or to make a complete transfer subject to a licence back from the Purchaser to Bayer. In both cases, the field of use available to Bayer will exclude the field of vegetable seeds.

(3083) The Notifying Party commits to divest the Vegetable Seeds Divestment Business as a single business to one or more suitable purchasers. This means the Vegetable Seeds Business will not be divided but sold as a single business.

(3084) The commitment to divest the Vegetable Seeds Divestment Business does not contain an upfront buyer clause. The purchaser of the Vegetable Seeds Divestment Business must be approved by the Commission. To be approved, it must fulfil the standard purchaser criteria[2021] and one additional criterion. The standard purchaser criteria, included in the First Commitments, are the following:

(a) the purchaser must be independent of and unconnected to Bayer and its Affiliated Undertakings;

(b) the Purchaser must have the financial resources, proven expertise and incentive to maintain and develop the Vegetable Seeds Divestment Business as a viable and active competitive force in competition with the Parties and other competitors;

(c) the acquisition of the Vegetable Seeds Divestment Business by a proposed purchaser must neither be likely to create *prima facie* competition concerns nor give rise to a risk that the implementation of the commitments will be delayed.

(3085) In addition, the First Commitments also included a criterion according to which the Purchaser must be a new entrant, that is to say, does not already control (directly or indirectly) any vegetable seeds business. The Commission calculated weighted average HHIs at segment levels in crops where the Parties overlap and found high concentration levels. If the Vegetable Seeds Divestment Business were sold to a player that is already present in these segments, this would likely increase concentration levels and thus raise competition issues.

3.1.3. Other elements

(3086) The First Commitments provide that Bayer will appoint an Independent Adviser, in order to provide independent advice and assistance to the Commission in connection with its assessment of (1) the adequacy of the commitments to restore effective competition in the EEA following the completion of the Concentration, and (2) the suitability of the proposed purchasers for the divestment businesses.[2022]

(3087) This provision was included in the First Commitments at the request of Bayer, in view of its desire for the Commission to assess the suitability of potential purchasers as soon as possible and in order for the Commission to be as advanced as possible with that assessment at the time of this Decision.

(3088) The First Commitments also contain certain safeguards regarding the Independent Adviser's independence, for instance regarding conflicts of interest and remuneration. Those safeguards mirror the safeguards that are normally included in commitments for monitoring trustees.

2021 Remedies Notice, paragraph 48.

2022 First Commitments, section F.

(3089) The Independent Adviser's role is limited to providing advice and assistance to the Commission. The decision on the adequacy of the commitments and the suitability of any purchaser is taken independently by the Commission.

(3090) The First Commitments also provide for the appointment of a Monitoring Trustee, whose function is to monitor compliance with the commitments. In addition, the First Commitments provide for a fast track dispute resolution procedure. That procedure may be invoked by a purchaser of the divested businesses and assets, in the event that it claims that Bayer is failing to comply with its obligations arising from the First Commitments.

3.2. Results of the market test

(3091) The Commission decided to subject the First Commitments to a market test, which was launched on 6 February 2018.

(3092) The market test questionnaire was sent to around 300 market participants, which had replied to the questionnaires sent during the Phase I investigation. Around 150 of them responded to the market test. Out of those 150 respondents, around 50 expressed a view and provided substantial input.

3.2.1. Overview of the results of the market test

(3093) The results of the market test were overall positive. A majority of the respondents that expressed a view gave positive views regarding the scope of the First Commitments and their effectiveness in removing the competition concerns, as shown in Table 174.

Table 174 – Overview of the market test results on the suitability of First Commitments to remove competition concerns

Questions	Responses		
	Yes	No	Respondents expressing positive views on the scope and effectiveness of the First Commitments (%)[2023]
In your opinion, would the divestment of the Broad Acre Divestment Businesses be suitable to effectively remove the competition concerns raised by the proposed transaction in the markets for oilseed rape seeds and the licensing of cotton seeds?[2024]	29	11	72%
In your opinion, would the divestment of the Broad Acre Divestment Businesses be suitable to effectively remove the competition concerns raised by the proposed transaction in the markets for broad acre crop traits?[2025]	23	12	66%

[2023] Based on the respondents which either replied "Yes" or "No" to the question concerned. Respondents which replied "I do not know" are excluded.

[2024] Questionnaire Market Test, question 1.

[2025] Questionnaire Market Test, question 2.

Questions	Responses		
	Yes	**No**	**Respondents expressing positive views on the scope and effectiveness of the First Commitments (%)[2023]**
In your opinion, would the divestment of the Broad Acre Divestment Businesses be suitable to effectively remove the innovation competition concerns raised by the proposed transaction in relation to the development of new traits and HT Systems (in combination with Bayer's divestment of its non-selective herbicides pipeline projects)?[2026]	20	17	54%
In your opinion, would the divestment of the GA Divestment Business and Glyphosate Assets be suitable to effectively remove the product and price related competition concerns raised by the proposed transaction in the relevant agricultural and non-agricultural non-selective herbicide markets in the EEA?[2027]	35	7	83%
In your opinion, would the divestment of the [NSH lines of research 1, 2 and 3] Data Transfers and Licences be suitable to effectively remove the competition concerns raised by the proposed transaction in innovation competition for non-selective herbicides and HT Systems (in combination with Bayer's divestment of its trait research activities as part of the Broad Acre Divestment Businesses) globally?[2028]	18	3	86%
Would the divestment of the NemaStrike Assets be suitable to effectively remove the competition concerns raised by the proposed transaction in nematicide seed treatment markets?[2029]	22	7	77%
In your opinion, is the scale and scope of the Digital Agriculture Licence sufficient to ensure BASF's viability and competitiveness on the market? In answering this question, please take into account BASF's personnel, assets, and products[2030]	21	8	72%
In your view, would the divestment of the Vegetable Seeds Divestment Business be in principle suitable to effectively remove the competition concerns raised by the proposed transaction in the various vegetable seed markets?[2031]	36	5	88%

Source: Responses to the Questionnaire Market Test.

2026 Questionnaire Market Test, question 3.
2027 Questionnaire Market Test, question 12.
2028 Questionnaire Market Test, question 25.
2029 Questionnaire Market Test, question 19.
2030 Questionnaire Market Test, question 38.
2031 Questionnaire Market Test, question 48.

(3094) The number of responses and the corresponding percentages do not, by themselves, allow the Commission to make a final assessment of the results of the market test. The Commission has reviewed all individual responses and its assessment of the market test is based on the totality of the replies. In assessing those replies, the Commission weighed the replies based on elements such as the consistency and relevance of the reply, the expertise of the respondent, and the possibility of replies being guided by self-interest. The numbers and percentages are nonetheless informative in this case, because they represent well the overall trend of the responses to the market test, even when taking into account various elements such as expertise, consistency, relevance and self-interest of the replies. The responses include the feedback from competitors and customers in all areas where the Commission raised competition concerns, as well as from interested third parties.

(3095) The results of the market test are described in detail in Sections XV.3.2.2 to XV.3.2.4

3.2.2. The BASF Divestment Package

(3096) The market test aimed at assessing (i) the six components of the BASF Divestment Package as listed in recital (3047) and (ii) whether BASF would be a suitable purchaser of the BASF Divestment Package.

3.2.2.1. The Broad Acre Divestment Businesses

(3097) The market test regarding the Broad Acre Divestment Businesses Commitments was intended to assess whether the divestment was suitable to remove: (i) competition concerns in the oil seed rape and cotton seed markets and in the markets for broad acre crop traits; and (ii) innovation competition concerns in the development of new traits and HT systems. In addition, the market test was intended to test whether certain carve outs impaired the viability and competitiveness of the divested businesses as well as whether the scale and scope of the businesses being divested, including the transfers of key personnel, and the transitional agreements and the proposed commercial conditions of those agreements were sufficient to ensure the viability and competitiveness of the businesses being divested.

(A) Competition concerns in the oil seed rape and cotton seed markets

(3098) The market test regarding the broad acre seeds was broadly positive in the sense that around 72% of the respondents (corresponding to 29 respondents) expressing an opinion considered that the proposed divestments would effectively remove the competition concerns in the markets for oilseed rape seeds and the licensing of cotton seeds. Those conclusions are reflected in Table 174 in Section XV.3.2.1.

(3099) In this respect, major European seed companies considered that the commitments effectively address the concerns raised by the Commission. A competitor indicated that "*BASF is active in OSR and the acquisition will seriously strengthen its OSR activities. Due to BASF size and resources BASF will suddenly become a competitor in that sector having germplasm, with associated traits and chemicals*".[2032] In a similar vein, another competitor commented that "*the proposed transaction will remove the concerns because BASF today is not active in these markets and at the same time has a commitment to develop to be a supplier of broad acre crop*

[2032] Response of a competitor to Questionnaire Market Test, ID11240, question 1.

seeds".[2033] Another competitor stated "[b]*y implementing the BASF divestment package Bayer will be the same competitor as Monsanto today and BASF will play [the] role Bayer is doing right now, so no competition [change] to our opinion*".[2034]

(3100) BASF itself commented "[t]*he divestment of the Broad Acre Divestment Businesses is suitable to effectively remove any competition concerns that could be identified in the markets for oilseed rape seeds and the licensing of cotton on the basis that essentially the entirety of the Bayer assets in broad acre crops are being divested and the parties' activities do not overlap meaningfully if at all in this area*".[2035]

(3101) One interested third party for the purposes of Article 18(4) of the Merger Regulation observed that the commitments did not tackle possible anticompetitive effects due to bundling or conglomerate issues. Those concerns are assessed in Section XIII of this Decision in which the Commission concludes that the Transaction will not lead to a significant impediment of effective competition in this respect. Those concerns are therefore not further discussed here.

(B) Competition concerns in the market for broad acre crop traits

(3102) The market test regarding broad acre crop traits was overall positive in that around 66% of the respondents (corresponding to 23 respondents) who expressed an opinion considered that the proposed divestments would effectively remove the competition concerns in the markets for broad acre crop traits. Those conclusions are reflected in Table 174 in Section XV.3.2.1.

(3103) One competitor observed that "*the divestment of the broad acre trait business to BASF will remove the competition concerns because BASF has been active in GMO trait development for more the* [sic] *15 years and has the necessary expertise to continue the business*."[2036] Another competitor considered: "*[…] BASF has already developed Traits (native) with associated chemicals. After the acquisition their position will be strengthened. Their product portfolio will become more complete and BASF will be in the position to offer a whole package of Germplasm+Traits+chemicals […]*".[2037] However, another competitor indicated that "*BASF has the financial means and the incentive to be successful, however BASF doesn't have the experience and track record to run a Seeds business to conclude that they will be able to sustain the competitive pressure that Bayer exerted*".[2038]

(3104) BASF itself commented "[t]*he divestment of the Broad Acre Divestment Businesses is suitable to effectively remove any competition concerns that could be identified in the markets for broad acre crop traits on the basis that essentially the entirety of the Bayer assets in broad acre crops are being divested, including Bayer's trait research*

2033 Response of a competitor to Questionnaire Market Test, ID11349, question 1.

2034 Response of a competitor to Questionnaire Market Test, ID11209, question 1.

2035 Response of BASF to Questionnaire Market Test, ID11377, question 1. BASF is identified as the Purchaser of the BASF Divestment Package in the commitments. Although BASF may have an interest in expressing a positive view about the remedies since they will allow BASF to purchase the divested businesses and assets, BASF also has an interest in ensuring that the divested businesses and assets include all assets and staff necessary for BASF to be able to compete with these businesses and assets.

2036 Response of a competitor to Questionnaire Market Test, ID11349, question 2.

2037 Response of a competitor to Questionnaire Market Test, ID11240, question 2.

2038 Response of a competitor to Questionnaire Market Test, ID11404, question 2.

activities in this field, and the parties' activities do not overlap meaningfully if at all in this area".[2039]

(3105) Some market participants expressed concerns that are however not related to the Transaction. One competitor notably claimed that genes patentability should not be allowed because it undermines competition between market players.[2040] Those concerns are not merger specific and are therefore not further discussed here.

(C) Innovation competition concerns in the development of new traits and HT Systems

(3106) The market test regarding innovation competition for the development of new traits and HT Systems was positive in that about 54% of the respondents (corresponding to 20 respondents) who expressed an opinion considered that the proposed divestments effectively removed the innovation competition concerns in relation to the development of new traits and HT Systems. Such conclusions are reflected in Table 174, in Section XV.3.2.1.

(3107) In this regard, one competitor noted "*BASF is a significant player in terms of R&D, with reputable capabilities in herbicide and trait development. […] the divestment in question is likely to effectively remove the innovation competition concerns raised in this regard*".[2041]

(3108) BASF itself commented "[t]*he divestment of the Broad Acre Divestment Businesses is suitable to effectively remove any innovation competition concerns that could be identified in relation to the development of new traits and HT systems on the basis that essentially the entirety of the Bayer assets in broad acre crops are being divested, meaning the parties' activities do not overlap meaningfully if at all in this area […]*".[2042]

(3109) One competitor considered that "*the support from Bayer is limited and will end after a relatively short period of time. In addition it is at least not guaranteed that in this relatively short period of time an own culture and knowledge base will emerge in BASF that accepts development times and uncertainties typical for the breeding business and can drive results. In total we therefore expect that the entry of BASF into the seed business will not be able to fully compensate the then no longer existing competition between Bayer and Monsanto about innovation*."[2043]

(D) Reverse carve-out of certain segments including hybrid rice for Asia

(3110) The commitments to divest Bayer's broad acre seeds and traits businesses do not include some businesses that will be carved out from the business that is divested. These consist of hybrid rice for Asia; hybrid cotton, juncea (mustard), and millet for India; and cotton for South Africa; as well as R&D programmes for the development of sugarcane for Brazil, and sugarbeet for Europe.

(3111) The market test specifically enquired about whether these carve-outs would have an adverse effect on the viability and competitiveness of the divested business. Around 84% of the respondents (corresponding to 27 respondents) that did express

2039 Response of BASF to Questionnaire Market Test, ID11377, question 2.
2040 Response of a competitor to Questionnaire Market Test, ID10880, question 2.1.
2041 Response of a competitor to Questionnaire Market Test, ID11173, question 3.
2042 Response of BASF to Questionnaire Market Test, ID11377, question 3.
2043 Response of a competitor to Questionnaire Market Test, ID11249, question 3.

an opinion on this point considered that this was not the case. In this respect, one respondent noted "[i]*n my opinion these business segments are not critical to the strength and long-term success of the Broad Acre divestment businesses. Sugarbeet in Europe is a small segment of limited long-term potential. Sugarcane in Brazil has good potential but, by itself, I do not see that the viability of the divested businesses depends on it. The other segments are embryonic*".[2044]

(3112) BASF itself commented "[t]*he "carve out" of the hybrid rice for Asia, juncea (non-canola grade) as mustard in India, millet in India and cotton in South Africa would not have an adverse effect on the viability and competitiveness of the Broad Acre Divestment Businesses as these assets are distinct from the divested assets and would not give rise to any R&D dependencies. BASF has only limited information available on sugarbeet in Europe and sugarcane in Brazil. However, it assumes the same answer would also be applicable to these minor business areas*".[2045]

(3113) One competitor observed that "*the carve-outs of Bayer's global broad acre crop seeds and trait business are not sufficiently defined to conclude whether they would affect the viability and competitiveness of the divestment business. In general, germplasm and traits developed in one country can be used elsewhere. Therefore, the impact of the carve-outs,* […] *might result in the Broad Acre Divestment Business being insufficient to ensure the viability and competitiveness of the divested business*".[2046] Another noted that "[o]*verall, the "carve outs" would not have adverse effect on the viability of the Broad Acre Divestment Business, except for the Juncea Carve Out* […] *Regarding Juncea, the carve out of Juncea may harm the divested Canola business as Bayer has indeed been working on Juncea for the use in Canada*".[2047]

(E) Supply agreement of isofluxatole and viability of the Balance HT System

(3114) The market test regarding the supply agreement for isofluxatole was positive overall in that around 69% of the respondents (corresponding to 18 respondents) who expressed an opinion considered that (i) the supply agreement is sufficient to ensure the viability and competitiveness of the Balance HT system, and (ii) isofluxatole should be supplied at cost.

(3115) One competitor noted that "[r]*eceiving only the traits but the herbicide only with supply agreement, means that Bayer will maintain control of the product in a sense. This can harm the development of the specific trait business of BASF*".[2048] By contrast, another competitor considered that the supply agreement for isofluxatole would not be necessary if other chemicals (with the same mode of action) were available. Another respondent to the market investigation observed "[i]*n my experience such a supply agreement allows access to the product in good condition considering the fact that BASF can be supplied by other suppliers than Bayer*".[2049]

(3116) BASF itself commented "[t]*he Broad Acre Divestment Businesses include all necessary assets to allow BASF to operate the Divestment Business as Bayer does today. In this regard, the objective of the isoxaflutole supply agreement is to provide*

2044 Response of a crop protection association to Questionnaire Market Test, ID10840, question 4.
2045 Response of BASF to Questionnaire Market Test, ID11377, question 4.
2046 Response of a competitor to Questionnaire Market Test, ID11332, question 4.
2047 Response of a competitor to Questionnaire Market Test, ID11404, question 4.
2048 Response of a competitor to Questionnaire Market Test, ID11212, question 5.
2049 Response of a crop protection association to Questionnaire Market Test, ID10840, question 5.

the Broad Acre Divestment Businesses with a cost effective, efficacious and adequate source of chemistry supply so as to ensure that Bayer's divested Balance HT system is a viable and competitive business".[2050]

(3117) Regarding the duration of the supply agreement BASF indicated that […] years from first introduction "*is sufficient to allow BASF to inter alia: (i) identify alternate (generic) sources of isoxaflutole; (ii) qualify those sources and establish the necessary regulatory framework for use in the Balance GT system; and (iii) potentially develop new formulations of isoxaflutole either alone or in combination with other chemistry to innovate and add value for the grower*".[2051]

(F) The scale and the scope of the divestment businesses including the Key Personnel transfers

(3118) The market test regarding the scale and the scope of the divestment businesses was broadly positive in that around 87% of the respondents (corresponding to 36 respondents) who expressed an opinion considered the scale and scope of the Broad Acre Divestment Businesses to be sufficient to ensure its continued viability and competitiveness on the market.[2052] However, some respondents stressed the need that enough Key Personnel should be transferred as BASF lacks seeds expertise and knowledge.

(3119) In this regard, one competitor observed "[t]*he business is sizable and broad which gives the buyer both scale and opportunity to develop the businesses further. The chemical element (glufosinate) fits well with BASF's pesticide portfolio. The key risk for BASF is their present lack of seeds expertise and knowledge of the market that makes BASF very dependent on the personnel, know-how and assets being transferred with the business. If insufficient or incapable personnel are transferred they may not be able to overcome this gap. If it can be assumed that all relevant know-how is within the seeds businesses being transferred this would not be an issue, but if some of it comes from outside the units, e.g., from corporate Bayer, then it would be*."[2053] And "[t]*he schedule only mentions the Heads of the various departments. While this is important, equally relevant would be the technical and commercial experts that work below this level. Our greatest concern is related to sales personnel which maybe held back and which may limit BASF's ability to derive full value from the assets*".[2054]

(3120) Another competitor pointed out shortcomings of a transfer limited to managers, indicating that "[Key Personnel to be transferred are] *managers. Nothing is mentioned as regard to the transfer of knowhow, and if the employees having such knowledge are transferred, which is key when genetic material is transferred*".[2055]

(G) Transitional service agreements (TSAs)

(3121) The market test regarding the transitional service agreements (TSAs) being considered to support the Broad Acre Divestment Business was broadly positive in that around 86% of the respondents (corresponding to 31 respondents) who

2050 Response of BASF to Questionnaire Market Test, ID11377, question 5.
2051 Response of BASF to Questionnaire Market Test, ID11377, question 6.
2052 Questionnaire Market Test, question 8.
2053 Response of a competitor to Questionnaire Market Test, ID11404, question 8.
2054 Response of a competitor to Questionnaire Market Test, ID11404, question 9.
2055 Response of a competitor to Questionnaire Market Test, ID11240, question 9.

expressed an opinion considered the TSAs sufficient to ensure its continued viability and competitiveness of the Broad Acre Divestment Businesses.

(3122) However, one competitor noted that "[t]*he "transitional" service agreements include a large number of actual long term agreement and agreements that would be in place for more than 2 years. The sheer number and duration of transitional agreements with BASF create a large number of ongoing links between two of the largest competitors in a concentrated market, which risks to harm the competitiveness of the divestment business. This is exemplified by the link of dependence that is created by the Proposed Commitments*".[2056]

3.2.2.2. The GA Divestment Business and Glyphosate Assets

(3123) The market test regarding the GA Divestment Business and the Glyphosate Assets was positive on the majority of the questions in that about 83% of the respondents (corresponding to 35 respondents) that provided a view considered that the proposed remedy was suitable to effectively remove the product and price related competition concerns.[2057] That conclusion is reflected in Table 174, in Section XV.3.2.1.

(3124) The market test regarding the proposed GA Divestment Business and Glyphosate Assets aimed at assessing the effectiveness of the divestiture to address the identified competition concerns and in particular: (i) whether the proposed remedy is suitable to effectively remove the product and price related competition concerns in the relevant agricultural and non-agricultural non-selective herbicide markets in the EEA; (ii) whether the scale and scope of the proposed package are sufficient to ensure the continued viability and competitiveness of the GA Divestment Business and Glyphosate Assets; (iii) whether Key Personnel should be identified in relation to the Glyphosate Assets to avoid an adverse effect on their viability and competitiveness; (iv) whether the exclusion of current and pipeline products which do not contain either glyphosate or glufosinate ammonium would have an impact on the viability and competitiveness of the the GA Divestment Business and Glyphosate Assets; (v) whether the supply of indaziflam from Bayer to BASF should be offered at cost; and (vi) whether the transitional services related to the GA Divestment Business and the Glyphosate Assets are sufficient to ensure their continued viability and competitiveness, notably regarding the duration of supply at cost.

(3125) First, with regard to the effective removal of product and price competition concerns,[2058] the majority of respondents that provided a view (around 83%, corresponding to 35 respondents) considered that the proposed commitment to divest the GA Divestment Business and Glyphosate Assets would remove those concerns.

(3126) A competitor contested the adequacy for the EEA of the divestiture to BASF of Bayer's glufosinate business, in essence because it would not mitigate the merged entity's dominance with glyphosate (acquired from Monsanto) in relevant markets in the EEA and because it would fail to solve the regulatory imbalances which harm generic players.[2059] The Commission notes that these arguments relate to the current situation on the markets rather than to effects brought about by the Transaction, and are therefore not Transaction-specific. The Commission also notes that Transaction-

2056 Response of a competitor to Questionnaire Market Test, ID11332, question 10.
2057 Questionnaire Market Test, question 12.
2058 Questionnaire Market Test, question 12.
2059 Response of a competitor to Questionnaire Market Test, ID11355, question 2.1.

specific effects on competition are addressed by the Final Commitments. Therefore, this competitor's comments do not affect the Commission's conclusion in recital (3246) that the Final Commitments on the GA Divestment Business and the Glyphosate Assets eliminate the horizontal overlaps in glyphosate and glufosinate ammonium where the Commission has identified competition concerns.

(3127) Second, the majority of respondents that provided a view (around 98%, corresponding to 42 respondents) also considered that the scale and scope of the GA Divestment Business and Glyphosate Assets are sufficient to ensure their viability and competitiveness taking into account BASF's personnel, assets and products.[2060]

(3128) Third, in terms of Key Personnel, the majority of respondents that provided a view (around 74%, corresponding to 25 respondents) indicated that it was not necessary to identify Key Personnel for the Glyphosate Assets; however, at least 9 respondents (around 26%) disagreed and considered it necessary to avoid an adverse effect on the viability and competitiveness of those assets.

(3129) BASF indicated that it "*does not consider it necessary for key personnel to be identified* […] [but] *the naming of key personnel would obviously give additional certainty as to the personnel ultimately being transferred*".[2061] A respondent stated that "*BASF is not currently a player in the non-ag NSH market, which is very different from the agricultural segments. They will need Bayer personnel in senior management, and more operational technical, marketing, sales personnel in the countries with knowledge of the products, the customers, the competition*".[2062]

(3130) Fourth, with regard to the exclusion of current and pipeline products which do not contain either glyphosate or glufosinate ammonium, the majority of respondents that provided a view (around 67%, corresponding to 24 respondents) indicated that such exclusion would not affect the viability and competitiveness of the GA Divestment Business and Glyphosate Assets.[2063]

(3131) Fifth, the majority of respondents that provided a view (around 55%, corresponding to 18 respondents) considered that the supply of indaziflam from Bayer to BASF should, indeed, be offered at cost.[2064]

(3132) A respondent submitted that it should be offered at cost "[t]*o ensure reasonable competition and lower prices* […]" for a period of "[…] *at least 5 years*".[2065] BASF indicated that "*BASF will have to compete with this mixture product in a highly competitive market, particularly in Asia for which it would be particularly well suited. The conditions of the indaziflam supply agreement should ensure BASF's competitiveness in this market*".[2066] Another respondent stated that the supply at cost "*is key to guarantee the ability to compete. Therefore the offer at cost should be considered for at least 10 years*".[2067]

(3133) Last, with regard to the duration and pricing conditions of the transitional services related to the GA Divestment Business and Glyphosate Assets, the majority of

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2060 Questionnaire Market Test, question 13.
2061 Response of BASF to Questionnaire Market Test, ID11377, question 14.1,
2062 Response of a competitor to Questionnaire Market Test, ID11343, question 14.1.
2063 Questionnaire Market Test, question 15.
2064 Questionnaire Market Test, question 16.
2065 Response of a competitor to Questionnaire Market Test, ID10855, question 16.1.
2066 Response of BASF to Questionnaire Market Test, ID11377, question 16.1.
2067 Response of a competitor to Questionnaire Market Test, ID11301, question 16.1.

respondents that provided a view (around 87%, corresponding to 33 respondents) considered that those services – including a formulated products tolling agreement at cost for a maximum period of [3-7] years – would be sufficient.[2068]

3.2.2.3. The NemaStrike Assets

(3134) The market test regarding the Nemastrike assets was positive on the majority of the questions. As mentioned in Table 174 in Section XV.3.2.1, around 77% of the respondents (corresponding to 22 respondents) that provided a view expressed positive views about the scope and effectiveness of the Nemastrike remedy.[2069]

(3135) One competitor commented that "*BASF's capacity to develop and commercialize such product will likely make it an effective competitor in this context. As such, the divestment of the NemaStrike Assets is likely to be suitable to effectively remove the competition concerns raised by the proposed Transaction in nematicide seed treatment markets*".[2070] Another competitor stated that "[t]*he number of solutions available for Nematicide control in seed treatment is very limited. The divestment would avoid [an excess] of concentration. BASF has broad scale and capabilities for serving the market*".[2071]

(3136) Two respondents raised concerns that the First Commitments would not address competition concerns regarding vertical links and bundling with other products.[2072] Another respondent complained that "*[t]he seed applied nematicide divestment does not address the powerful seed applied biologics portfolio*".[2073] These concerns relate to competitive effects of the Transaction and are assessed in Section XI of this Decision. The Commission has found that the Transaction will not lead to a significant impediment of effective competition in this respect. Those concerns are therefore not further discussed here.

(3137) The market test regarding the NemaStrike Assets mainly aimed at assessing whether (i) whether the divestment of the NemaStrike Assets had the sufficient scale and scope to ensure their continued viability and competitiveness, (ii) the NemaStrike Assets should include personnel in order to ensure their viability and competitiveness, (iii) the effect on competition of a possible […] global supply agreement between BASF and the merged entity, and (iv) whether the transitional services provided to support the NemaStrike Assets are sufficient to ensure the continued viability and competitiveness of the NemaStrike Assets.

(3138) First, concerning the scale and scope of the NemaStrike Assets, around 84% of respondents (corresponding to 16 respondents) that expressed a view stated that the scale and scope of the NemaStrike Assets would be sufficient to ensure their continued viability and competitiveness.[2074]

(3139) At the same time, many respondents expressed concerns about the fact that no personnel would be included in the NemaStrike Assets. Around 53% of the

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2068 Questionnaire Market Test, question 17.

2069 This calculation is based on the response to Question 19 of the Questionnaire Market Test and is based on the respondents that provided an answer other than "I don't know".

2070 Response of a competitor to Questionnaire Market Test, ID11173, question 19.1.

2071 Response of a competitor to Questionnaire Market Test, ID10965, question 20.1.

2072 Response of a competitor to Questionnaire Market Test, ID11387, question 19.1., and response of a competitor to Questionnaire Market Test, ID11404, questions 19.1 and 19.2.

2073 Response of a competitor to Questionnaire Market Test, ID11332, questions 19.2.

2074 Questionnaire Market Test, question 20.

respondents (corresponding to 9 respondents) that expressed a view considered that personnel should be included in the NemaStrike Assets.[2075] One competitor explained that "[c]*ritical formulation and research expertise is required to deliver a commercial product and thus future support should include personnel with critical know-how to help ensure future success*"[2076] and further specified that "*the divestiture package should include employees from the divesting party with expertise in formulation, biological research, and marketing staff relating to the product*".[2077]

(3140) One competitor claimed that the NemaStrike Assets should involve the "*transfer of IP owned either by Bayer or Monsanto related to NemaStrike, including mixture chemistry patents (Nemastrike plus other active ingredients) and any combination IP with seeds and traits*."[2078]

(3141) Second, concerning the effect of the […] global supply agreement between BASF and the merged entity on competition, around 52% of the respondents (corresponding to 9 respondents) that indicated a view considered that a global supply agreement would have a negative effect on competition regarding nematicidical seed treatment.[2079]

(3142) One respondent commented that "*more or less this Supply Agremeent will [be] practical considerin[g] the strong BAYER new position on seed market and allow a quicker development of this technology to be accessible to farmers*".[2080] Another competitor explained that "*[p]rovided it wasn't an exclusive supply agreement and avoided most favored nations terms it would ensure a purchaser of Nemastrike. It should likely have some take or pay provisions so that Monsanto does more than just have access to the product, but actually uses it or otherwise pays BASF*".[2081]

(3143) However, one interested third party expressed concerns that the supply agreement would strengthen the link among the big providers to the detriment of third party competitors.[2082] Similarly, a competitor argued that "*[a]* […] *global supply agreement guaranteed through the Commitments would create a long-lasting link between competitors, and thus present its own concerns. A* […] *supply agreement (which might even be at cost) would virtually eliminate any interest in other technology suppliers with alternative technologies that offer minimizing Dekalb growers access to alternative technologies*".[2083]

(3144) Finally, as to transitional services, around 94%, of the respondents (corresponding to 16 respondents) that expressed a view considered the transitional services provided to support the NemaStrike Assets as sufficient to ensure their continued viability and competitiveness.[2084] On this point, a competitor commented that "*[s]upport is provided in all relevant departments and even for the manufacturing, Bayer provides support for the application methodology and chemistry and will provide technical and troubleshooting support. With internal BASF competencies, this agreement*

2075 Questionnaire Market Test, question 21.
2076 Response of a competitor to Questionnaire Market Test, ID11332, question 21.1.
2077 Response of a competitor to Questionnaire Market Test, ID11332, question 21.2.
2078 Response of a competitor to Questionnaire Market Test, ID11404, question 20.2.
2079 Questionnaire Market Test, question 22.
2080 Response of a competitor to Questionnaire Market Test, ID10917, question 22.2.
2081 Response of a competitor to Questionnaire Market Test, ID11337, question 22.2.
2082 Response of a farmer's association to Questionnaire Market Test, ID11387, question 22.2.
2083 Response of a competitor to Questionnaire Market Test, ID11332, question 22.2.
2084 Questionnaire Market Test, question 23.

should not endanger the viability of the asset".[2085] Another respondent, however, pointed to the lack of technical assets and a lack of assets to ensure market access of BASF.[2086]

(3145) One competitor criticised the fact that the commitments involved "mixing and matching" assets, because the NemaStrike Assets involve assets from Monsanto while the remainder of the divestitures involve assets from Bayer.[2087]

3.2.2.4. The [NSH lines of research 1, 2 and 3] Data Transfers and Licences

(3146) The market test on the [NSH lines of research 1, 2 and 3] Data Transfers and Licences was positive on the majority of the questions in that around 86% of the respondents (corresponding to 18 respondents) that provided a view considered that the [NSH lines of research 1, 2 and 3] Data Transfers and Licences would be suitable to effectively remove the Commission's concerns.[2088] These findings are reflected in Table 174 in Section XV.3.2.1.

(3147) The market test regarding the proposed [NSH lines of research 1, 2 and 3] Data Transfers and Licences mainly aimed at assessing their effectiveness to address the identified competition concerns and in particular: (i) whether the proposed remedy is suitable to effectively remove the innovation related competition concerns for non-selective herbicides and HT Systems (in combination with Bayer's divestment of its trait research activities as part of the Broad Acre Divestment Businesses) globally; (ii) whether the proposed remedy provides all the necessary assets for BASF to replicate Bayer's current position in innovation for non-selective herbicides and HT Systems (in combination with Bayer's divestment of its trait research activities as part of the Broad Acre Divestment Businesses) globally; (iii) whether the proposed remedy is sufficiently clear and effective in excluding Bayer from innovation for non-selective herbicides and HT Systems (in combination with Bayer's divestment of its trait research activities as part of the Broad Acre Divestment Businesses) on the basis of these divested [NSH lines of research 1, 2 and 3] Data Transfers and Licences (iv) whether lead scientists should be identified in relation to the [NSH lines of research 1, 2 and 3] Data Transfers and Licences to avoid an adverse effect on their viability and competitiveness; and (v) whether other Key Personnel should be identified in relation to the [NSH lines of research 1, 2 and 3] Data Transfers and Licences to avoid an adverse effect on their viability and competitiveness.

(3148) First, with regard to the effective removal of innovation competition concerns,[2089] the majority of respondents that provided a view (around 86%, corresponding to 18 respondents) considered that the proposed [NSH lines of research 1, 2 and 3] Data Transfers and Licences would remove those concerns.

(3149) Second, around 81% of respondents (corresponding to 22 respondents) that provided a view considered that the [NSH lines of research 1, 2 and 3] Data Transfers and Licences included all the necessary assets for BASF to replicate Bayer's current position in innovation for non-selective herbicides and HT Systems.[2090]

2085 Response of a competitor to Questionnaire Market Test, ID11237, question 22.2.
2086 Response of a competitor to Questionnaire Market Test, ID11404, question 19.1.
2087 Response of a competitor to Questionnaire Market Test, ID11332, question 19.1.
2088 Questionnaire Market Test, question 25.
2089 Questionnaire Market Test, question 25.
2090 Questionnaire Market Test, question 26.

(3150) Third, around 95% of the respondents (corresponding to 18 respondents) that provided a view submitted that the [NSH lines of research 1, 2 and 3] Data Transfers and Licences were sufficiently clear and effective in excluding Bayer from innovation for non-selective herbicides and HT Systems.[2091]

(3151) Fourth, around 59% of the respondents (corresponding to 16 respondents) that provided a view considered that lead scientists should be made available to BASF in order avoid any adverse effect on the viability and competitiveness of the [NSH lines of research 1, 2 and 3] Data Transfers and Licences.[2092]

(3152) Fifth, around 56% of the respondents (corresponding to 14 respondents) that provided a view considered that it was not necessary to include other Key Personnel; however, at least 11 respondents (around 44%) disagreed and considered it necessary to make other Key Personnel available to BASF in order to avoid any adverse effect on the viability and competitiveness of the [NSH lines of research 1, 2 and 3] Data Transfers and Licences.[2093]

(3153) One respondent submitted that "*[t]he remedy requires the necessary personnel to maintain the viability and competitiveness of the business by guaranteeing its ability to continue improving current products and developing future products*".[2094] BASF indicated that "*BASF has not had the opportunity to conduct due diligence on the Data Transfers and Licences to make a conclusive assessment.*"[2095] Another respondent stated that "*[l]ack of explicit competence could potentially endanger the viability of the asset. The complexity of this subject needs support by competent personel for further development*".[2096]

(3154) One competitor also argued that "*[i]n order to address [the Commission's concerns regarding innovation competition in NSH and HT Systems], Bayer's complete R&D organizations associated with NSH, including current pipeline products, early-stage discovery/pipeline products, R&D assets and personnel, must be divested*" and that "*[t]he Proposed Commitments fall far short of what is required to eliminate the innovation competition concern*", making a reference to the commitments in the Dow/DuPont case. That competitor considered that "*[a] remedy would need to have the necessary scope for a purchaser to replicate Bayer's role as a global R&D-integrated player, which requires the divestment of the complete R&D organization of one of the parties to accompany the divestiture of the downstream NSH*".[2097]

3.2.2.5. The Digital Agriculture Licence

(3155) The market test regarding the Digital Agriculture Licence was positive on the majority of the questions in that around 72% of the respondents (corresponding to 21 respondents) that provided a view supported the scope and nature of the digital agriculture remedy, notably with the exception of the proposed geographic scope of the Digital Agriculture Licence.[2098] That finding is reflected in Table 174 in Section XV.3.2.1.

2091 Questionnaire Market Test, question 27.
2092 Questionnaire Market Test, question 28.
2093 Questionnaire Market Test, question 29.
2094 Response of a competitor to Questionnaire Market Test, ID11332, question 29.1.
2095 Response of BASF to Questionnaire Market Test, ID11377, question 29.1.
2096 Response of a competitor to Questionnaire Market Test, ID11237, question 29.1.
2097 Annex to the response to the Market Test submitted by a competitor, ID11334 and ID11429, pages 2-3.
2098 Questionnaire Market Test, question 37.

(3156) The market test regarding the proposed Digital Agriculture Licence aimed at assessing its effectiveness to address the identified competition concerns and, in particular: (i) whether a sole licence as opposed to a full transfer of Bayer's digital agriculture activities could ensure an effective remedy and prevent consumer harm; (ii) whether the scale and scope of the Digital Agriculture Licence would be sufficient to ensure BASF's viability and competitiveness on the market; (iii) whether BASF would need to operate on the basis of the Digital Agriculture Licence on a EEA-wide or rather a global basis to ensure an effective remedy; (iv) whether the option to hire two Bayer employees was sufficient; (v) whether the transfer of Key Personnel would be necessary to avoid adverse effects on the viability and competitiveness of the Licensed Materials; (vi) whether a commitment to use best efforts to assist BASF with securing contracts or identifying suppliers was sufficient; (vii) whether the supply of updates to master datasets for a period of 12 months was sufficient; and (viii) whether the assistance to BASF from Bayer (three-man years within 12 months) included in the commitments was sufficient for the remedy to be effective.

(3157) First, regarding the sole licence, the majority of respondents that expressed a view (around 70%, corresponding to 28 respondents) stated that a sole licence as opposed to a full transfer can ensure an effective remedy and prevent consumer harm.[2099] One respondent to the market test argued that the sole licence would be insufficient to address the competition concerns. It considered that the only way to address the competition concerns created through the combination of Monsanto's and Bayer's activities in digital agriculture would be through a structural remedy in the form of the divestiture of one of the Party's digital agriculture business and all the underlying technology and data on a global basis.[2100] This respondent to the market test also emphasized the need to sell the Digital Agriculture Licence to an entity not currently active as an integrated player in the agrochemical industry in order to ensure that a disruptive force would enter the digital agriculture space.[2101]

(3158) Second, regarding the scale and scope of the Digital Agriculture Licence, the majority of respondents that expressed a view (around 72%, corresponding to 21 respondents) supported it;[2102] however, on whether an EEA-wide or global licence would be necessary, the majority of respondents that provided a view (around 79%, corresponding to 31 respondents) stated that an EEA-wide licence would not suffice in order to ensure an effective remedy and that a global licence would be necessary.[2103]

(3159) BASF indicated that "*it is required that BASF will be enabled to operate the license globally.*"[2104] One competitor noted that a global licence would be required to ensure "*the necessary leverage of investment*."[2105] Another stated that "*in order to successfully and profitably offer digital farming solutions and to achieve economies of scale, it is of high importance to be able to operate on a global basis with these*

2099 Questionnaire Market Test, question 31.

2100 Annex to Questionnnaire Market Test submitted by a competitor, ID11334 and ID11429, paragraphs 26–37.

2101 Interested third party's comments on the Statement of Objections, ID10083, page 8.

2102 Questionnaire Market Test, question 38.

2103 Questionnaire Market Test, question 37.

2104 Response of BASF to Questionnaire Market Test, ID11377, question 37.1.

2105 Response of a competitor to Questionnaire Market Test, ID10889, question 37.1.

digital farming solutions."[2106] A different competitor noted that "*limiting the license to the EEA means that BASF will lack the scope to effectively compete*."[2107] A respondent also observed that in digital agriculture "*scale is one of a number of important considerations.*"[2108] In the same vein, another respondent submitted that "*[a]bility to profitably operate the platform will require maximum scalability*"[2109] and a competitor stated that "*[i]f the digital license is restricted to the EEA only, BASF could be disadvantaged compared to Bayer and Monsanto due to the lack of scalability of their platform over time*."[2110]

(3160) Third, regarding the questions on the transfer of employees and Key Personnel, the majority of the market test participants that expressed a view (around 58%, corresponding to 14 respondents) supported the scope of the Digital Agriculture Licence; however, a significant number of respondents (around 42%, corresponding to 10 respondents) considered that including only two Bayer employees in the Digital Agriculture Licence package was insufficient for the remedy to be effective.[2111] Moreover, 9 respondents out of 26 (around 35%) indicated that Key Personnel should be made available to BASF in order to avoid an adverse effect on the viability and competitiveness of the Licensed Materials.[2112]

(3161) One respondent noted that "*key personnel are necessary to enable BASF to effectively integrate and continue to develop the digital platform*."[2113] A competitor indicated that "*[…] it is absolutely essential that key personnel […] be divested to BASF.*"[2114] Another respondent stated that "*[…] having access to its key personnel would be critical to making sure BASF could full* [sic] *leverage and transfer the access they will be granted*."[2115] With regard to the number of employees, one respondent observed that "*[…] it will take a lot* [sic] *significantly higher amount of transferred resources to cover all needed competences and areas of expertise*."[2116]

(3162) Fourth, the majority of the respondents that expressed a view (around 83%, corresponding to 25 respondents) considered that a commitment to use best efforts to assist BASF with securing contracts or identifying suppliers was sufficient.[2117]

(3163) Last, with regard to the updates to the master data sets and the assistance to BASF from Bayer, the majority of respondents that expressed a view considered the commitments sufficient. However, some companies indicated that more than 12 months of updates and assistance would be required.[2118]

2106 Response of a competitor to Questionnaire Market Test, ID11349, question 37.1.
2107 Response of a competitor to Questionnaire Market Test, ID11332, question 37.1.
2108 Response of an interested third party to Questionnaire Market Test, ID11259, question 37.1.
2109 Response of a supplier to Questionnaire Market Test, ID11340, question 37.1.
2110 Response of a competitor to Questionnaire Market Test, ID11404, question 37.1.
2111 Questionnaire Market Test, question 35.
2112 Questionnaire Market Test, question 36.
2113 Response of a competitor to Questionnaire Market Test, ID10975, question 36.1.
2114 Response of a competitor to Questionnaire Market Test, ID11332, question 36.1.
2115 Response of a competitor to Questionnaire Market Test, ID11381, question 36.1.
2116 Response of a supplier to Questionnaire Market Test, ID11340, question 35.1.
2117 Questionnaire Market Test, question 33.
2118 Questionnaire Market Test, questions 32.1 and 34.1.

3.2.2.6. BASF as purchaser of the BASF Divestment Package

(3164) A majority of the respondents that indicated a view consider that BASF would be a suitable purchaser of the BASF Divestment Package as shown in Table 175.

Table 175 – Overview of the market test results on the suitability of BASF as purchaser of the BASF Divestment Package

Questions	Responses		
	Yes	No	Respondents supporting BASF as suitable purchaser (%)[2119]
Do you consider that BASF is independent of and unconnected to Bayer and Monsanto?[2120]	77	9	89%
Do you consider that BASF has the financial resources to maintain and develop the BASF Divestment Package as a viable and active competitive force in the markets where the Commission has identified concerns?[2121]	73	2	97%
Do you consider that BASF has the relevant expertise to maintain and develop the BASF Divestment Package as a viable and active competitive force in the markets where the Commission has identified concerns?[2122]	60	7	90%
Do you consider that BASF has the incentive to maintain and develop the BASF Divestment Package as a viable and active competitive force in the markets where the Commission has identified concerns?[2123]	65	1	98%
Do you consider that the acquisition by BASF of the BASF Divestment Package would create competition concerns or give rise to a risk that the implementation of the commitments will be delayed?[2124]	12	37	75% found *prima facie* **no** competition concerns
In your opinion, would the divestiture of the BASF Divestment Package to BASF ensure its continued viability and competitiveness on the market? In answering this question, please take into account BASF's personnel, assets, and products[2125]	46	7	76%

Source: Responses to the Questionnaire Market Test.

(3165) As regards the independence of BASF, BASF itself stated it "*is fully independent of and unconnected to Bayer and Monsanto*". BASF indicated that it "*has no*

[2119] Based on the respondents which either replied "Yes" or "No" to the question concerned. Respondents which replied "I do not know" are excluded.
[2120] Questionnaire Market Test, question 39.
[2121] Questionnaire Market Test, question 40.
[2122] Questionnaire Market Test, question 41.
[2123] Questionnaire Market Test, question 42.
[2124] Questionnaire Market Test, question 43.
[2125] Questionnaire Market Test, question 44.

institutional links […] *that raise any issues in relation to BASF's independence*" and that "*the limited number and nature of collaborations between BASF and Bayer/Monsanto do not raise issues in relation to BASF's independence*".[2126] One competitor indicated that in its view "*BASF is fully independent* [sic] *and unconnected to Bayer/ Monsanto. All relationships are partnerships at arm's length (e.g. trait development partnership between BASF and Monsanto)*".[2127] Similarly, another competitor stated that "[a]*lthough there may be commercial links and cooperation / supply agreements in place, BASF is to be considered as an independent competitor to Bayer and Monsanto*."[2128] Another competitor noted that "*BASF is an independent, listed company with its own objectives in the market*".[2129] However, a respondent expressed concerns on the impact of cross shareholding among players in the agrochemical industry on the independence of BASF.[2130]

(3166) As regards financial resources, BASF claimed that it has "*significant financial resources*", coupled with "[t]*rack record of investing in innovation*", which will be used to maintain and develop the BASF Divestment Package as a viable and active competitive force.[2131] A competitor indicated that "*BASF has solid financial resources as well as a solid balance sheet that will enable BASF to make this investment*".[2132] Another competitor stated that "*BASF is a massive company with deep resources and strong commitment to agriculture*".[2133] Another competitor also stated that "*BASF is a strong, experienced company with significant resources*".[2134]

(3167) As regards expertise, BASF claimed it has the "*relevant expertise*" in crop protection, traits and integration of new businesses in order to maintain and develop the BASF Divestment Package as a viable and active competitive force.[2135] One competitor stated that "*we know BASF as a professional and experienced player in the agricultural chemical industry*".[2136] Another competitor acknowledged that "*BASF's existing own expertise in trait development and agricultural chemicals together with the expertise acquired from Bayer is a good starting ground*".[2137] Another competitor indicated that "*BASF is a Chemicals company and as such has the proven capability to operate a chemicals business*".[2138] However, several competitors highlighted BASF's lack of expertise in relation to seeds.[2139]

(3168) As regards incentives, BASF claimed that it will "*be incentivised to compete effectively using the BASF Divestment Package in order to maximise the return on its significant acquisition investment*" and "*to take advantage of a unique and attractive opportunity for BASF to fill a gap in its portfolio and enter the non-selective*

2126 Response of BASF to Questionnaire Market Test, ID11377, question 39.1.
2127 Response of a competitor to Questionnaire Market Test, ID11349, question 39.1.
2128 Response of a competitor to Questionnaire Market Test, ID11237, question 39.1.
2129 Response of a competitor to Questionnaire Market Test, ID11404, question 39.1.
2130 Response of an interested third party to Questionnaire Market Test, ID11259, question 39.1.
2131 Response of BASF to Questionnaire Market Test, ID11377, question 40.1.
2132 Response of a competitor to Questionnaire Market Test, ID11349, question 40.1.
2133 Response of a competitor to Questionnaire Market Test, ID11404, question 40.1.
2134 Response of a competitor to Questionnaire Market Test, ID11374, question 40.1.
2135 Response of BASF to Questionnaire Market Test, ID11377, question 41.1.
2136 Response of a competitor to Questionnaire Market Test, ID11349, question 41.1.
2137 Response of a competitor to Questionnaire Market Test, ID11249, question 41.1.
2138 Response of a competitor to Questionnaire Market Test, ID11404, question 41.1.
2139 Questionnaire Market Test, question 44.1.

herbicide and seed business".[2140] Another competitor stated that "[a]*lthough traditionally BASF has focused on chemicals, they now seem to attempt to broaden their portfolio in order to realize synergies and manage risk. We therefore believe that BASF indeed has the incentives to maintain and develop the Divestment Package*".[2141] Similarly, another competitor indicated that "*the addition of a substantial seed business provides to BASF a complete outreach into the agricultural markets. Seeds is the main entry point to farms, thus, providing a substantial incentive to develop the divestment package*".[2142] In the same vein, a competitor stated that "*BASF is paying a substantial price for the Divestment Package and is a fiercely competitive company with clear ambition to grow in agriculture*".[2143]

(3169) As regards the creation of competition concerns, BASF stated that "[t]*he acquisition does not give rise to prima facie competition concerns in the EU or in any other jurisdictions*".[2144] A competitor stated that "*the acquisition of the BASF Divestment Package by BASF will not lead to concentration and competition concerns*".[2145] Another competitor stated that "*Bayer and BASF will remain major players in the market, but there will at least be enough competition in the market and enough free choice for the farmer*".[2146] Similarly, another competitor submitted that "[w]*hether Bayer or BASF manage these business [sic] makes little difference to the market. Both are strong companies with the wherewithal to succeed. The carve outs seem complete in the sense that BASF should have all that it needs to carry on the position that Bayer had before*."[2147] However, several respondents expressed concerns regarding the fact that there is a concentration trend in the agrochemical industry.[2148] One competitor argued that BASF being already one of the leading innovators in the crop protection industry, the divestment of the BASF Divestment Package to BASF would not remove the innovation concerns identified by the Commission.[2149] The same competitor and another competitor expressed concerns regarding the links created between BASF and the Parties, through the transitional agreements provided for in the First Commitments.[2150]

(3170) As regards whether the divestiture to BASF would ensure the continued viability and competitiveness of the BASF Divestment Package, BASF was of the view that it would be the case.[2151] A competitor stated that "[v]*iability of the package is granted as BASF has by no doubt the capacity to develop it further. Whether competitiveness is guaranteed depends on how open the companies remain for further cooperation and license agreements*".[2152] Another competitor stated that "*BASF has the resources, skills and commitment to ensure the continued viability and*

2140 Response of BASF to Questionnaire Market Test, ID11377, question 42.1.
2141 Response of a competitor to Questionnaire Market Test, ID11349, question 42.1.
2142 Response of a competitor to Questionnaire Market Test, ID11237, question 42.1.
2143 Response of a competitor to Questionnaire Market Test, ID11404, question 42.1.
2144 Response of BASF to Questionnaire Market Test, ID11377, question 40.1.
2145 Response of a competitor to Questionnaire Market Test, ID11349, question 44.1.
2146 Response of a competitor to Questionnaire Market Test, ID10877, question 43.1.
2147 Response of a competitor to Questionnaire Market Test, ID11404, question 44.1.
2148 Questionnaire Market Test, question 44.1.
2149 Annex to the response to the Market Test submitted by a competitor, ID11334 and ID11429.
2150 Annex to the response to the Market Test submitted by a competitor, ID11334 and ID11429; Response of a competitor to Questionnaire Market Test, ID11332, question 44.
2151 Response of BASF to Questionnaire Market Test, ID11377, question 44.1.
2152 Response of a competitor to Questionnaire Market Test, ID11237, question 44.1.

competitiveness of the acquired business. Yet whether this will be sufficient to succeed in face of the other recently merged players remain to be seen".[2153]

(3171) With regards to digital agriculture, an interested third party considered that BASF would not be a suitable purchaser of the Digital Agriculture Licence and of the businesses divested in the First Commitments more generally, because it is already a dominant player or at least one of the four big players which together control 84% of the pesticides market.[2154] A divestiture to BASF would therefore increase the already high market concentration. Instead, the interested third party suggested that the purchaser (of the Digital Agriculture Licence) should be a company that is not in the top 10 of pesticides or seeds players.[2155] Another interested third party considered that "*divestments to other major market incumbents*" would not be capable of restoring the competition lost as a result of the Transaction, as such divestments would "*simply represent a game of 'musical chairs' among the main players rather than a real remedy*."[2156]

3.2.3. The Vegetable Seeds Divestment Business

(3172) The results of the market test on the Vegetable Seeds Divestment Business were positive overall in that around 88% of respondents (corresponding to 36 respondents) that indicated a view stated that the divestment of the Vegetable Seeds Divestment Business would be suitable to effectively remove the Commission's competition concerns.[2157] Such conclusions are reflected in Table 174 in Section XV.3.2.1.

(3173) The market test regarding the Vegetable Seeds Divestment Business aimed at assessing, in particular (i) whether the scope and scale of the Vegetable Seeds Divestment Business were sufficient to ensure its continued viability and competitiveness, (ii) whether the transfer of Key Personnel would be sufficient to ensure the viability and competiveness of the Vegetable Seeds Divestment Business and (iii) whether TSAs should be included in the commitments.

(3174) Around 88% of respondents (corresponding to 36 respondents) that expressed a view stated that the divestment of the Vegetable Seeds Divestment Business would be suitable to effectively remove the Commission's competition concerns.[2158]

(3175) Similarly, around 96% of respondents (corresponding to 26 respondents) that expressed a view stated that the divestment of the Vegetable Seeds Divestment Business had the sufficient scale and scope to ensure its continued viability and competitiveness.[2159]

(3176) However, a number of respondents expressed concerns regarding certain parts of the Vegetable Seeds Divestment Business.

(3177) One competitor indicated that the scope of IP rights transferred should be extended in order to cover IP rights owned by entities of Bayer Group, other than BVS, that

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2153 Response of a competitor to Questionnaire Market Test, ID11404, question 44.1.

2154 Response of a farmer's association to Questionnaire Market Test, ID11387, question 31.1; Letter from a farmer's association to the Commissioner, ID11741.

2155 Response of a farmer's association to Questionnaire Market Test, question 31.1, ID11387; Letter from a farmer's association to the Commissioner, ID11741.

2156 Interested third party's comments on the Statement of Objections, ID10167, page 2.

2157 Questionnaire Market Test, question 48.

2158 Questionnaire Market Test, question 48.

2159 Questionnaire Market Test, question 49.

relate to the vegetable seeds business. According to that competitor, IP rights owned by BVS only relate to vegetable seeds, while certain IP rights owned by other entities of Bayer cover other crops but are nevertheless necessary to successfully develop new vegetable seeds varieties.[2160]

(3178) While around 84% of respondents (corresponding to 21 respondents) that expressed a view stated that the transfer of the Key Personnel would be sufficient to ensure the viability and competitiveness of the Vegetable Seeds Divestment Business[2161], several competitors indicated that the list of Key Personnel should also include breeders. Those competitors explained that breeders are crucial for the viability and competitiveness of the Vegetable Seeds Divestment Business as they have the expertise and know-how required for the development of new vegetable seeds varieties.[2162] In addition, certain competitors indicated that the list of key personnel should also include other functions such as human resources, legal, stewardship, IT as well as the supporting staff of the key personnel identified.[2163]

(3179) Around 76% of respondents (corresponding to 13 respondents) that expressed a view stated that TSAs should be included in the commitments.[2164] Several competitors indicated that TSAs are necessary to ensure the continuity of the Vegetable Seeds Divestment Business. Two competitors indicated that services such as human resources, IT and Finance should be covered by TSAs.[2165]

3.2.4. Other elements

(3180) One competitor objected to the "fast track dispute resolution procedure" in the First Commitments, submitting that the question of remedy compliance needs to be assessed by the Commission and the Monitoring Trustee, not by the parties.[2166] The Commission notes that the fast track dispute resolution procedure provides the purchaser with an additional mechanism to address non-compliance with the commitments, but it does not remove the Commission's power to monitor and sanction compliance with the commitments. The competitor's concerns that the fast track dispute resolution procedure relegates the question of remedy compliance to the parties is therefore not justified.

(3181) The respondents to the market test did not raise any issues in relation to the provisions in the First Commitments regarding the Independent Adviser.

3.3. Assessment of the First Commitments

3.3.1. The BASF Divestment Package

3.3.1.1. The Broad Acre Divestment Businesses

(3182) Overall, the results of the market test on the First Commitments on the Broad Acre Divestment Businesses were positive. However, the Commission found that the results of the market test highlighted some risks associated with the proposed package (see Section XV.3.2.2.1).

2160 Questionnaire Market Test, question 49.
2161 Questionnaire Market Test, question 51.
2162 Questionnaire Market Test, question 51.
2163 Questionnaire Market Test, question 51.
2164 Questionnaire Market Test, question 52.
2165 Questionnaire Market Test, question 52.
2166 Annex to the response to the Market Test submitted by a competitor, ID11334 and ID11429, page 9.

(3183) First, in terms of Key Personnel, additional personnel would need to be identified for the Broad Acre Divestment Businesses to ensure the viability and competitiveness of the assets.

(3184) Second, with regard to the supply agreement of isoxaflutole, the majority of respondents considered that the supply agreement for isoxaflutole should be at cost to ensure the competitiveness of the business.

(3185) The Commission does not share the view, expressed by one competitor, that the carve outs to the Broad Acre Divestment Business would affect the viability of the divestment businesses. The Commission considers that these carve-outs do not affect the viability and the competitiveness of the business as the carved out business segments are relatively small, with a limited scope, financially unattractive and are therefore not critical to the strength and long-term success of the Broad Acre divestment businesses.[2167]

(3186) The Commission also does not share the view, expressed by a competitor, that the commitments relating to the Broad Acre Divestment Businesses should be rejected because they contain a large number of transitional agreements that will harm the competitiveness of the divestment business.[2168] Transitional agreements are common in case of divestitures and often necessary for the competitiveness and viability of the divestment business.[2169] In this case, the transitional agreements in the commitments are aimed, among others, at ensuring that BASF will be able to quickly conduct business in the various countries covered by the divestiture, for instance by ensuring BASF has access to product registrations and other permits and licences. The large number of transitional agreements is not, in and of itself, a problem. On the other hand, once a final binding sales agreement has been concluded between Bayer and BASF, the Commission will have to assess, whether certain specific transitional agreements create competition problems or affect the independence of BASF by going beyond what is necessary to ensure the competitiveness and viability of the divestment business. This assessment is part of the standard suitable purchaser assessment process, which includes an assessment of the final binding sales agreement, including any ancillary agreements.

3.3.1.2. The GA Divestment Business and Glyphosate Assets

(3187) Overall, the results of the market test on the First Commitments on the GA Divestment Business and Glyphosate Assets were positive. However, the Commission found that the results of the market test highlighted some risks associated with the proposed package (see Section XV.3.2.2.2).

(3188) First, in terms of Key Personnel, additional personnel would need to be identified for the Glyphosate Assets to ensure the viability and competitiveness of the assets.

(3189) Second, with regard to the GA Divestment Business, the majority of respondents considered that the supply agreement for [active ingredient] should be at cost to ensure the competitiveness of the business.

2167 Parties' response to the Commission's request for information RFI 124, question 2.

2168 The competitor in question expressed this view not only in relation to the transitional agreements in the Broad Acre Divestment Business but also in relation to the transitional agreements in other parts of the commitments and in the commitments more generally. The Commission does not share these views, for the same reasons expressed here.

2169 Remedies Notice, paragraph 28.

(3190) Last, the respondents to the market test considered that the transitional services offered – notably including a formulated product tolling agreement at cost for a maximum period of […] – would be sufficient. Therefore, the current duration of […] is likely to be insufficient to ensure the continued viability and competitiveness of the GA Divestment Business and Glyphosate Assets.

3.3.1.3. The NemaStrike Assets

(3191) Overall, the results of the market test on the First Commitments on the NemaStrike Assets were positive. However, the Commission found that the results of the market test highlighted some risks associated with the proposed package (see Section XV.3.2.2.3).

(3192) First, the Commission found that, in order to be effective, the divestiture of the NemaStrike Assets should include the transfer of key personnel, to ensure the transfer to BASF of the technical and commercial knowhow that is needed to compete with the NemaStrike Assets.

(3193) Second, the Commission considered that the IP included should be broader and should include all IP related to Nemastrike to ensure the competitiveness of the divested assets.

(3194) Third, the Commission considered that the […] supply agreement under which BASF would supply Bayer/Monsanto with NemaStrike contemplated in the commitments was not necessary for the viability of the NemaStrike assets and could have negative effects on competition.

(3195) Lastly, the transitional supply agreements need to be provided for a longer period than the […] envisaged to ensure the viability of the divested assets. Moreover, these supply agreements should be provided at variable costs to ensure the competitiveness of the divested assets. The transitional supply agreements should also include supply toll application services which should also be provided at variable costs and be for a longer period than […].

(3196) The Commission does not share the concerns, voiced by a competitor, regarding the "mix and match" nature of the First Commitments. First, the First Commitments involve only a very limited degree of "mixing and matching", since virtually all divestitures involve assets from Bayer and only a very small part of the divestitures (the NemaStrike assets) stem from Monsanto. Second, the risks of a "mix and match" divestiture are limited in this case because there are no close links between nematicide R&D and the other businesses that are divested.

3.3.1.4. The [NSH lines of research 1, 2 and 3] Data Transfers and Licences

(3197) Overall, the results of the market test on the First Commitments on the [NSH lines of research 1, 2 and 3] Data Transfers and Licences were positive.

(3198) Moreover, the [NSH lines of research 1, 2 and 3] Data Transfers and Licences are needed to ensure the viability and continued competitiveness of the divested GA Divestment Business and Glyphosate Assets, as well as of the divested HT Systems and HT traits, looking forward in terms of lifecycle management.

(3199) However, the Commission found that the results of the market test highlighted that lead scientists and other Key Personnel should be included in [NSH lines of research 1, 2 and 3] Data Transfers and Licences in order to avoid any adverse effect on their viability and competiveness (see Section XV.3.2.2.4).

(3200) On the point raised by a competitor regarding the allegedly insufficient scope of the proposed commitments and the need for Bayer to divest its complete R&D organisation associated with non-selective herbicides (see recital (3154)), the Commission notes the following. First, the Commission agrees that the divestiture proposed in the First Commitments lacks lead scientists and other Key Personnel. However, it would be unnecessary and disproportionate to require a divestiture of additional assets or Bayer's entire R&D organisation. The [NSH lines of research 1, 2 and 3] Data Transfers and Licences will be divested to BASF, if BASF is approved as a suitable purchaser. Complemented with the assets of BASF, these assets will result in viable and competitive lines of research (see recital (3282)) that will replicate Bayer's R&D efforts in NSH and HT Systems. In those circumstances, and taking into account the principle of proportionality, the Commission considers that it is not necessary for Bayer to divest its entire R&D organisation or additional assets, except for the personnel identified in recital (3199).

3.3.1.5. The Digital Agriculture Licence

(3201) Overall, the results of the market test on the First Commitments on the Digital Agriculture Licence were positive. However, the Commission found that the results of the market test highlighted a variety of risks associated with the Digital Agriculture Licence (see Section XV.3.2.2.5).

(3202) First, the Commission took into account the results of the market test which indicated that the geographic scope of the Digital Agriculture Licence was insufficient to ensure the scalability, competitiveness and viability of the divested package. Under the First Commitments, the Digital Agriculture Licence only covered Bayer's Digital Farming portfolio in the EEA and its pipeline projects usable in the EEA. Moreover, the First Commitments did not stipulate whether the licence would be useable in the EEA only or whether it was a global licence.

(3203) Second, with regard to the number of employees and key personnel to be transferred, the Commission agrees with the results of the market test which showed that the transfer of more than two employees and key personnel with seniority and knowledge on certain strategic areas was necessary to ensure the effectiveness, competitiveness and viability of the Digital Agriculture Licence.

(3204) Third, in line with the market test, the Commission considers that the provision of updates and support from professionals trained on the Licensed Materials within the 12 months of BASF Closing and of the commencement of the Digital Agriculture Licence were insufficient to ensure effectiveness and viability of the Digital Agriculture Licence.

(3205) Fourth, the Commission does not share the view, expressed by an interested third party,[2170] that the Digital Agriculture Licence should be rejected as a remedy because it excludes other users from access to the portfolio. In this respect, the Commission notes that the commitments must remove the anti-competitive effects caused by the Transaction and, prior to the Transaction, Bayer's digital agriculture portfolio was not accessible to third parties either. For the same reason, the Commission does not share the interested third party's view that the merged entity should divest Monsanto's digital agriculture portfolio.[2171] Through the Digital Agriculture Licence,

[2170] Response of a farmer's association to Questionnaire Market Test, question 31.1, ID11387.

[2171] Response of a farmer's association to Questionnaire Market Test, question 31.1, ID11387.

BASF will be able to replicate the role played by Bayer and this can preserve the existing competition.

(3206) Last, the Commission does not agree with a competitor's view that a divestiture to a non-agrochemical player would be an appropriate remedy in this case. As explained in Section XII, primarily large integrated players are able to compete with the Parties in the provision of certain digital agriculture services, in particular digitally-enabled prescriptions. Other players active in digital agriculture do not have the required broad capabilities including the agronomic knowledge and data concerning crop protection products, which is necessary to solve the competition concerns identified in this Decision. Moreover, a divestiture (instead of a licence) of Bayer's digital farming business could disrupt the provision of some or all digital agriculture services to farmers in the EEA, which could harm them in the short and mid-term, for example in the transition period during which BASF would adapt the acquired capabilities to its own suit of crop protection products. A licence is likely to ensure the continuation of the digital agriculture services, while allowing BASF to replicate Bayer's position in the market in a timely manner.

3.3.2. The Vegetable Seeds Divestment Business

(3207) Overall, the results of the market test on the Vegetable Seeds Divestment Business were positive.

(3208) However, the Commission notes that the results of the market test highlighted some risks associated with the Vegetable Seeds Divestment Business (see Section XV.3.2.3), as follows:

(a) The absence of certain IP rights owned by entities of Bayer, other than BVS, which are necessary for the operation of the Vegetable Seeds Divestment Business;

(b) The absence of certain employees identified as "key personnel" whose transfer is crucial in order to ensure the viability and competitiveness of the Vegetable Seeds Divestment Business;

(c) The absence of certain TSAs which are necessary to support the Vegetable Seeds Divestment Business.

4. FINAL COMMITMENTS

(3209) In light of the issues described in Section XV.3.3, on 16 February 2018, the Notifying Party submitted revised commitments, namely the Final Commitments. The Final Commitments are an integral part of this decision as Annex 3.

(3210) The Final Commitments addressed the Commission's concerns that remained in light of its evaluation of the market test of the First Commitments.

4.1. Description of the Final Commitments

4.1.1. The BASF Divestment Package

4.1.1.1. The Broad Acre Divestment Businesses

(3211) In the Final Commitments, the Notifying Party increased the number of key personnel identified in the commitments as being part of the Broad Acre Divestment Businesses from 13 to 45. The additional key personnel comprise in particular,

several employees from the traits research, traits development and broad acre seeds organisations, including breeding and other technical areas.

(3212) Regarding the supply of isoxaflutole, the Final Commitments further specify the commercial conditions of the supply of isoxaflutole, which will be provided at variable costs for an initial period of […], renewable at the option of BASF for a total of up to […]. In respect of the trademarks related to the Balance GT system, the Final Commitments provide for an exclusive licence to the relevant trademarks, including any such herbicide trademarks.

4.1.1.2. The GA Divestment Business and Glyphosate Assets

(3213) In the Final Commitments, the Notifying Party made a number of improvements regarding the GA Divestment Business and Glyphosate Assets.

(3214) First, six Key Personnel were identified and included in the Glyphosate Assets, while nine additional Key Personnel were added to the list of six names included in the First Commitments for the GA Divestment Business.

(3215) Second, with regard to the GA Divestment Business, the Final Commitments include the supply of indaziflam at variable cost, in priority over other purchasers and in quantities demanded by BASF until the earlier of the expiry of the agreement or until there are at least three generic suppliers of indaziflam able to supply BASF whose source of indaziflam is not Bayer.

(3216) Last, the Notifying Party committed to provide transitional supplies or services linked to the GA Divestment Business and Glyphosate Assets at variable cost for a period of […] renewable up to […].

4.1.1.3. The NemaStrike Assets

(3217) In the Final Commitments, the Notifying Party made a number of improvements

(3218) First, the Notifying Party has identified 13 employees as “key personnel” that will be part of the Final Commitments. In addition, the Notifying Party committed to provide to BASF additional personnel at its option.

(3219) Second, the Notifying Party has widened the scope as well as clarified the scope of the IP included in the commitments. In particular, the NemaStrike Assets now include all intellectual property related to NemaStrike and tioxazafen (the active ingredient in NemaStrike), including but not limited to worldwide patents, trademarks, and copyrights. Moreover, (i) where such IP currently is exclusive to NemaStrike, it will be transferred, or (if a transfer is not possible) exclusively licensed, to BASF; (ii) where such IP currently is used by other parts of the Monsanto business, it will be allocated to the primary user (the NemaStrike business to be transferred to BASF or Monsanto/Bayer) with licences, or covenants not to assert put in place to ensure access by the other party, provided that the field of use available to Monsanto/Bayer will exclude the field of nematicidal seed treatments.

(3220) Moreover the Final Commitments provide that when IP is used by both the merged entity and BASF, the field of use available to Monsanto/Bayer will exclude the field of nematicidal seed treatments.

(3221) Third, the Final Commitments no longer contemplate a […] supply agreement with BASF under which BASF would supply Bayer/Monsanto with NemaStrike.

(3222) Finally, the Notifying Party has also committed to supply, at the request of BASF, toll application services of NemaStrike to BASF for […] at variable cost. BASF will

have the option to renew these terms of supply for a further period of […], for a total of up to […] after the BASF Closing, subject to the Commission's approval.

4.1.1.4. The [NSH lines of research 1, 2 and 3] Data Transfers and Licences

(3223) In the Final Commitments, the Notifying Party included five lead scientists, identified as Key Personnel, as follows: (i) two laboratory leaders for the [NSH line of research 1] Data Transfer and Licence; (ii) one laboratory leader for the [NSH line of research 2] Data Transfer and Licence; and (iii) two laboratory leaders for the [NSH line of research 3] Data Transfer and Licence.

(3224) Moreover, the Notifying Party committed to provide to BASF, after BASF's consultation with the abovementioned Key Personnel, the option to offer employment to up to three full time employees in total working across any of the three lines of research to ensure a smooth transition (if required by BASF), subject to the Commission's approval following consultation with the Monitoring Trustee. These additional employees, once identified by BASF and approved by the Commission, will be Key Personnel for the purposes of the commitments.

4.1.1.5. The Digital Agriculture Licence

(3225) In the Final Commitments, the Notifying Party made a number of improvements regarding the Digital Agriculture Licence.

(3226) First, the Final Commitments regarding the Digital Agriculture Licence extended its scope to include the entirety of Bayer Digital Farming's global portfolio, both for existing and pipeline products. Furthermore, the geographic scope for the use of the licence was indicated as worldwide.

(3227) Second, the Notifying Party also included, at the option of BASF, to offer employment to up to six Key Personnel of Bayer with seniority and knowledge on one or several of the following areas: (i) data management/science, (ii) commercial, (iii) software development specific to the tools, (iv) system architects, (v) agronomic algorithms, (vi) sales/marketing, (vii) strategy, (viii) partnership coordinators, and (ix) modelling/on-farm research personnel. In the Final Commitments, the Notifying Party also specifically identified the first six Key Personnel to which BASF would have the option to offer employment.

(3228) Third, with regard to third party supplier contracts, besides Bayer's commitment to use its best efforts to assist BASF with securing these contracts or identifying alternative suppliers, the Notifying Party included a commitment to cooperate with BASF in any reasonable arrangement designed to provide for BASF the benefits of the third party supplier contracts that Bayer has.

(3229) Last, the Notifying Party made other various improvements, including (i) adding to the […] term for the provision of updates to master datasets an additional period of […] (at the option of BASF), (ii) extending the term for the provision of support by Bayer to BASF from […], and (iii) increasing the number of workshops available to BASF from two to four.

4.1.2. The Vegetable Seeds Divestment Business

(3230) The Notifying Party committed to transfer all IP rights currently held by Bayer legal entities other than BVS which are necessary for the operation of the Vegetable Seeds Divestment Business. In case any of these IP rights would be shared with or required by Bayer for any other purposes, Bayer commits, where feasible, to either license the

IP to the Purchaser through a non-exclusive licence, or by a complete transfer subject to a licence back from the Purchaser to Bayer. In both cases, the field of use available to Bayer will exclude vegetable seeds.

(3231) The Notifying Party increased the number of key personnel identified in the commitments from 6 to 31. The additional key personnel comprise in particular, several employees from BVS R&D organisation, including heads of breeding teams.

(3232) The Notifying Party committed to providing the Purchaser of the Vegetable Seeds Divestment Business, at its option, with IT support services and any other services necessary to ensure a smooth transition of the Vegetable Seeds Divestment Business.

4.2. Assessment of the Final Commitments

4.2.1. The BASF Divestment Package

4.2.1.1. The Final Commitments remove the horizontal overlaps between Bayer and Monsanto and/or replicate the lost competitive constraint in all markets where the Commission has identified competition concerns

(3233) The Commission considers that the divestitures that are included in the Final Commitments remove the horizontal overlaps between Bayer and Monsanto and/or replicate the lost competitive constraint in all markets where the Commission has identified competition concerns relating to: (i) broad acre crop seeds, (ii) broad acre crop traits, (iii) non-selective herbicides, (iv) nematicide seed treatment, and (v) digitally-enabled prescriptions of fungicides for broad acre crops in the EEA.

(A) The Broad Acre Divestment Businesses

(3234) The Final Commitments on the Broad Acre Divestment Businesses entail the divestiture by Bayer of its entire global broad acre crop seeds and traits business, subject to certain limited carve-outs. The divestiture will therefore eliminate the horizontal overlaps in all broad acre crop seeds and broad acre crop traits markets where the Commission had concerns.

(3235) The divestiture of the Broad Acre Divestment Businesses ensures that Monsanto's dominant position in broad acre crop traits markets is not further strengthened. The divestiture of Bayer's research activities in traits will also address the concerns identified by the Commission with regard to innovation competition.

(3236) The Commission notes that the limited carve-outs relate to crops and geographic markets where the Commission did not identify concerns. As explained in recital (3279), they do not affect the viability or competitiveness of the divested business.

(3237) As regards key personnel, the Commission notes that the Final Commitments of the Broad Acre Divestment Businesses include the transfer of 45 instead of the initially envisaged 13 key personnel. The additional key personnel comprise in particular, several employees from the traits research, traits development and broad acre seeds organisations, including breeding and other technical areas.

(3238) As regards the supply agreement of isoxaflutole, the Commission notes that the commercial terms of the supply agreement have been specified in the Final Commitments of the Broad Acre Divestment Businesses and provide for a supply at variable costs. Also, the Final Commitments include an exclusive licence granted by Bayer to BASF for relevant trademarks for the Balance GT system (GM traits and herbicide).

(3239) To conclude, the Commission considers that by requiring Bayer to divest the Broad Acre Divestment Businesses, the Final Commitments will remove the horizontal overlaps in all the broad acre crop seeds and broad acre crop traits markets where the Commission had competition concerns. The divestiture of the Broad Acre Divestment Businesses will also ensure that Monsanto's dominant position in broad acre crop traits markets is not further strengthened. Finally, the divestiture of Bayer's trait research activities will also address the concerns identified by the Commission with regard to innovation competition.

(B) The GA Divestment Business and the Glyphosate Assets

(3240) The Commission considers that the Final Commitments on the GA Divestment Business and Glyphosate Assets will eliminate the horizontal overlaps between the Parties' respective current and forthcoming products with regard to non-selective herbicides where the Commission has identified competition concerns.

(3241) The Commission notes that the GA Divestment Business consists of Bayer's entire global glufosinate ammonium business, without carve-outs. It includes all of the assets and the key personnel necessary to remove the horizontal overlaps and address the competition concerns.

(3242) The Commission further notes that the Glyphosate Assets comprise Bayer's non-agricultural glyphosate-based products in the EEA and the Zarpa-brand family of agricultural glyphosate products in the EEA. The assets that Bayer commits to divest include: (i) Bayer's non-agricultural glyphosate-based herbicide product portfolio, comprising all trademarks, formulations, mixtures and methods, all data and support necessary for registrations, and all relevant local registrations; (ii) Bayer's non-agricultural glyphosate-based herbicide product portfolio; (iii) all pipeline projects and the associated IP relating to Bayer's non-agricultural glyphosate-based products in the EEA, and, for Spain and Portugal, to the Zarpa-brand family of agricultural glyphosate products in the EEA; (iv) all dedicated supplier contracts, customer contracts and distribution agreement; (v) all the Personnel of the Glyphosate Assets, subject to the work council process in France (for French employees only).

(3243) As regards Key Personnel, the Commission notes that the Final Commitments of the GA Divestment Business now include the transfer of 15 instead of the initially envisaged six Key Personnel. The additional Key Personnel now includes the heads of various production sites as well as the heads of agronomic development, formulation technology, human safety and regulatory affairs and the head of marketing crop manager arable. The Final Commitments of the Glyphosate Assets now include six employees instead of no employees. The Key Personnel include the head of development and regulatory as well as four country or regional business managers.

(3244) As regards the supply agreement for indaziflam, the Commission considers that the Final Commitments on the GA Divestment Business now ensure that Bayer will supply BASF with the active ingredient at variable cost in priority over other purchaser and in the quantity demanded by BASF at least for the duration of the AI's patent protection.

(3245) As regards transitional supply or service agreements, the Commission notes that the Final Commitments on the GA Divestment Business and the Glyphosate Assets stipulate that these agreements will also have to be provided at variable cost for the initial period of […] after the BASF Closing and that BASF has the option of

renewing the terms for a further period of […] for a total of up […] of the BASF closing.

(3246) The Commission concludes that the Final Commitments on the GA Divestment Business and the Glyphosate Assets eliminate the horizontal overlaps in glyphosate and glufosinate ammonium where the Commission has identified competition concerns.

(C) The NemaStrike Assets

(3247) The Commission considers that the Final Commitments on the NemaStrike Assets will eliminate the horizontal overlaps between the Parties' respective activities with regards to nematicide seed treatment where the Commission has raised competition concerns.

(3248) The Commission takes into account that the NemaStrike Assets include (i) all intellectual property related to NemaStrike and tioxazafen, (ii) all know-how specific to NemaStrike and NemaStrike application; (iii) all product registrations and pending regulatory submissions related to NemaStrike; (iv) all current commercial formulations and those in development; (v) all data from NemaStrike field trials, including ongoing trials and studies; (vi) all tolling and other relevant third-party agreements relevant to NemaStrike; (vii) all sales and marketing assets, including, inter alia, customer lists, distribution plans, all market research conducted to date regarding NemaStrike, the NemaStrike website URL and NemaStrike social media sites. The Commission further notes that the NemaStrike Assets also include the transfer of key personnel and a commitment by Bayer to provide training and information required by BASF.

(3249) As regards key personnel, the Commission takes note that the Final Commitments on the NemaStrike Assets now include the transfer of 13 Key Personnel including scientists for research in particular for testing and toxicology, a chemistry exposure study manager, regulatory affairs managers, an operations manager on supply chain and demand planning, a key account manager on global agriculture productivity solutions and seed treatment, a commercial market and product manager for seed applied solutions revenues, a global seed treatment process enablement lead, an R&D product development lead on seed treatment and a commercial technology development lead for seed treatment.

(3250) As regards IP, the Commission notes that the Final Commitments on the NemaStrike Assets now encompass all intellectual property related to NemaStrike and tioxazafen (the active ingredient in NemaStrike). Where such IP currently is exclusive to NemaStrike, it will be transferred, or (if a transfer is not possible) exclusively licensed, to BASF. Where such IP currently is used by other parts of the Monsanto business, it will be allocated to the primary user (the NemaStrike business to be transferred to BASF or Monsanto/Bayer) with licences, or covenants not to assert put in place to ensure access by the other party, provided that the field of use available to Monsanto/Bayer will exclude the field of nematicidal seed treatments. It now also includes all know-how specific to NemaStrike and the NemaStrike application and all sales and marketing assets including customer lists, distribution plans, and all market research conducted to date regarding NemaStrike.

(3251) The Commission considers that the removal of the […] supply agreement under which BASF would supply the merged entity with NemaStrike, contemplated in the

First Commitments, addresses its concerns about the negative effects that such an agreement could have on competition.

(3252) As regards transitional supply agreements, the Commission notes that the Final Commitments on the NemaStrike Assets stipulate that these agreements will also have to be provided at variable costs for the initial period of […] after the BASF Closing and that BASF has the option of renewing the terms for a further period of […] for a total of up to […] of the BASF closing. In particular, this also applies to the supply of toll application services of NemaStrike provided to BASF by the Parties. The Parties will also assist BASF in replicating the production, application, and supply chain processes of NemaStrike.

(3253) As regards training support agreements, the Commission further observes that these agreements will also be provided at variable costs.

(3254) The improvements to the First Commitments remove the concerns which the Commission had, based on the market test, regarding the divestiture of the NemaStrike Assets. For the reasons explained in recital (3196), the Commission does not share the concerns voiced by a competitor about the fact that the NemaStrike Assets involve assets from Monsanto while the remainder of the divestitures involve assets from Bayer.

(3255) To conclude, the Commission considers that the Final Commitments on the NemaStrike Assets remove all of the horizontal overlaps in relation to nematicide seed treatment where the Commission has identified competition concerns.

(D) The [NSH lines of research 1, 2 and 3] Data Transfers and Licences

(3256) The Commission considers that the Final Commitments on the [NSH lines of research 1, 2 and 3] Data Transfers and Licences will remove the horizontal overlaps between the Parties' respective innovation efforts for non-selective herbicides and HT Systems, where the Commission has identified competition concerns.

(3257) The Commission notes that the Final Commitments on the [NSH lines of research 1, 2 and 3] Data Transfers and Licences Bayer consist of the elements described below.

(3258) First, the [NSH lines of research 1, 2 and 3] Data Transfers and Licences include the transfer to BASF of all data and know-how gathered by Bayer up to the Effective Date from field trials conducted on the [NSH lines of research 1, 2 and 3] Chemistries (as well as in vitro assays as relating to the usability of such data with Bayer's HT traits for the NOC Data Transfer and Licence only) as relating to all non-selective uses as well as information on the structure, and Samples, of the relevant molecules.

(3259) Second, they grant to BASF a perpetual, exclusive, worldwide licence of all Bayer IP rights and know-how relating to Bayer's [NSH lines of research 1, 2 and 3] Chemistries existing at the Effective Date for all non-commercial and commercial applications in the field of non-selective uses, including:

(a) For the control of unwanted vegetation for example in permanent crops and plantation crops (such as trees, nuts and vines), on roadsides, squares, industrial sites, airports or railway tracks; or

(b) For the burn-down application, for example in farm crops; and

(c) For the application on herbicide tolerant field crops (HT crops) in which the tolerance is conferred by man-made mutation or transgenic modification.

(3260) Explicitly excluded from these licences referred to in recital (3259) is any selective use in any plant which is tolerant by nature.

(3261) The Commission further notes that the Final Commitments on the [NSH lines of research 1, 2 and 3] Data Transfers and Licences will require an exclusive licence or licences for the relevant data and know-how.

(3262) The Commission also notes that the Final Commitments also include Key Personnel for each chemistry, namely (i) [NSH line of research 1], (ii) [NSH line of research 2] and (iii) [NSH line of research 3]. In particular, regarding [NSH line of research 1], the Final Commitments identify two laboratory leaders as Key Personnel to be transferred to BASF; for the [NSH line of research 2] Data Transfer and Licence one laboratory leader is identified as Key Personnel; and for the [NSH line of research 3] Data Transfer and Licence two laboratory leaders are identified as Key Personnel.

(3263) Moreover, the Commission observes that Bayer will also provide to BASF, after BASF's consultation with the abovementioned Key Personnel, the option to offer employment to up to three full time employees in total working across any of the three lines of research ([NSH line of research 2] Chemistries, [NSH line of research 3] Chemistries and Ketoenole Chemistries) to ensure a smooth transition (if required by BASF), subject to the Commission's approval following consultation with the Monitoring Trustee. These additional employees, once identified by BASF and approved by the Commission, are then considered to be Key Personnel for the purposes of the Final Commitments.

(3264) The Commission further notes that the Final Commitments on the [NSH lines of research 1, 2 and 3] Data Transfers and Licences ensure the viability and continued competitiveness of the divested GA Divestment Business and Glyphosate Assets, as well as of the divested HT Systems and HT traits, looking forward in terms of lifecycle management. For the reasons explained in recital (3200), the Commission does not share the view, expressed by a competitor, that only a divestiture of Bayer's entire non-selective herbicide R&D organisation would remove the competition concerns.

(3265) The Commission concludes that the Final Commitments on the [NSH lines of research 1, 2 and 3] Data Transfers and Licences will remove the horizontal overlaps between the Parties' respective innovation efforts for non-selective herbicides and HT Systems, where the Commission has identified concerns. They will ensure that BASF's incentives are not diluted and that Monsanto's dominant position in broad acre crop traits markets will not be further strengthened.

(E) The Digital Agriculture Licence

(3266) The Commission considers that the Final Commitments regarding the Digital Agriculture Licence address the concerns raised by the Commission in relation to digitally-enabled prescriptions of fungicides for broad acre crops in the EEA as well as the issues raised in the market test with regard to the First Commitments (see Section XV.3.2.2.5).

(3267) The Commission takes into account that the Digital Agriculture Licence includes a binding, perpetual, irrevocable, and sole licence to BASF for the use on a worldwide basis of Bayer's Digital Farming global portfolio including pipeline projects which qualify as alpha projects or that are more advanced. In this way, the Commission considers that the Digital Agriculture Licence is likely to enable BASF to replicate the competitive position held by Bayer in the field of digital agriculture, and in

particular in digitally-enabled prescriptions of fungicides for broad acre crops in the EEA, absent the Transaction.

(3268) The Commission considers that the market test supports the conclusion that the grant of a sole licence, as opposed to a full transfer is sufficient to ensure an effective remedy and prevent consumer harm since it will increase competition by allowing BASF to become a strong competitor in the relevant market while, at the same time, it will ensure the continuance of services by Bayer to farmers and other consumers.

(3269) The Commission also notes that the Final Commitments will cover in particular the source code, data and algorithms of the entirety of Bayer's Digital Farming global portfolio, and a copy of all relevant literature, documentation, milestone reports, algorithms, data, architecture and source code pertaining to the pipeline projects that will be transferred. These are key assets required to maintain and continue to develop the digital agriculture products.

(3270) With regard to the geographic scope, the Commission considers that a global Digital Agriculture Licence will ensure the scalability, competitiveness and viability of the divested package moving forward. Scalability is likely to provide BASF with the ability to operate the divested business in a competitive and profitable way. Moreover, BASF is likely to be able to use the knowledge and learning from different parts of the world to make their products more competitive and attractive to farmers in the EEA. Furthermore, the broadening of the geographic scope from EEA-wide to worldwide was supported by the market test (see Section XV.3.2.2.5).

(3271) In addition, BASF will receive up to six Key Personnel from Bayer with seniority and knowledge in key strategic areas necessary to ensure the viability and competitiveness of the Digital Agriculture Licence.

(3272) Moreover, the Commission notes that, to ensure an effective transfer of the Digital Agriculture Licence to BASF, Bayer committed to use its best efforts to assist BASF with securing contracts with third party suppliers in four key areas: (i) data services, (ii) cloud data storage/processing providers, (iii) software licences and IT service providers, and (iv) business service providers; as well as with five suppliers that provide Bayer with more tailored inputs for its digital agriculture products. In addition, Bayer committed to cooperate with BASF in any reasonable arrangement designed to provide BASF the benefits of the third party supplier contracts that Bayer has.

(3273) The Commission also notes that Bayer will provide without undue delay any updates to the master datasets that become available for a period of up to […] and it will provide three-man years of support from professionals trained on the Licensed Materials within the first […] of the commencement of the Digital Agriculture Licence; as well as up to 4 workshops.

(3274) Therefore, the Commission concludes that the Final Commitments address all the issues raised during the market test and are likely to allow BASF to replicate the competitive constraint lost because of the Transaction in the field of digital agriculture, and in particular with regard to digitally-enabled prescriptions of fungicides for broad acre crops in the EEA.

4.2.1.2. The divested businesses will constitute a viable and competitive business taking into account the resources of BASF

(3275) A business that is divested has to be viable as such and the resources of a possible or even presumed future purchaser are not taken into account by the Commission at the stage of assessing the remedy.[2172] However, in this case, the Notifying Party has (1) identified a specific purchaser (BASF), (2) signed several binding (although not yet final) sales agreements with BASF[2173], (3) committed to divest the BASF Divestment Package to BASF, and (4) committed not to implement the Transaction before the Commission has approved BASF as purchaser and the terms of sale. In those circumstances, the Commission can take into account the resources of the specific purchaser (BASF) in assessing the commitments.[2174]

(3276) In the following recitals, the Commission therefore assesses whether the divested businesses would constitute a viable and competitive business in the hands of BASF. However, as explained in recitals (3289) and (3290), the Commission does not make any final assessment of whether BASF is a suitable purchaser and it does not assess whether any agreements between the Notifying Party and BASF (including any ancillary agreements) are consistent with this Decision and the Final Commitments.

(3277) Moreover, the Commission's assessment of whether the divested businesses will constitute a viable and competitive business taking into account the resources of BASF is a *prima facie* assessment, based on the evidence available to the Commission at this point in time. A final assessment will be made when the Commission assesses the suitability of BASF as a purchaser. At that time, the Commission must assess, among others, whether BASF has "all required assets and employees to support the BASF Divestment Package, particularly (but not exclusively) those elements which are not being sold as standalone businesses".[2175]

(3278) The Commission notes that the Broad Acre Divestment Businesses, as described in the Final Commitments, include Bayer's global broad acre crop seeds and traits business, with certain limited carve-outs.

(3279) These carve outs consist of hybrid rice in Asia, hybrid cotton, juncea (mustard), and millet in India and cotton in South Africa Moreover, the R&D programmes directed to sugarcane in Brazil and sugarbeet in Europe are excluded from the Broad Acre Divestment Businesses. For the reasons expressed in recital (3185), the Commission considers that these carve-outs do not affect the viability and the competitiveness of the divestment businesses.

(3280) The divestiture includes all assets and staff that contribute to the current operation of Bayer's broad acre seeds and traits business or are necessary to ensure the viability and competitiveness of the Broad Acre Divestment Business. The Broad Acre Divestment Businesses therefore constitutes a viable and competitive business, even when not taking into account the resources of BASF, and constitutes an effective remedy. In any event, given that BASF has global scale and access to the crop protection markets, the divestment of the Broad Acre Divestment Businesses to

2172 Remedies Notice, paragraph 30.

2173 As explained in recital (3291), the agreements between Bayer and BASF were signed before Bayer submitted the Final Commitments and before several elements were added to the commitments.

2174 Remedies Notice, paragraphs 30 and 56-57.

2175 Final Commitments, paragraph 26(d).

BASF would allow the replication of the competitive constraint previously exerted by the Parties.

(3281) The GA Divestment Business, as described in the Final Commitments, consists of Bayer's entire global glufosinate ammonium business, without carve-outs. The Glyphosate Assets comprise Bayer's non-agricultural glyphosate-based products in the EEA and the Zarpa-brand family of agricultural glyphosate products in the EEA. The [NSH lines of research 1, 2 and 3] Data Transfers and Licences comprise intellectual property, data, Samples, Key Personnel and licences.

(3282) The Commission is of the view that the GA Divestment Business, the Glyphosate Assets and the [NSH lines of research 1, 2 and 3] Data Transfers and Licences, complemented by the assets and personnel of BASF, would constitute viable and competitive businesses. BASF has extensive experience in discovering, developing, producing and selling herbicides and it can therefore integrate these businesses and assets in its existing business organisation. It has extensive capabilities in herbicide research & development and will therefore be able to effectively incorporate and continue the [NSH lines of research 1, 2 and 3]. Moreover, BASF has a global distribution organisation, which will allow it to market the products that are part of the GA Divestment Business and the Glyphosate Assets and any products that may originate from the [NSH lines of research 1, 2 and 3]. In addition, the [NSH lines of research 1, 2 and 3] Data Transfers and Licences ensure the viability and continued competitiveness of the divested GA Divestment Business and Glyphosate Assets, as well as of the divested HT Systems and HT traits, looking forward in terms of lifecycle management.

(3283) BASF's financial strength can also contribute to the effectiveness of the divested assets and businesses.

(3284) The Commission notes that the NemaStrike Assets, as described in the Final Commitments, comprise the assets of Monsanto's global NemaStrike nematicides business. The Commission considers that while they do not constitute a stand-alone business, the IP, know-how, testing data, tolling and other supply agreements, sales and marketing assets and personnel, together with BASF assets and staff would ensure the viability and competitiveness of this remedy package. The Commission considers that BASF has extensive experience in research & development in the field of pest control, including in nematicides. It has a strong seed treatment business already, giving it access to the market, and it is about to launch a nematicidal seed treatment product on the US market. It can therefore integrate the NemaStrike Assets in its existing business, thereby creating a viable and effective business. BASF's financial strength can also contribute to the effectiveness of the divested assets and businesses.

(3285) The Commission notes that the Final Commitments regarding the Digital Agriculture Licence will give BASF a binding, perpetual, irrevocable, and sole licence. The Commission observes that, as indicated in Section XV.4.2.1.1, the Digital Agriculture Licence includes all the relevant assets which contribute to its current operation and that are necessary to ensure its viability and competitiveness such as source code, data and algorithms. Moreover, BASF's digital agriculture personnel will be supplemented with six senior Key Personnel from Bayer acquainted with the Licenced Materials, which will ease the transfer of the licence and ensure that BASF can replicate Bayer's competitive position.

(3286) The Commission considers that BASF's assets and personnel would be able to complement the licence and assets received from Bayer, contributing to the viability, effectiveness and competitiveness of BASF's digital agriculture business post-Transaction. BASF is globally active in crop protection. It has extensive knowledge of crop protection products, both about its own products and about products of its competitors, and how they function. Moreover, BASF is active in the broader digital agriculture domain. This expertise, together with its broad capabilities as an integrated player, will in all likelihood allow BASF to take over the Licenced Materials and effectively adapt them to its own products. In addition, BASF has access to distribution channels for digital agriculture products, including, distributors, cooperatives and farmers. BASF also has already launched a brand for marketing its digital agriculture products, Maglis (see Section XII.4.3.3.4). Moreover, BASF's regulatory expertise is expected to assist it in developing the digital agriculture products and making sure the resulting digitally-enabled prescriptions will be compatible with local regulations. Finally, BASF's financial strength can also contribute to the effectiveness of the Digital Agriculture Licence.

(3287) Overall, based on the discussion in recitals (3275)-(3286) and without prejudice to the final assessment by the Commission of whether BASF meets the purchaser criteria in the Final Commitments, the Commission concludes, on the basis of the available evidence, that the BASF Divestment package would constitute a viable and competitive business, taking into account the resources of BASF.

(3288) The Commission also concludes that the divestiture of the BASF Divestment Package is capable of being implemented effectively in a short period of time. Under the Final Commitments, the Notifying Party would be obliged to close the sale of the divested businesses to BASF within three months from the approval by the Commission of BASF and the terms of sale. Additional time will be required before all contracts, authorisations and product registrations are effectively transferred but, at the time of this Decision, the Commission has not found evidence suggesting that the implementation of the divestiture of the BASF Divestment Package would take longer than comparable transactions of this size in the ordinary course of business. The Commission also takes into account the fact that the Parties have prepared most of the planned divestitures since a relatively long time and the divestitures therefore appear to be well planned and prepared. The Commission also notes that, at the time of the final purchaser assessment, the Notifying Party will need to demonstrate that the sale of the BASF Divestment Package to BASF will not give rise to a risk that the implementation of the commitments will be delayed. At that point in time, the Commission will make a final assessment on whether the implementation of the commitments can occur in a timely manner.

4.2.1.3. The suitability of BASF as a purchaser of the BASF Divestment Package

(3289) In this Section, the Commission assesses, on a preliminary basis, whether BASF could be considered a suitable purchaser of the BASF Divestment Package within the meaning of paragraph 26 of the Final Commitments. In the present Decision, the Commission does not make a final assessment of whether BASF is a suitable purchaser, since several issues regarding BASF's suitability as buyer require further investigation and since, as explained in recital (3291), BASF and the Notifying Party have not signed the final binding sales agreement for the sale of the entire BASF Divestment Package. The final assessment of whether BASF is a suitable purchaser will accordingly be made separately and after adoption of the Decision, as provided

for in paragraph 28 of the Final Commitments, following the submission by Bayer of a fully documented and reasoned proposal.

(3290) The Commission also does not assess whether any agreements between the Notifying Party and BASF (including any ancillary agreements) are consistent with this Decision and the Final Commitments, including their objective to bring about a lasting structural change in the market. This assessment will also be made separately and after adoption of the Decision, as provided for in paragraph 28 of the Final Commitments.

(3291) With respect to the agreements between the Notifying Party and BASF, the Commission notes that the Notifying Party has signed several agreements with BASF. However, those agreements were signed in October 2017, before the Notifying Party submitted the Final Commitments and before various elements were added to the commitments. It follows that the agreements which the Notifying Party has entered into with BASF are not necessarily final. Moreover, the Notifying Party and BASF have not entered into binding agreements for all components of the BASF Divestment Package.

(3292) The Commission considers that BASF appears to be, at the present stage of the proceedings, a suitable purchaser of the BASF Divestment Package. As noted in Section XV.4.2.1.2, the Commission considers that the complementarity between BASF's resources and the divested businesses and assets contributes to the effectiveness of the Final Commitments.

(3293) The positive results of the market test also suggest that BASF may be able to meet the criteria required by the Final Commitments in order to be approved by the Commission as a purchaser of the BASF Divestment Package. The majority of the respondents that expressed a view considered that BASF has the financial resources, the expertise and the incentives to maintain the BASF Divestment Package as a viable and competitive force.

(3294) Moreover, the Commission notes that BASF is, at present, not yet active in seeds and traits development. A central part of the BASF Divestment Package is the Broad Acre Divestment Businesses. The divestiture of those businesses to BASF would turn BASF into a global seeds and traits player. In doing so, the Final Commitments would ensure that the Transaction does not lead to a reduction in the number of global seeds and traits players. Prior to the Transaction, there are six global seeds and traits players (Monsanto, Bayer, DowDuPont, ChemChina-Syngenta, KWS and Limagrain). A divestiture of Bayer's global broad acre crop seeds and traits business to BASF would ensure that this number remains the same after the Transaction.

(3295) Notwithstanding the elements mentioned in recitals (3292)-(3294), the Commission takes note of other elements which require further investigation in order to properly assess whether BASF is a suitable purchaser.

(3296) First, it is possible that BASF will lack the incentives to maintain and develop the BASF Divestment Package as a viable and active competitive force in all the relevant markets.

(3297) In this respect, it is possible that BASF's incentives to compete with LibertyLink and other traits divested by Bayer could be affected by the existing cooperation between on the one hand, BASF and, on the other hand, Bayer and Monsanto, such as the cooperation on Dicamba supply with Monsanto. Indeed, the Commission notes that BASF commercialises Dicamba formulation for use with Dicamba-tolerant crops,

which may affect BASF incentives. BASF claims that its cooperation with Monsanto will not in any way affect its incentives. BASF explains that it has financial and strategic incentives to both develop LibertyLink and Dicamba, notably because Dicamba and Glufosinate are complementary rather than substitute.[2176] The Commission will thus have to assess whether BASF will have the incentives to maintain and develop the BASF Divestment Package as a viable and active competitive force during the next years.

(3298) Second, it is also possible that BASF's purchase of the BASF Divestment Package from Bayer could create new links between BASF and Bayer. These links may affect the independence of BASF or create competition problems. For example, it appears that, as part of the acquisition, BASF would obtain licences to Monsanto's Cotton and Soybean Dicamba-tolerant and IR Traits and to Monsanto's Cotton and Soybean germplasm and breeding technology. These measures would create additional links between, on the one hand, BASF and, on the other hand, Bayer and Monsanto. BASF argued that these licences are mere enablement measures, which would enable the BASF Divestment Package and enhance BASF competitiveness. According to BASF, these licences would not create any form of dependency between BASF and the Parties.[2177]

(3299) Third, it is again possible that the divestment of the BASF Divestment Package to BASF could give rise to competition concerns due to potential overlaps notably (i) in relation to R&D projects in the area of non-selective herbicide (NOC and PPO chemical classes) and (ii) in traits discovery, for example related to BASF's HT trait research activities. BASF argued that these overlaps will not affect competition.[2178]

(3300) In addition, the Commission notes that certain respondents to the market test also expressed concerns on the suitability of BASF as a purchaser of the BASF Divestment Package. As noted above in Section XV.3.2.2.6, some competitors expressed concerns on the links created between BASF and the Parties, through the transitional agreements provided for in the Final Commitments. BASF argued that transitional agreements are necessary to ensure the viability of the BASF Divestment Package. BASF added that they have a limited duration and relate to normal transitional services.[2179]

(3301) In this respect, the Commission however considers that transitional agreements are common in case of divestitures and often necessary for the competitiveness and viability of the divestment business.[2180] Accordingly, the presence of transitional arrangements as such does not imply that the Commission should find that they raise concerns. Moreover, the Commission notes that, in this case, the transitional agreements foreseen in the Final Commitments are aimed, among others, at ensuring that BASF will be able to readily conduct business in the various countries covered by the divestiture, for instance by ensuring that BASF has access to product registrations and other permits and licences. The Commission therefore considers that the relatively large number of transitional agreements is not, in and of itself, a

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2176 Memorandum from BASF in response to Commission queries regarding BASF as a suitable purchaser (the "BASF Memorandum"), ID11601, paragraph 3.4.

2177 BASF Memorandum, ID11601, paragraphs 5.11-5.15.

2178 BASF Memorandum, ID11601, paragraphs 7.1-7.15.

2179 BASF Memorandum, ID11601, paragraph 8.3.

2180 Remedies Notice, paragraph 28.

problem. On the other hand, once a final binding sales agreement has been concluded between Bayer and BASF and submitted to the Commission pursuant to paragraph 28 of the Final Commitments, the Commission will assess whether certain specific transitional agreements may create competition problems or affect the independence of BASF by going beyond what is necessary to ensure the competitiveness and viability of the divestment business. This assessment is part of the standard purchaser assessment process, which includes an assessment of the final binding sales agreement, including any ancillary agreements.

(3302) Finally, a number of interested third parties[2181] have indicated that BASF is one of the main global crop protection players (together with Bayer, Monsanto, DowDuPont, ChemChina-Syngenta and FMC) and is characterised by a number of shareholders that are common to some of these rivals.[2182]

(3303) As indicated in Section VI.4.4, the Commission recognizes the debate related to the possible effects of the presence of common shareholders in an industry. At the same time, the Commission considers that the presence of common shareholders does not, as such, disqualify BASF as a suitable purchaser in the sense of paragraph 48 of the Remedies Notice. First, unlike other indicators of concentration such as the market shares or the Herfindahl-Hirschman Index ("HHI"), the presence of common shareholders should be taken as an element of context in the appreciation of possible significant impediments to effective competition. The Commission accordingly considers that, since common shareholdings are a reality in the biotech and agrochemical industry, this feature should be taken into account as an element of context at the time of the purchaser assessment, but should not as such disqualify BASF *prima facie* as a suitable purchaser for the purposes of this Decision.

(3304) Second, the Commission notes that the debate regarding common shareholdings is relatively recent and not yet entirely settled.

(3305) Third, the Commission notes that the aim of the remedy is to replicate the role of Bayer in the market absent the Transaction. In this respect, the Commission notes that Bayer, absent the Transaction, would also be a player characterised by certain shareholders that are common with some of its competitors.

(3306) Fourth, the Commission notes that in light of the already concentrated level of certain relevant markets, the Final Commitments would ensure that a sufficient number of independent competitors is preserved by the remedy in each of the markets where a significant impediment to effective competition has been identified.

(3307) With regard to the argument that BASF is not a suitable purchaser because it is one of only a few large players in a concentrated industry, the Commission notes the following. First, as explained in recital (3294), the commitments would result in BASF becoming a new global player in seeds and trait development. This would ensure that the number of players in this concentrated sector is not reduced. Second, the possible effects on competition of BASF's purchase must be assessed based on the market power of BASF and the divested businesses in the "relevant product and

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2181 Interested third party's comments on the Statement of Objections, ID10094, page 22; Interested third party's comments on the Statement of Objections, ID10167, page 2; Response of a farmer's association to Questionnaire Market Test, ID11387, question 31.1; Letter from a farmer's association to the Commissioner, ID11741.

2182 See Section VI.4.4 of this Decision; see also, Commission Decision in Case M.7932 – Dow/DuPont (2017), Annex 5, paragraph 18.

geographic markets" and not abstractly at industry level. The fact that BASF is a large player in the agrochemical industry overall or in the pesticides industry, does not mean, in and of itself, that BASF would not be a suitable purchaser. This will depend on the market position of BASF on specific relevant markets and the overlaps between BASF and the divested businesses therein. Industry-wide concentration may provide context for the analysis of the different affected relevant markets and, in this Decision, the Commission has analysed that context and taken it into account (see Section VI.4 of this Decision and, in particular, Section VI.4.2 on the increase in concentration in the seeds, traits and crop protection industry). However, the focus of the competitive analysis is on market power in the relevant markets in the sense of the Commission's Notice on the definition of relevant market for the purposes of Community competition law.[2183] The Commission will have to assess, at the stage of the suitable purchaser assessment, whether the acquisition of the divested businesses and assets by BASF would create competition problems. In any event, the fact that the agrochemical sector or the crop protection industry is concentrated should not, as such, disqualify BASF as a suitable purchaser in the sense of the paragraph 48 of the Remedies Notice.

(3308) The Notifying Party informed the Commission that on 13 October 2017 it had entered into several agreements with BASF. Under those agreements, BASF would purchase certain crop science businesses and assets from Bayer, including Bayer's global glufosinate ammonium business and certain broad acre crop seeds including the global cotton business (excluding India and South Africa), the North American and European OSR business and the soybean business. However, at the date of the Advisory Committee, the Notifying Party had not communicated the final version of the agreements to the Commission.

(3309) For the reasons expressed in recitals (3289) to (3308), it appears, in particular in light of the positive results of the market test, that BASF would be *prima facie* a suitable purchaser of the BASF Divestment Package. However, the issues described above will require further investigation and the Commission has not been able to assess the final version of the agreements as they have not yet been provided by the Notifying Party. It follows that the Commission is not in a position at this stage to conclude whether BASF would be a suitable purchaser of the BASF Divestment Package.

4.2.2. The Vegetable Seeds Divestment Business

4.2.2.1. The Final Commitments remove horizontal overlaps and other competition concerns

(3310) The Commission identified competition concerns in a number of vegetable seeds markets, which resulted from horizontal overlaps between the activities of the Parties. The divestiture of the Vegetable Seeds Divestment Business consists of Bayer's global vegetable seeds business. The divestiture of the Vegetable Seeds Divestment Business therefore removes the horizontal overlaps between the activities of Bayer and Monsanto in relation to vegetable seeds.

(3311) In addition to concerns related to horizontal overlaps between the Parties, one interested third party expressed a concern regarding the combination of Monsanto's activities in relation to a material used for growing vegetables in greenhouses

[2183] Commission's notice on the definition of the Relevant Market for the purposes of Community competition law, OJ C 372, 09.12.1997, p. 5.

("Unterlagen") and the Parties' activities in vegetable seeds.[2184] However, the Commission notes that, under the Final Commitments, Bayer will divest its entire global vegetable business. Moreover, Monsanto's position in the area of vegetable seeds and "Unterlagen" would not change as a result of the Transaction. Accordingly, the Transaction would not result in any further vertical integration in respect of these businesses. The Final Commitments therefore remove any possible merger-specific effects arising from the Transaction.

4.2.2.2. The Vegetable Seeds Divestment Business is a viable and competitive business

(3312) The Vegetable Seeds Divestment Business consists of Bayer's global vegetable seeds business.

(3313) The Vegetable Seeds Divestment Business comprises all BVS fixed and intangible assets including, in particular, all sites and locations held by BVS, all employees, all products across different life cycle, all brands, all IP held by BVS legal entities, all agreements held by BVS and all customer lists and customer records.

(3314) The Purchaser will have access to all necessary assets to be able to immediately compete in various vegetable seeds markets, including those where the Commission has identified competition concerns. In addition, the Purchaser will be able to benefit from the scale of Bayer's current operations given that the Vegetable Seeds Divestment Business consists of the Bayer's entire global vegetable seeds business including also in markets where the Commission did not articulate concerns.

(3315) The addition of Key Personnel and IP in the Final Commitments addresses the concerns raised in the market test on these points. The Notifying Party also commits to provide the Purchaser of the Vegetable Seeds Divestment Business with IT support services and any other services necessary to ensure a smooth transition.

(3316) The Vegetable Seeds Divestment Business does not comprise legal entities, sites, contracts and IP, which are shared with other Bayer businesses and are thus only partly used by the Vegetable Seeds Divestment Business. However, employees and assets that work for or are used in legal entities that will not be divested will be transferred to the legal entity specified by the purchaser. The legal entities that are fully divested account for 90% of the Bayer Vegetable Seeds revenue and employ 89% of all employees.

(3317) The Commission concludes that the Vegetable Seeds Divestment Business comprises a viable and competitive business on its own. The Commission also considers that the divestiture of the Vegetable Seeds Divestment Business is capable of being implemented effectively in a short period of time. Under the Final Commitments, the Notifying Party would be obliged to close the sale of the Vegetable Seeds Divestment Business within three months from the approval by the Commission of the purchaser and the terms of sale. After closing, some further implementation measures may be needed but, for the reasons explained in recital (3288) and subject to the limitations set out in that recital, these do not raise concerns about the capability of the Final Commitments to be effectively implemented within a short period of time.

[2184] Interested third party's comments on the Statement of Objections, ID10094, Section 2.2.5.

4.2.2.3. Suitable purchaser

(3318) Around 79% of the respondents (corresponding to 30 respondents) that indicated a view considered that the Vegetable Seeds Divestment Business would attract the interest of purchasers that could meet the criteria for being considered a suitable Purchaser.[2185] Several respondents to the market test indicated their interest in purchasing the Vegetable Seeds Divestment Business. The Notifying Party also confirmed that it has already received offers from a number of potential purchasers.

(3319) The fact that the Purchaser shall be a new entrant will ensure that the Transaction does not reduce the number of vegetable seed players.

5. CONCLUSION ON THE COMMITMENTS

(3320) As explained in Sections XV.4.2.1.1 and XV.4.2.2.1, the divestitures that are included in the Final Commitments remove the horizontal overlaps between Bayer and Monsanto and/or replicate the lost competitive constraint in all markets where the Commission has identified competition concerns.

(3321) Moreover, the businesses and assets that will be divested either constitute a viable and competitive business on their own (this is the case for the Vegetable Seeds Business, see Section XV.4.2.2.2) or will constitute a viable and competitive business in the hands of BASF (this is the case for the BASF Divestment Package, see Section XV.4.2.1.2).

(3322) For these reasons, the Commission has reached the conclusion that the Final Commitments address in full the competition concerns raised by the Transaction, subject to the approval of BASF as purchaser of the BASF Divestment Package and of the Purchaser of the Vegetable Seeds Divestment Business. Therefore, the Transaction would not significantly impede effective competition in the internal market, subject to full compliance with the Final Commitments.

SECTION XVI: CONDITIONS AND OBLIGATIONS

1. CONDITIONS AND OBLIGATIONS

(3323) Pursuant to the second subparagraph of Article 8(2) of the Merger Regulation, the Commission may attach to its decision conditions and obligations intended to ensure that the undertakings concerned comply with the commitments they have entered into vis-à-vis the Commission with a view to rendering the concentration compatible with the internal market.

(3324) The fulfilment of a measure that gives rise to a structural change of the market is a condition, whereas the implementing steps which are necessary to achieve that result are generally obligations on the parties. Where a condition is not fulfilled, the Commission's decision declaring the concentration compatible with the internal market is no longer applicable. Where the undertakings concerned commit a breach of an obligation, the Commission may revoke the clearance decision in accordance with Article 8(6)(b) of the Merger Regulation. The undertakings concerned may also

[2185] Questionnaire Market Test, question 54.

be subject to fines and periodic penalty payments under Articles 14(2) and 15(1) of the Merger Regulation.

(3325) In accordance with the distinction described in recital (3324) as regards conditions and obligations, this Decision should be made conditional on compliance with Section B (commitment to divest the BASF Divestment Package) and Section C (commitment to divest the Vegetable Seeds Divestment Business) of the Final Commitments submitted by the Notifying Party on 16 February 2018, in accordance with Article 8(2) of the Merger Regulation. All other commitments included in Sections D, E, F, G and H of the Final Commitments should be obligations within the meaning of Article 8(2) of the Merger Regulation. The full text of the commitments is set out in Annex 3 to this Decision,

HAS ADOPTED THIS DECISION:

Article 1

The notified concentration whereby Bayer Aktiengesellschaft acquires control of the whole of Monsanto Company within the meaning of Article 3(1)(b) of Regulation (EC) No 139/2004 is declared compatible with the internal market and the Agreement on the European Economic Area.

Article 2

Article 1 is subject to compliance with the conditions set out in Sections B and C of Annex 3 and the Schedule to that Annex.

Article 3

Bayer Aktiengesellschaft shall comply with the obligations set out in Sections D, E, F, G and H of Annex 3.

Article 4

This Decision is addressed to:

Bayer Aktiengesellschaft
Kaiser-Wilhelm-Allee
51368 Leverkusen
Germany

Done at Brussels, 21.3.2018

For the Commission

(Signed)
Margrethe VESTAGER
Member of the Commission

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CASE M.8084 – Bayer/Monsanto

ANNEX 1 TO THE COMMISSION DECISION

THE COMMISSION'S ECONOMIC ANALYSIS OF PATENT DATA

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1. INTRODUCTION AND OUTLINE

(1) This annex to the Commission's Decision presents the Commission's analysis of the patent data for traits.

(2) The purpose of this analysis is to measure the technological strengths of the firms involved in R&D for traits. Based on the quality of past innovations, this analysis allows to identify the innovation activities and capabilities of the Parties and their competitors, as well as the innovation areas (defined by crops/traits combinations) where the Parties overlap in term of research activities and capabilities.

(3) The Annex is structured as follows:

(a) Section 2 presents a summary of the Commission's analysis;

(b) Section 3 describes the data and presents some methodological considerations;

(c) Section 4 presents the results of different quantitative analyses. As discussed in Section 4.1, the Commission considers the quantitative analysis carried out in Section 4.1.4 as being the most reliable in the context of this case. Section 4.2 presents a sensitivity analysis of the patent analysis presented in Section 4.1.4, when only the patents published after 2011 are considered.[1] In Section 4.3, the Commission presents its assessment of the Parties' submissions on patent data. Section 4.4 concludes.

(d) Appendices A and B present some robustness analyses. Appendices C and D present patent shares based on the Parties' submissions related to patent data.

(4) Throughout this Annex, reference is made to the two submissions made by the Parties on the economic analysis of patent for traits. This includes the following submissions:

(a) "Patent analysis in broad acre seeds and traits", dated 22 November 2017.[2]

(b) "Response to the SO's patent analysis", dated 9 January 2018.[3]

(5) As regards the other two economic submissions of the Parties related to patents for herbicides and for weed management systems, the Commission's assessment is not discussed in this Annex, but included in the main body of the Decision (see Sections XI.1.4.7 and XI.1.5.7 of the Decision).

(6) The main topics raised by the Parties in their economic submissions on patents for traits are:

(a) The Commission's analysis carried out in the Statement of Objections defines innovation spaces based on the crop and technology combinations, which is too broad and not consistent with the Parties' internal documents. This argument is addressed in Section 3.2.1.

(b) The Commission's analysis carried out in the Statement of Objections relies on an incorrect classification of patents by crop and technology. The Statement of Objections relied on classifications of patents provided by the Parties' in response to the Commission's requests for information RFI 19 and RFI 70, which

[1] This methodology allows to control for the effect that older patents have a tendency to receive more citations, by excluding the "oldest" patents from the analysis. This methodology was actually proposed by the Parties in their economic submission "Patent analysis in broad acre seeds and traits", dated 22 November 2017 (ID8696-4).

[2] ID8696-4.

[3] ID9955-83.

have been modified by the Parties in their economic submission of 22 November 2017, and further modified in their economic submission annexed to the response to the Statement of Objections. This argument is addressed in Section 3.2.4.

(c) The Commission's analysis carried out in the Statement of Objections includes both active and inactive patents. The Parties argue that inactive patents should be excluded from the analysis for two reasons: (i) inactive patents have no longer R&D activities associated with them, which suggests that the line of research is no longer actively pursued, and (ii) while the patents owned by the Big5 companies (namely, Bayer, BASF, DowDuPont, Monsanto, and ChemChina-Syngenta) include both active and inactive patents, inactive patents belonging to organisations other than the Big5 companies are excluded. This argument is addressed in Section 3.2.5.

(d) The Commission's analysis carried out in the Statement of Objections focused on patents published after 2007, with a sensitivity analysis for patents published after 2011 to control for the effect of age.[4] The Parties argue that only the patents published after 2011 are relevant for the assessment of the proposed Transaction, since patents published before 2011 result in overlaps in areas where the Parties are no longer actively researching. This argument is addressed in Section 3.4.4.

(7) In the response to the Statement of Objections, the Parties did not comment on several parts of the Commission's economic analysis. This concerns:

(a) Most of the evidence and reasoning on data description and methodological considerations presented in Section 3.

(b) The evidence and reasoning of the Commission presented in Section 4.1, where the Commission explained why it considers the patent analysis carried out in Section 4.1.4 as being the most reliable,

(c) The methodology used to control for the age of patents in Section 4.2.

(d) The evidence presented in Section 4.3, showing that even under the classification of patents per crops and technology used in the Parties' submission of 22 November 2017, and using the Parties' own methodologies to calculate patent shares, the patent shares of the merged entity are significant for the same overlapping areas as in the Commission's analysis.

(8) The Commission has carried out further analysis of patent data based on the Parties' new patent classification used in the response to the Statement of Objections (and also provided in the Parties' response to the Commission's request for information RFI 113). In addition, for each patent, the Commission has also asked to the Parties to indicate if the patent was considered active or inactive. This analysis was included in the second Letter of Facts sent on 31 January 2018.[5]

[4] This means that older patents automatically received more citations than more recent patents. In order to check the sensitivity if its analysis, the Commission also reports patent shares for patents published after 2011. This year-threshold was actually suggested by the Notifying party in its economic submission dated 22 November 2017.

[5] The data and codes used by the Commission were also provided to the Parties as part of the access to file procedure (ID10533).

(9) As discussed in the second Letter of Facts, the Commission disagrees with the re-classification of a specific patent owned by Monsanto.[6] While the Parties initially categorised this patent as related to weed control in Canola[7], in the response to the Statement of Objections the Parties reclassified this patent as related to weed control in Brassica and claiming, consequently, that this innovation of Monsanto would not generate any overlap with Bayer's innovations for weed control in Canola. However, the evidence presented by the Commission in the second Letter of Facts shows that this patent is related to a specific event of Monsanto for weed control in Canola (see Section 3.2.4 for further details). Moreover, the Commission notes that this patent was initially classified for weed control in canola in the economic submission of the Parties made on 22 November 2017.

(10) In the second Letter of Facts, the Commission reports its analysis of patent shares based on the classification of patents provided by the Parties in response to the Commission's request for information RFI 113 (except for this specific of Monsanto related to weed control in Canola). The Commission reported in particular patent shares for the methodology that it considers the most reliable in this case (see Sections 4.1.4 and 4.4). The patent shares based on other methodologies discussed in the Statement of Objections were also made available in the codes, data, and in particular the Excel files provided to the Parties as part of the access-to-file procedure, allowing the Parties to replicate the Commission's analysis of patent data.[8]

(11) In this Annex, the Commission reports patent shares based on three different classifications:

(a) Patent shares based on the patent classification used by the Commission in Statement of Objections. This scenario is called "***SO-analysis***" hereafter;

(b) Patent shares based on the patent classification used by the Parties in the response to the Statement of Objections (and also provided in response to the Commission' request for information RFI 113), with the exception of one patent for Monsanto that the Commission considers relevant for weed control in Canola, and considering all (i.e. active and inactive) patents. This scenario is called "***RSO+all patents***" hereafter;

(c) Patent shares based on the patent classification used by the Parties in the response to the Statement of Objections (and also provided by the Parties in response to the Commission' request for information RFI 113), with the exception of one patent for Monsanto that the Commission considers relevant for weed control in Canola, and considering only active patents (i.e. excluding inactive patents). This scenario is called "***RSO+act. patents***" hereafter.

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6 This patent of Monsanto is referenced under the PatentSight identifier "44462099", corresponding to the patent family "EP2575431.A1".

7 See the Parties' economic submission "Patent analysis in broad acre seeds and traits" made on 22 November 2017 (ID8696-4).

8 The data, codes, and Excel files provided follow the same structure as the ones provided as part of the access to file procedure for the patent analysis carried out in the Statement of Objections (ID10533).

2. SUMMARY OF THE COMMISSION'S ANALYSIS OF PATENT DATA: BAYER AND MONSANTO ARE IMPORTANT INNOVATORS, REPRESENTING A SIGNIFICANT COMBINED PATENT SHARE IN SEVERAL INNOVATION AREAS

(12) The purpose of the patent analysis is to measure the technological strengths of the firms involved in R&D for traits. Based on the quality of past innovations, this analysis allows to identify the innovation activities and capabilities of the Parties and their competitors, as well as the innovation areas (defined by crops/traits combinations) where the Parties overlap in term of research activities and capabilities.

(13) This patent analysis should be considered in combination with the evidence presented in the main body of the Decision, where evidence is presented on what are the Parties' recent key active innovation areas, closeness between the Parties' recent innovation efforts, as well evidence on the alternative R&D efforts available from rivals. Overall, the importance of the Parties as measured by patent shares, evidence on their recent innovation areas, closeness and availability of rival R&D programs are important elements that inform the Commission's decision to raise innovation concerns in the Decision for specific innovation spaces (i.e. for the combination of specific crops and type of traits). In this respect, the Commission notes that an innovation concern has not been raised for all innovation spaces where the merging parties represent a significant combined patent share.

(14) The analysis of patent data is conducted at the level of the crop and technology combination (i.e. cotton-weed control), which is closely related to the innovation spaces as defined in the Decision. The crop/technology combination is also closely related to the research targets defined by the Parties internally (see Section X.1.7 of the Decision), where research targets for traits include for example [pipeline products].[9] This methodology allows: (i) to identify the combinations of crops and technology where the Parties' research activities overlaps, and (ii) more generally to assess the innovative strengths of Bayer and Monsanto at the level of the crop and technology combination.

(15) In this Annex, the Commission presents a number of methodological issues regarding forward-citation analyses and discusses solutions for these issues (Section 3.4, Sections 4.1.1, 4.1.2, 4.1.3, and 4.1.4). As discussed in these Sections, the Commission considers the forward-citation analysis presented in Section 4.1.4 as the most reliable.

(16) First, in several innovation areas, the Commission finds that the merging parties represent a significant combined patent share.[10] Moreover, the innovation spaces where the Parties have a significant patent share are also concentrated post-Transaction (with relatively high post-Transaction HHIs), with a further significant increase in concentration due to the proposed Transaction (relatively high Delta HHIs).[11] The Commission considers that the high level of the patent shares of the merged entity, in a concentrated market structure (high HHI) and with a further significant increase in concentration due to the proposed Transaction (high delta HHI), constitute important initial indicators of potential competition concerns.[12] These innovation spaces are:

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9 Source: BI 00783 [internal document], ID451-876.

10 In this document, “patent share” refers to the share of patents held by a given company in an innovation area, after accounting for the appropriate measure of patent quality (e.g. forward citations).

11 Guidelines on the assessment of horizontal mergers, 2004, paragraph 20.

12 As mentioned in J. Baker and C. Shapiro, "*in the absence of entry and merger efficiencies, a merger that leads to a substantial increase in market concentration will tend to raise price, harm consumers, and reduce economic efficiency*", and "*the clear lesson from oligopoly theory is that market concentration*

canola-quality traits, canola-weed control, cotton-enabling technologies, cotton-insect control, cotton-weed control, fruits/vegetables-crop efficiency, fruit/vegetables-disease control, fruit/vegetables-other traits, not crop specific-insect control, not crop specific-weed control, and soybean-weed control. Further details are available in Section 4, and a summary table is included in Section 4.4 (see Table 16). Last, the Commission notes that the changes in patent classification made by the Parties in the response to the Statement of Objections does not affect the innovation areas listed above, except for Canola-Weed control where the combined patent share is actually higher than in the Commission's analysis carried out in the Statement of Objections.

(17) As discussed in the main body of the Decision (see also paragraph (13)), evidence on closeness in terms of recent innovation efforts as well evidence on the alternatives available are also necessary to raise innovation concerns for specific innovation spaces (i.e. for the combination of specific crops and type of traits). This is why an innovation concern is not raised for all innovation spaces where the merged entity represents a significant combined patent share (in other words, despite being the two main innovators in some particular innovation areas, these innovation areas do not constitute research targets for both Parties since several years, for example [pipeline products]).

(18) In particular, the Decision (Section X.1.7.5) contains evidence on closeness for the innovation efforts made by the Parties for several innovation spaces related to: (i) HT (weed control) for soybean, cotton, and canola, and (ii) IR (insect control) traits for soybean, and cotton, and (iii) cross-crops trait research for HT and IR traits, and (iv) with a lack of alternatives for the related innovation spaces. The Commission notes that the Notifying Party did not contest this evidence in the response to the Statement of Objections.

(19) Second, the Commission considers that the analysis of patent data indicates that the Parties are important innovators for further innovation spaces, where either Bayer or Monsanto have a very significant patent share (close to 40%). These innovation spaces are:

(a) For Bayer: considering the patent classification used in the Statement of Objections, canola-crop efficiency ([40-50]% patent share), cotton-crop efficiency ([40-50]%), cotton-enabling technologies ([90-100]%), cotton-insect control ([70-80]%), cotton-weed control ([40-50]%), rice-crop efficiency ([60-70]%), rice-insect control ([90-100]%), sugarbeet-weed control ([90-100]%);[13] considering the sample of active patents and the patent classification used by the Parties in the response to the Statement of Objections, canola-crop efficiency ([50-60]% patent share), cotton-crop efficiency ([40-50]%), cotton-enabling technologies ([90-100]%), cotton-insect control ([70-80]%), cotton-quality traits ([30-40]%), cotton-weed

matters" (J. Baker and C. Shapiro (2008), "Reinvigorating Merger Enforcement that Has Declined as a result of Conservative Economic Analysis" in The Effect of Conservative Economic Analysis on U.S. Antitrust, page 252).

[13] For patents published after 2011, Bayer has patent shares above 40% in the following innovation spaces: canola-crop efficiency ([70-80]% patent share), canola-quality traits ([40-50]%), cotton-crop efficiency ([40-50]%), cotton-enabling technologies ([80-90]%), cotton-quality traits ([90-100]%), cotton-weed control ([40-50]%), fruits/vegetables-other traits ([40-50]%), rice-insect control ([90-100]%), sugarbeet-weed control ([90-100]%).

control ([40-50]%), rice-insect control ([90-100]%), sugarbeet-weed control ([90-100]%), fruits&vegetables-other trait ([30-40]%);[14]

(b) For Monsanto: considering the patent classification used in the Statement of Objections, corn-breeding ([90-100]% patent share), corn-crop efficiency ([40-50]%), corn-germplasm ([90-100]%), corn-disease control ([70-80]%), corn-other traits ([90-100]%), cross crops-germplasm ([40-50]%), cross crops-weed control ([40-50]%), rice-weed control ([90-100]%), soybean-breeding ([90-100]%), soybean-crop efficiency ([90-100]%), soybean-breeding ([90-100]%), soybean-crop efficiency ([90-100]%); soybean-disease control ([40-50]%), soybean-germplasm ([90-100]%), soybean-other traits ([90-100]%), soybean-insect control ([50-60]%), soybean-quality traits ([60-70]%), soybean-weed control ([60-70]%), fruits&vegetables-crop efficiency ([50-60]%); fruits&vegetables-disease control ([60-70]%), potato-insect control ([90-100]%);[15] considering the sample of active patents and the patent classification used by the Parties in the response to the Statement of Objections, canola-weed control ([90-100]%), corn-crop efficiency ([40-50]%), corn-breeding/germplasm ([90-100]%), corncrop efficiency ([40-50]%), corn-disease control ([60-70]%), corn-insect control ([30-40]%), corn-other traits ([90-100]%), cross crops-weed control ([40-50]%), rice-weed control ([90-100]%), soybean-breeding/germplasm ([90-100]%), soybean-crop efficiency ([90-100]%), soybean-disease control ([60-70]%), soybean-other traits ([90-100]%), soybean-insect control ([70-80]%), soybean-quality traits ([60-70]%), soybean-weed control ([60-70]%), fruits&vegetables-crop efficiency ([50-60]%); fruits&vegetables-desease control ([60-70]%), fruits and vegetables-other traits ([30-40]%), potato-insect control ([90-100]%).[16]

(20) Some of these innovation spaces are not further discussed in this Annex (except in the concluding Section 4.4) because the Parties' patent portfolios do not overlap in term of research activities. Nevertheless, the Commission still considers that the high patent shares of either Bayer or Monsanto show the overall importance of the Parties as innovators in traits.

(21) Last, the Commission notes that a patent analysis is by definition a backward looking exercise and the fact that the parties' patent portfolios do not currently overlap for these crops/technologies does not necessarily mean that the parties' current research

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14 For patents published after 2011, the corresponding patent shares of Bayer are: canola-crop efficiency ([60-70]% patent share), cotton-crop efficiency ([40-50]%), cotton-enabling technologies ([80-90]%), cottonquality traits ([90-100]%), cotton-weed control ([40-50]%), rice-insect control ([90-100]%), sugarbeet-weed control ([90-100]%), fruits&vegetables-other trait ([40-50]%). The Commission also notes that Bayer's patent share in disease control traits for fruits and vegetables is at [5-10]% for the full period, increasing to [10-20]% for patents published after 2011.

15 For patents published after 2011, Monsanto has patent shares above 40% in the following innovation spaces: canola-weed control ([60-70]%), corn-breeding ([90-100]%), corn-germplasm ([90-100]%), cotton-weed control ([40-50]%), fruits/vegetables-crop efficiency ([40-50]%), fruits/vegetables-disease control ([40-50]%), fruits/vegetables-other traits ([40-50]%), potato-insect control ([90-100]%), soybean-crop efficiency ([90-100]%), soybean-weed control ([70-80]%).

16 For patents published after 2011, the corresponding patent shares of Monsanto are: canola-weed control ([80-90]%), corn-crop efficiency ([30-40]%), corn-insect control ([40-50]%), soybean-crop efficiency ([90-100]%), soybean-weed control ([70-80]%), fruits&vegetables-crop efficiency ([40-50]%); fruits&vegetables-desease control ([40-50]%), fruits and vegetables-other traits ([40-50]%), potato-insect control ([90-100]%).

activities do not overlap for these crops/technologies. This could be the case whenever one of the parties is a particularly recent entrant into research related to traits for a specific crop/technology (for example [pipeline products]).

3. DATA DESCRIPTION AND METHODOLOGICAL ISSUES IN FORWARD-CITATION ANALYSES

3.1. Citations-based measures are relevant metrics to assess the quality of innovations

(22) It is well established in the economic literature that citation-based indexes are informative on the technological importance (or quality) of patents.[17] This amounts to count the number of times each patent has been cited by subsequent patents (so called forward-citations) to compute a citation-based index as a measure of innovative output. The relevance of a forward-citation analysis to measure patent quality has been recently recognised in a US court proceeding.[18]

(23) Citation data come directly from published patents. Indeed, when a patent is granted, a public document (the patent specification) is published by the relevant patent office. The publication contains detailed information about the innovation, the inventor, and the technological antecedents of the innovation with citations to previous patents, if these exist, or the general state of the art (also called previous state of knowledge). As discussed in Hall, Jaffe, Tratjenberg (2005),[19] "*these* [patent] *citations serve an important legal function, since they delimit the scope of the property rights awarded by the patent*". As discussed in Ernst and Omland (2011), "*generally, a relevant patent will lead to further R&D (Research & Development), which will in turn be covered by patents. These later patents will cite the prior patent as prior art*".[20]

(24) The granting of a patent means that the innovation embodied in the patent represents a novel and useful contribution over the previous state of knowledge, as represented by

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17 Tratjenberg (1990), "A penny for your quotes: patent citations and the value of innovations", The Rand Journal of Economics. Griliches (1990), "Patent statistics as economic indicators: a survey", Journal of Economic Literature. Jaffe, Tratjenberg, Henderson (1993), "Geographic localization of knowledge spillovers as evidenced by patent citations", The Quarterly Journal of Economics. Aghion, Bloom, Blundell, Griffith, Howitt (2005), "Competition and innovation: an inverted U-relationship", The quarterly Journal of Economics. Hall, Jaffe, Tratjenberg (2005), "Market value and patent citations", RAND Journal of Economics. Cohen (2010), "Fifty years of empirical studies of innovative activity and performance", Handbook of Economics. Ernst and Omland (2011), "The Patent Asset Index – A new approach to benchmark patent portfolios", World Patent Information. Bloom, Schankerman, Van Reenen (2013), "Identifying technology spillovers and product market rivalry", Econometrica.

18 In the Comcast vs Spring court proceeding on patent litigation (Comcast Cable v. Sprint Communications, Civil Action No. 12-859, District Court for the Eastern District of Pennsylvania, November 21, 2016), the Court has rejected the argument of Comcast arguing that a forward citation analysis was not a reliable method to assess the value of patents, mentioning that several cases, publications, and studies have endorsed this method since the 1990s.

19 Hall, Jaffe, Tratjenberg (2005), "Market value and patent citations", RAND Journal of Economics, page 4. See also Jaffe, Tratjenberg, Henderson (1993), "Geographic localization of knowledge spillovers as evidenced by patent citations", The Quarterly Journal of Economics.

20 Ernst and Omland (2011), "The Patent Asset Index – A new approach to benchmark patent portfolios", World Patent Information (page 3). See also Tratjenberg (1990), "A penny for your quotes: patent citations and the value of innovations", The Rand Journal of Economics; Griliches (1990), "Patent statistics as economic indicators: a survey", Journal of Economic Literature; Jaffe, Tratjenberg, Henderson (1993), "Geographic localization of knowledge spillovers as evidenced by patent citations", The Quarterly Journal of Economics.

citations. Therefore, if patent B cites patent A, it implies that patent A represents a piece of previously existing knowledge upon which patent B builds.[21]

(25) The quality of patents in the trait industry is very heterogeneous, with many patents having no or very few citations and only a few patents having a significant number of citations (see Section 3.3). This result is also well established in the economic literature.[22] It is therefore important to consider the relative quality of each patent in any analysis to have a reliable assessment of the technological strength of firms involved in research for traits.

3.2. Data description

(26) In its analysis, the Commission uses patent data provided by Bayer, [patent database knowhow].[23,24,25,26] The Commission notes that this classification of patents is done by Bayer in the normal course of business.

3.2.1. Patent classification per crops and technology

(27) The analysis of patent data is conducted at the level of the crop and technology combination (i.e. cotton-weed control), which is closely related to the innovation spaces as defined in the Statement of Objections. The crop/technology combination is also closely related to the research targets defined by the Parties internally (see Section X.1.7.5. of the Decision), where research targets for traits include for example [pipeline products].[27] This methodology allows: (i) to identify the combinations of crops and technology where the Parties' research activities overlaps, and (ii) more generally to assess the innovative strengths of Bayer and Monsanto at the level of the crop and technology combination.

(28) In the response to the Statement of Objections, the Parties argue that doing the analysis at the crop and technology level is inconsistent with the Parties' internal documents. The Commission understands that the Parties consider that the crop and technology combinations would lead to too broad innovation spaces, with the risk of resulting in "artificial" overlaps while the Parties may be researching for very different traits or very different crops.

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21 Tratjenberg (1990), "A penny for your quotes: patent citations and the value of innovations", The Rand Journal of Economics. Hall, Jaffe, Tratjenberg (2005), "Market value and patent citations", The Rand Journal of Economics.

22 For example: Tratjenberg (1990), "A penny for your quotes: patent citations and the value of innovations", The Rand Journal of Economics.

23 The Commission considers Dow and DuPont being part of the same entity (see Commission's Decision in case M.7932 Dow/DuPont, 27 March 2017).

24 Bayer's dataset on patents was provided on 15 May 2017 in response to the Commission's request for information RFI 14, question 27 (BI 02892, [internal document], ID1163). An updated version was submitted in response to the Commission's request for information RFI 19, question 10 (Annex 19.3, ID1638-37).

25 As regards BASF, the Commission considers that it is not a sufficiently integrated player to compete on the same level as other integrated players in trait innovation, notably because of the lack of germplasm and the absence of its own seed business (see Section X.1.7.3.1.C of the Decision).

26 See for example Bayer's internal documents BI 01773 ([internal document], 22 December 2016, ID451-395), BI 02896 to BI 02910 on [internal document], ID1445-1328 to 1402-1332. [patent database knowhow], see for example Monsanto's internal documents MI 04001 (section [internal document], November 2015, ID1455-13327), MI 000018589.00001 (attached file entitled [internal document], November 2015, ID5442-4959), and MI 000018589.00001 (attached file entitled [internal document], 5 April 2016, ID5442-4960) [patent database knowhow].

27 Source: BI 00783 [internal document], ID451-876.

(29) First, as regards HT traits in broad acres crops (i.e. HT traits in soy, cotton, corn, canola for example), the Parties argue that the internal document cited in paragraph (27) relates to innovation in HT systems, and therefore is irrelevant for innovation in traits. However, the Commission notes that the same internal document mentions in particular research targets for traits (as well as for herbicides), for example [pipeline products]. Therefore, the Commission considers that the internal document cited above in paragraph (27) is consistent with carrying the patent analysis at the level of crops and technology for HT traits in broad acre crops (e.g. cotton-weed control, soy-weed control). Moreover, as discussed in the main body of the Decision (see Section XI.1.5), [pipeline product].

(30) The Parties also argue that HT traits developed for a similar crop but with different modes of actions should be considered as belonging to separate innovation spaces. According to the Parties, the analysis of patent data for HT traits should have been carried out at the sub-technology level (for example, traits for the [pipeline product] class, Dicamba class, Glyphosate class, [pipeline product] class) instead of the technology level (HT trait overall). Given that Bayer has been mainly active in research related to the [pipeline product] class, while the patent data indicates that Monsanto has been mainly active on research related to [pipeline product] (i.e. [pipeline product]), the Parties consider that there is essentially no overlap for research in HT traits.

(31) As discussed in the Statement of Objections, the Commission disagrees with the Parties since the qualitative evidence shows that, while Monsanto has a limited presence for trait research in the [pipeline product] class, it is still closely competing with Bayer's HT traits based on the [pipeline product] class. Relevant evidence can be found in the following internal documents of Bayer and Monsanto (see also Decision, Sections X.1.7.5.3-X.1.7.5.6 and XI.1.5.5.6):

(a) During a presentation made at the [internal document] on November 12, 2013, called [internal document], Bayer mentions the following: [R&D strategy; quote from internal document].[28]

(b) When analysing its competitors, as regards Bayer and its agronomic trait related to the [pipeline product] class, Monsanto mentions the following: [R&D strategy; quote from internal document];[29]

(c) When analysing the different offerings per crop, Monsanto considers that: [R&D strategy].[30] More generally, this document of Monsanto highlights that [R&D strategy].

(32) Based on the above, the Commission considers that in their economic submissions on patents, the Parties define overlaps for research is HT traits on a too-narrow level and their approach is therefore inconsistent with the qualitative evidence. The Commission notes that in the response to the Statement of Objections, the Parties did not comment on the evidence discussed in paragraph (31).

(33) Second, as regards IR traits for broad acre crops, the Parties argue that research targets are defined at the level of the type of insect rather than IR trait overall, for example traits for [pipeline products].

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28 Source: BI 02995, [internal document] ID1562-292, slides 49 and 50.

29 Source: MI 000227784.00001, [internal document], ID6152-10770, slide 26.

30 Source: MI 000274268.00001, [internal document], ID6438-11084, slides 40, 49 and 50.

(34) The Commission first notes that a patent classification per type of insect (e.g. Lepidoptera, Aphids, etc) was not available in the initial patent classification provided by the Parties nor in the revised classification provided in the response to the Statement of Objections.

(35) Moreover, even if the innovation spaces may be narrower than insect control, the Commission nevertheless considers that a high patent share in IR traits is a reliable evidence to assess the technological strength of firms involved in research for IR traits.

(36) Finally, the Commission did assess whether the Parties are close innovation competitors in IR traits (e.g. both parties doing research in IR traits against "Lepidoptera" for similar crops). The Commission notes that the Parties did not comment on the evidence presented in the Statement of Objections supporting closeness between the Parties for innovation in IR traits, for example for [pipeline products], with a limited number of alternatives available. Therefore, doing a patent share analysis at a more narrower level (e.g. [pipeline products]) would have likely led to higher combined patent shares than the one presented below at the more aggregated level of IR traits. Given that the Parties are close innovation competitors for similar type of IR traits (for example [pipeline products] traits), the Commission considers that the patent shares presented at the level of IR traits are conservative and do not result in "artificial" overlaps.

(37) Third, as regards traits for crop efficiency in broad acre crops, the Parties argue that research targets should be defined at a narrower level than crop efficiency overall, e.g. at the level of "crop efficiency / yield traits" or "crop efficiency / abiotic stress tolerance".

(38) While research targets may be narrower than crop efficiency overall, the Commission still considers that a high patent share in crop efficiency traits is a reliable evidence to assess the technological strength of firms involved in research for crop efficiency traits. Moreover, the Commission did not raise innovation concern for research in any crop efficiency traits. As a result, the Parties' comment on the appropriate granularity of the innovation spaces for crop efficiency traits is immaterial for the Commission's conclusion that no innovation concerns are raised by the proposed Transaction in crop efficiency traits.

(39) Fourth, as regards traits for Fruits and Vegetables, the Notifying Party argues that innovation spaces should defined per type of fruits or type of vegetables (e.g. tomatoes, corn salad, cucumber, watermelon, etc) rather than for "Fruits and Vegetables" overall.

(40) While the innovation spaces may be narrower than "Fruits and Vegetables", the Commission considers that a high patent share in traits for "Fruits and Vegetables" is nevertheless a reliable piece of evidence to assess the technological strength of firms involved in research for specific traits and/or specific types of fruits and vegetables, in particular given the importance of economies of scale and scope in the vegetables business of the Parties (see Section VIII.6.1 of the Decision).

(41) Moreover, the Commission notes that the Parties did not comment in the response to the Statement of Objections on the evidence that the merging parties are close competitors for several crops, for example carrot, cucumber, eggplant, garden bean, hot pepper, leek, lettuce, melon, onion, pea, spinach, squash, sweet pepper, tomato,

and watermelon (see Section VIII.7-VIII.21 of the Decision).[31] Therefore, doing a patent share analysis at a narrower level (e.g. for specific types of vegetables) would have likely lead to higher combined patent shares than the one presented below at the more aggregated level of "Fruits and Vegetables". Given that the Parties are close innovation competitors for similar types of fruit and vegetables, the Commission considers that the patent shares presented at the level of "Fruits and Vegetables" are conservative and do not result in "artificial" overlaps. Last, the Parties submitted in the response to the Statement of Objections some patent classification for fruits and vegetables for the Parties (like pepper, tomatoes, watermelon) showing that they overlap for some specific crops.[32] The Commission notes that the Parties did not comment on this evidence in the response to the second Letter of Facts.

3.2.2. Patents for non-Big5 companies

(42) The Commission has further extended the initial patent dataset provided by Bayer in response to the Commission's request for information RFI 19 (Annex 19.3) by including all biotech patents belonging to companies other than the Big5 companies. This corresponds to the Commission's request for information RFI 70.

(a) First, the Commission has identified 10 additional firms as potential innovators in "Broad acre crops" from the market share data constructed by Bayer based on its MAST database[33] and 11 additional firms as potential innovators in "Vegetables seeds" from the ILP platform.[34]

(b) Second, other potential biotech innovators have been extracted from Bayer's "collaboration database".[35] Out of all companies appearing in the Bayer "collaboration database", the Commission selected the innovators with at least one patent marked as biotech in the "Thomson" dataset (see paragraph (49)). This procedure led to the identification of 97 additional biotechnology firms as potential innovators (see Annex 1 to the Commission's request for information RFI 70).

(43) This methodology was discussed during a phone call with the Parties on 20/09/2017, where the Parties mentioned the data-intensive work associated with the Commission's request for information RFI 70. However, given that the Parties were not able to explain the potential difficulties and the time necessary to answer, the Commission maintained the scope of this request for Information.

(44) As a result of the phone call, at the request of the Parties and for the sole purpose of focusing their efforts, the Commission provided to the Parties a list of the biotech patents appearing in the Thomson database having at least one citation (see Annex 2 to the Commission's request for information RFI 70). The Commission notes that it did not at any stage of the procedure reduce the scope of the initial request for information RFI 70.

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31 As discussed in the Decision (Section VIII.1), native traits are developed through breeding activities. In the patent data, traits for fruits and vegetables are essentially native traits (around […]% native traits; around […]% GM traits; and around […]% are not categorised).

32 This analysis was included in the Second Letter of Facts.

33 Source: File [internal document] sent in response to Q10 of RFI 48, ID5107-82.

34 Source: ILP patent register, available at: https://www.ilp-vegetable.org/patents/.

35 Bayer's dataset on collaborations in the biotechnology sector was provided on 2 June 2017 in response to RFI 19, question 34 ([internal document], ID1638-39).

(45) In the response to the Commission's request for information RFI 70, the Parties also confirmed that they have provided the classification for all patents owned by these additional firms along the dimensions discussed in paragraph (27) (see also paragraphs (75) - (76)).

(46) The Commission notes that in the response to the Commission's request for information RFI 70, the Parties (i) generally agreed with the methodology used by the Commission and (ii) added 33 additional biotech innovators.[36]

3.2.3. Citation data collected by the Commission

(47) For each of the patents, the Commission has used the PatentSight web-interface to collect information on additional characteristics:[37]

(a) **Patent Family identifier.** To protect an invention, patent applicants seek protection by several patent offices in different countries. As a result, an invention will generally have more than one patent publication. A patent family includes all patents that describe the same invention. In order to avoid double counting of multiple patents relating to the same invention, the metrics provided by PatentSight (patent counts, measures of patent quality, etc.) are based on patent families;

(b) **Document members.** This variable lists all patent publications belonging to the same patent family;

(c) **Citing patents by owners.** This variable contains the list of patent family identifiers of all citing patent families, and the corresponding owner(s) of each citing patent family. This variable allows to calculate the number of citations received by each patent and its breakdown between internal citations and external citations (see Section 3.4.2).

(d) **Publication date.** This variable lists the publication date of the patent family;

(e) **Current owner.** This variable lists the current owner(s) of the patent family;

(f) **IPC codes.** IPC codes refer to the International Patent Classification codes;[38]

(g) **Title** and **abstract** of each patent family;

(h) **Technology Relevance.** This indicator is based on the number of worldwide citations received from later patents, adjusted for age, patent office practices, and technology fields.

(48) When a patent is owned jointly by a Big5 company and a non Big5 company, the patent is reallocated to the Big5 company. For example, when a patent co-owned by Bayer and CSIRO, this patent is reallocated to Bayer. This is because to the extent that the proposed Transaction will affect the incentives of Bayer to continue its own research (because of an overlap with a line of research of Monsanto), it will also affect the incentives of Bayer to continue its research in collaboration with other companies. Based on the sample principle, the only patent jointly owned by two Big5 firms, namely by Monsanto and ChemChina-Syngenta, is reallocated to Monsanto. This

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36 See the Excel file [internal document] (spreadsheet [internal document]), submitted by the Parties in their response to the Commission request for Information RFI 70, ID6386.

37 https://www.patentsight.com/. See Ernst and Omland (2011), "The Patent Asset Index – A new approach to benchmark patent portfolios", World Patent Information.

38 Source: http://www.wipo.int/classifications/ipc/en/index.html.

consists of one single patent for an Insect Resistant (IR) trait (see further discussion in Section 4.1.4).

(49) In its analysis, the Commission has also relied on the Thomson patent dataset provided by Bayer.[39] This dataset lists 27932 patents, and contains information on the area of the invention. The Derwent Class Code, assigned by Thomson Reuters experts, defines the area of the invention. The areas of invention for each patent is listed below:

(a) Agrochemicals (i.e. crop protection): C01, CO2 and CO3;

(b) Biotech: C06;

(c) Formulation: C07;

(d) Biocontrol: C05.

(50) This Thomson patent dataset is used to identify the innovation areas to which the citing patent families extracted from PatentSight correspond (see Section 4.1.2 for further details).

(51) Overall, the patent dataset analysed by the Commission contains 2401 patent families, essentially covering the period 2007-2016. There are also a few additional patents for 2005 and 2006.

3.2.4. Changes to the patent classification made by the Parties during the investigation

(52) As discussed in paragraph (11), the Commission reports below the patent shares based on: (i) the classification used in the Statement of Objections, and (ii) the patent classification used by the Parties in the response to the Statement of Objections (also provided in response to the Commission's request for information RFI 113). By using this second classification, the Commission takes into account all comments made by the Parties on the alleged incorrectness and incompleteness of the dataset used by the Commission in the Statement of Objections.

(53) The Commission notes that the patent classification has been modified by the Parties during the merger investigation. The patent classification for the Big5 companies was initially submitted in the response to the Commission's request for information RFI 19, and was used in the Commission's patent analysis presented in the Commission's Article 6(1)(c) Decision. The Commission notes that in the response to the 6(1)(c) Decision the Parties did not make any comment on the incorrectness of the patent classification. The Commission then asked the Parties to classify patents per crop and technology for the non-Big5 companies in the request for information RFI 70.

(54) In the Parties' economic submission on patent for traits (dated 22 November 2017), the Commission noticed some changes in classification compared to the response to the Commission's requests for information RFI 19 and RFI 70.[40] When the Commission became aware of these changes, the Commission asked the Parties to report the dates when these classification issues were discovered and when these issues were resolved.[41] The Commission notes that several of these changes were discovered and resolved during the period 23-25 October 2017 (a few other changes were made on 21 November 2017), that is one month before the Parties submitted their submission

[39] Source: Parties' response to the Commission's request for information RFI 14, question 27.

[40] The Parties' response to the Commission request for information RFI 70 was submitted on 29 September 2017.

[41] Commission' request for information RFI 105, dated 27 November 2017.

on patents.[42] However, these changes have been communicated to the Commission only in an Appendix attached to the economic submission of the Parties (dated 22 November 2017).

(55) In the response to the Commission's request for information RFI 105, the Parties mentioned that [impact of revisions; quote from confidential submission]. The Commission notes that this statement made by the Parties seems contradictory with the argument made by the Parties in the response to the Statement of Objections that the Commission's dataset used in the Statement of Objections is incorrect and incomplete to such an extent that it could create a significant bias in the patent shares presented in the Statement of Objections.

(56) The Parties made two additional changes in the patent classification used in the economic analysis submitted in the response to the Statement of Objections. The Commission notes that these two changes affect Monsanto, and the crop classification was changed from canola to Brassica. These two patents are identified with the PatentSight identifiers […].[43]

(57) In particular, the Commission disagrees with the reclassification done by the Parties for the specific patent corresponding to the PatentSight identifier […]. While this patent was classified by the Parties as related to the crop "Canola" with an application to weed control in the response to the Commission's request for information RFI 19 and in the Parties' submission on patents dated 22 November 2017, in the response to the Statement of Objections the Parties re-classified this patent as belonging to the crop "Brassica" instead of "Canola". By not counting this specific patent of Monsanto in "canola-weed control", the Parties remove the research overlap with Bayer in this innovation space.

(58) The Commission disagrees with the Parties' reclassification of this particular patent. Instead, the Commission considers that this patent is relevant for the crop "Canola" for the following reasons:

(a) First, the patent publication mentions that this patent of Monsanto concerns the transgenic event MON 88302 and the crop Brassica Napus, i.e. Canola: "*Transgenic event MON 88302 was created by the insertion of transgenic DNA (provided herein as SEQ ID NO:5) into linkage group N4 of the A genome of a Brassica Napus plant*".[44]

(b) Second, the GM approval database lists the MON event 88302 under the trade name "*TruFlex Roundup Ready Canola*", with Brassica Napus (i.e. Canola) listed as the crop of interest (see Figure 1).[45] The Commission notes that Parties did not comment on this evidence in its response to the second Letter of Facts

(59) In the response to the second Letter of facts, the Parties mention that since this patent corresponds to an invention that can be applied not only to Canola (which is referred as brassica napus) but also to other species of Brassica (like brassica juncea, brassica

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42 See Excel file [internal document] (lines No. 16-33), submitted by the Parties in their response to the Commission's request for Information RFI 105, ID8840. A few other changes (from lines No 8 to No15 in the Excel file submitted) were identified and resolved on 21 November 2017.

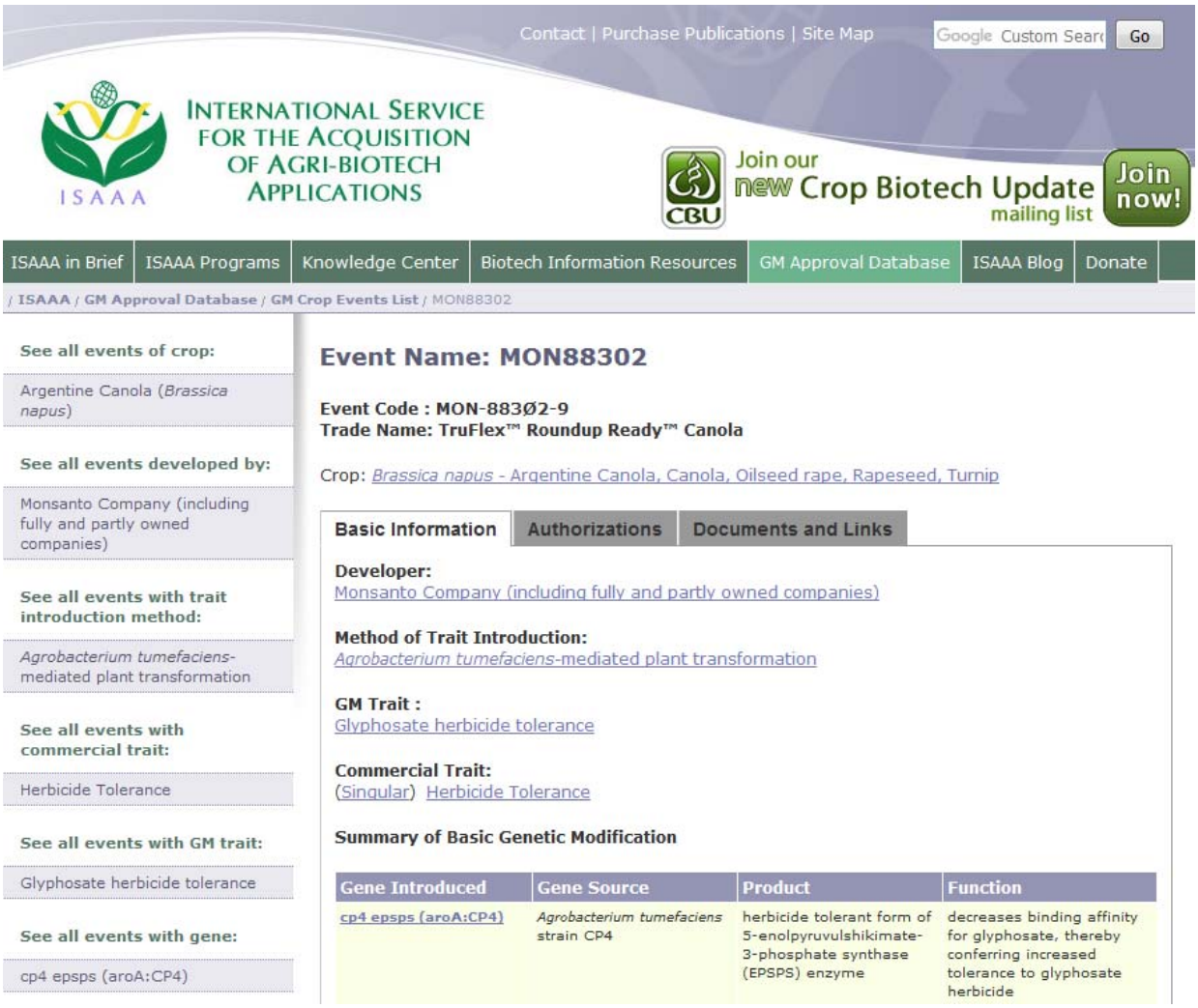
43 […].

44 Source: Original document WO2011153186 (A1) https://worldwide.espacenet.com/publicationDetails/originalDocument?FT=D&date=20111208&DB=&locale=en EP&CC=WO&NR=2011153186A1&KC=A1&ND=6#; page 9.

45 Source: http://www.isaaa.org/gmapprovaldatabase/event/default.asp?EventID=255.

rapa), this patent should be classified under the category "Brassica" and not "Canola". However, the Commission considers that this argument does not justify re-classifying this specific patent only in "Brassica", since this patent is also relevant for "Canola" (as shown in paragraph (58) and as recognised by the Parties in the response to the second Letter of Facts). Moreover, in the patent analysis carried out by the Commission in the second Letter of facts, this patent is classified both in the categories "Canola" and "Brassica", and therefore the potential use of this patent across these two crops is already taken into account.

Figure 1 – MON event 88302 in the GM approval database of the International Service for the Acquisition of Agri-Biotech Applications[46]



(60) In order to take into account the Parties' comments that the Commission used in the Statement of Objections an incomplete and incorrect dataset for patent classification, the Commission reports also patent shares based on the patent classification used by the Parties in the response to the Statement of Objections (and also provided in the Parties' response to the Commission's request for information RFI 113). This

46 http://www.isaaa.org/gmapprovaldatabase/event/default.asp?EventID=255.

corresponds to the scenarios "*RSO+all patents*" and " *RSO+active patents*".[47] The only exception is one specific patent of Monsanto (with the PatentSight ID […]), which the Parties does not consider as being relevant for canola in its re-classification done in the response to the Statement of Objections, while the Commission found specific evidence showing that this patent is related to an event for weed control in canola (see paragraphs (58)-(59)).

(61) In response to the Commission's request for information RFI 113, the Parties also propose to drop two patents with the PatentSight IDs […] and […]. The Commission has dropped these two patents from its analysis carried out in the second Letter of Facts. In addition, the Parties propose to add three patents with the PatentSight IDs […], […], and […]. However, the Commission notes that these three patents receive zero citations, therefore they are not impacting the calculation of patent shares based on citations.[48] The Commission notes that Parties did not comment on this evidence in the response to the second Letter of Facts.

3.2.5. Active vs all patents (i.e. including active and inactive patents)

(62) In their economic submissions, the Parties argue that only active patents are relevant for the assessment, and that inactive patents should be excluded from the analysis for two reasons: (i) inactive patents have no longer R&D activities associated with them, which suggests that the line of research is no longer actively pursued, and (ii) while for the Big5 companies (namely, Bayer, BASF, DowDuPont, Monsanto, and ChemChina-Syngenta) the Commission has included both active and inactive patents, for organisations other than the Big5 companies the Commission has not requested the Parties to classify inactive patents in the request for information RFI 70 (and as a consequence, the Commission has only included active patents for organisations other than the Big5 companies).

(63) In this respect, the Commission considers the following.

(64) First, contrary to the claim of the Parties, the scope of the Commission's request for information RFI 70 was never restricted to only the active patents of the non-Big5 companies. Neither the Commission's request for information RFI 70 nor the subsequent written exchanges with the Parties mention that the request for information is limited to active patents only.[49]

(65) The Commission discussed with the Parties the scope of the request of information RFI 70 in a phone call on 22/09/2017. During the phone call, the Parties mentioned the data-intensive work associated with the Commission's request for information RFI 70. However, given that the Parties were not able to explain the potential difficulties and the time necessary to answer, the Commission maintained the scope of this request for information. As a result of the phone call, at the request of the Parties and for the sole

[47] Other changes on the patent classification made by the Parties, like dropping some patents because they were not related to seeds and traits, changing the owner of one patent assigned initially to Bayer, are also taken into account in the patent classification provided by the Parties in response to the Commission's request for information 113.

[48] See excel file [internal document] provided to the Parties as part of the access to file procedure for the second Letter of Facts. In other words, not including these patents formally in the Commission's analysis does not create any bias for the results.

[49] ID5927.

purpose of focussing their efforts, the Commission provided to the Parties a list of biotech patents appearing in the Thomson database having at least one citation.[50]

(66) The Commission considers that the scope of the request for information RFI70 covered both active and inactive patents of the non-Big5 companies. In particular, among the 5304 patent families listed in Annex 2 of Commission's request for information RFI 70, […] patents are inactive according to PatentSight, […] of which are owned by a non-Big5 company. Moreover, the Commission notes that among the […] patents included in its analysis, […] patents are inactive, […] of which are owned by the Big5 companies and […] owned by the non-Big5 companies. To the extent that the Parties did not provide a classification for some inactive patents of the non-Big5 companies, the Commission considers that it cannot be held accountable for this data limitation.

(67) In addition, if it was the Parties' understanding that the Commission did not ask for the classification of inactive patents for the non-Big5 companies in the request for information RFI 70 (something that is contested by the Commission in paragraphs (64)-(66) above), the Parties had the opportunity to raise this issue in their response, since the Commission asked explicitly the Parties to comment on the Commission's methodology.[51] However, in their response, the Parties' agreed with the Commission's methodology.

(68) Second, while the Commission notes that there is a degree of uncertainty on whether all inactive patents are included for the non-Big5 companies, this issue does not apply for the Big5 companies. Therefore, the Commission considers that there is no reason why including inactive patents would lead to overestimate the patent share of Bayer compared to other Big5 companies.

(69) Third, as regards inactive patents, the Commission considers that if an inactive patent corresponds to an innovation space where a company has still research activities, then the quality of this inactive patent can still be informative on the innovation strength of that company for that specific innovation space.

(70) Fourth, the Commission also notes that in their economic submissions, the Parties consider […] patents of Bayer as inactive, while these patents are formally active in the data extracted from PatentSight by both the Commission and the Parties.[52] According to Bayer, the data extracted from PatentSight are not correct for these […] patents. The Commission notes that while this specific issue can also apply to other firms, a similar data treatment was not possible based on the information provided by PatentSight. Therefore, the Parties' approach for these […] patents creates a difference in the treatment of active patents between Bayer and the other companies, which can only result in underestimating the patent shares of Bayer when active patents are considered.

(71) Last, the Commission notes that excluding inactive patents may be justified if they are related to some specific innovation spaces where a company has reduced its traits patent portfolio due to a restructuring plan of its research activities. While its inactive patents could be good quality patents, these patents would be less relevant for the assessment of the current innovation strength of that company in those specific innovation spaces. However, the Commission is not aware of any restructuring plans

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50 See Excel file RFI 70 Annex2 attached to an email sent by the Commission to the Parties on 22/09/2017 (ID5927).

51 See the Commission's request for information RFI 70, question 1.

52 See the Parties' response to the Commission's request for information RFI 113, question 2.

of Bayer's or Monsanto's research activities that would have led to decision to let certain patent families lapse. Moreover, patent shares when inactive patents are excluded are also reported.

(72) In its analysis, the Commission will report below patent shares when all patents are included (i.e. active and inactive patents) and patent shares when inactive patents are excluded (i.e. including only active patents). The Commission notes that patent shares when all patents are included (i.e. active and inactive patents) are generally similar to patent shares when inactive patents are excluded (i.e. including only active patents). The only difference is for canola-weed control, where the patent share of Bayer is decreasing when inactive patents are excluded. However, given that the patent share of Monsanto is increasing, the combined patent share of the merged entity is actually even higher than when inactive patents are included.

3.2.6. Descriptive statistics

(73) Table 1 lists the patent owners. Under the patent classification used in the Statement of Objections, the Big5 companies own […] patents (close to […]% of the total). BASF own […] patents, Bayer (BAY) […] patents, ChemChina-Syngenta (CCSYN) […] patents, DowDuPont (DDP) […] patents and Monsanto (MNS) […] patents. Other companies include for example Limagrain, Beja Zaden, CSIRO, Enza Zaden, Evogene, MS Tech. The category "Other" includes smaller companies and universities or public research institutes.

(74) Under the patent classification used by the Parties in the response to the Statement of Objections and when all patents are considered (i.e. active and inactive patents), the Big5 companies own a similar number of patents ([…] patents). When considering only active patents, the Big5 companies own […] patents, which still represent still close to […]% of the total number of patents. The main change concerns BASF, where its number of patents is decreasing from […] patents to […] active patents. In the patent shares reported below, this effect related to the decrease of the number of patents for BASF is taken into account under the scenario "*RSO+active patents*".

Table 1 – List of owners included in the patent analysis

Owner[53]	Number of patents (SO-analysis)	Number of patents (RSO-all patents)	Number of patents (RSO-active patents)
BASF	[…]	[…]	[…]
Bayer (BAY)	[…]	[…]	[…]
ChemChina-Syngenta (CCSYN)	[…]	[…]	[…]
DowDuPont (DDP)	[…]	[…]	[…]
Monsanto (MNS)	[…]	[…]	[…]
Bejo Zaden	[…]	[…]	[…]
CSIRO	[…]	[…]	[…]
Enza Zaden	[…]	[…]	[…]
EvoGene	[…]	[…]	[…]
Limagrain	[…]	[…]	[…]
MS Tech	[…]	[…]	[…]
Other	[…]	[…]	[…]
Total	[…]	[…]	[…]

(75) Table 2 lists all the functionalities included in the patent dataset. For example, when one considers all patents with the classification used in the Statement of Objections,

[53] Jointly owned patents are also allocated to CSIRO, Enza Zaden, Evogene, MSTech.

crop efficiency contains […] patents, disease control […] patents, enabling technologies […] patents, other traits […] patents, insect control […] patents, quality traits […] patents and weed control […] patents. When one considers active patents with the classification used by the Parties in response to the Statement of Objections, crop efficiency contains […] patents, disease control […] patents, enabling technologies […] patents, other traits […] patents, insect control […] patents, quality traits […] patents and weed control […] patents.

Table 2 – List of traits included in the patent analysis[54]

Functionality	Number of patents (SO-analysis)	Number of patents (RSO-all patents)	Number of patents (RSO-active patents)
Breeding/Germplasm[55]	[…]	[…]	[…]
Crop Efficiency	[…]	[…]	[…]
Disease Control	[…]	[…]	[…]
Enabling Technology	[…]	[…]	[…]
Other Traits[56]	[…]	[…]	[…]
Insect Control	[…]	[…]	[…]
Quality Traits	[…]	[…]	[…]
Weed Control	[…]	[…]	[…]
Total	[…]	[…]	[…]

(76) Table 3 lists all the crops included in the patent dataset. For example, when one considers all patents with the classification used in the Statement of Objections, soybean includes […] patents, fruit and vegetables […] patents, corn […] patents, wheat […] patents, cereals […] patents, cotton […] patents and canola […] patents. The Commission also notes the importance of the category called "Not crop specific", representing […] patents ([…]%). According to Bayer, "Not crop specific" refers to those inventions that could be applied to a multitude of crops or plant species (e.g. an invention disclosing a new herbicide tolerance gene and its use, could be applied to most if not all agricultural important plant species).[57] In other words, these inventions are "cross-crops". The Commission also notes that across the cross-crops inventions, the main categories are: crop efficiency ([…] patents), enabling technologies ([…] patents), insect control ([…] patents), quality traits ([…] patents), other traits ([…] patents), weed control ([…] patents), disease control ([…] patents) and breeding ([…] patents).[58]

(77) When one considers active patents with the classification used by the Parties in response to the Statement of Objections, the main change concerns the crops canola and Brassica. This is related to the changes in patent classification made by the Parties in response to the Statement of Objections (see Section 3.2.4). While the Commission considers Brassica and Canola to be part of the same crop in the Statement of Objections, the Parties disagree with the Commission's approach and instead argue that

54 The sum of all traits is higher than the total number of patents families because some patents are classified with several technologies areas (for example enabling technologies/weed control).

55 The Commission adopts the same convention as the Parties in the response to the Statement of Objections, who consider the combined technology "Breeding/Germplasm".

56 In the response to the Commission's request for information RFI 70, question 5, Bayer mentions that [know how of patent database; quote from confidential submission].

57 Source: Parties' response to the Commission's request for information RFI 19, question 8.c.

58 Some of the patents are counted twice since these patents are classified with several technologies areas (for example enabling technologies/weed control).

Brassica and Canola are two different crops (see Section 3.2.1). The Commission notes that the cross-crops inventions still represents the first category, with […] active patents ([…]%). Across these cross-crop inventions, the main categories are: crop efficiency ([…] patents), enabling technologies ([…] patents), insect control ([…] patents), quality traits ([…] patents), other traits ([…] patents), weed control ([…] patents), disease control ([…] patents), and breeding ([…] patents).[59]

Table 3 – List of crops included in the patent analysis

Crops	Number of patents (SO analysis)	Number of patents (RFI 113- all patents)	Number of patents (RFI 113- active patents)
Alfalfa	[…]	[…]	[…]
Brassica	[…]	[…]	[…]
Canola	[…]	[…]	[…]
Cereals	[…]	[…]	[…]
Corn	[…]	[…]	[…]
Cotton	[…]	[…]	[…]
Fruit and Vegetables	[…]	[…]	[…]
Not crop specific	[…]	[…]	[…]
Others	[…]	[…]	[…]
Potato	[…]	[…]	[…]
Rice	[…]	[…]	[…]
Soybean	[…]	[…]	[…]
Sugarbeet	[…]	[…]	[…]
Sugarcane	[…]	[…]	[…]
Wheat	[…]	[…]	[…]
Total	[…]	[…]	[…]

(78) The Commission has carried out its analysis at the level of crops and technology combinations (e.g. cotton-weed control). This is consistent with the research targets defined by the Parties internally (see Section 3.2.1 and X.1.7.5 of the Decision).

3.3. Patents are very heterogeneous in quality

(79) An analysis of citations and technology relevance shows that patent quality is very heterogeneous, with most of the patent families never or rarely cited and therefore having little quality, and a few patents being cited very often and thus having very high quality. In other words, patents differ greatly in their technical and economic significance, with many patents reflecting minor improvements of little economic value while a few patents prove to be very valuable.[60] This significant heterogeneity in patent quality is also well-established in the economic literature.[61]

(80) As regards total citations, Figure 2 and Table 4 show that 22% of the patents have zero citations, 71% of the patents have fewer than 5 citations, and 90% of the patents have fewer than 15 citations. As regard the Technology Relevance, Figure 2 and Table 4 also show an important heterogeneity with most of the patents of little quality: 50% of

[59] Some of the patents are counted twice since these patents are classified with several technologies areas (for example enabling technologies/weed control).

[60] Griliches (1990), "Patent statistics as economic indicators: a survey", Journal of Economic Literature.

[61] See for example: Tratjenberg (1990), "A penny for your quotes: patent citations and the value of innovations", The Rand Journal of Economics; Griliches (1990), "Patent statistics as economic indicators: a Survey", Journal of Economic Literature. Gilbert (2006), "Looking for Mr. Schumpeter: where are we in the competition-innovation debate?", The University of Chicago Press Journals, page 191: "*Patent values are highly skewed, with most providing little or no commercial benefit*".

patent have a Technology Relevance lower than 1, 77% of patents have a Technology Relevance lower than 2.

(81) The significant heterogeneity in patent quality, with a few patents accounting for most of the citations, implies that a simple patent counts does not give an accurate assessment of the technological strength of the different firms involved in R&D for traits. Citation-based index are therefore more appropriate to assess the technological strengths of the different firms. This is a well-established result in the economic literature.[62]

Figure 2 – Distribution of the number of total citations and Technology Relevance (all patents)[63]

[…]

[62] See Section 3.1.

[63] The Commission notes that the Parties did not comment on this evidence in the response to the statement of Objections. Similar findings apply when active patents are considered (i.e. excluding inactive patents).

Table 4 – Distribution of the number of total citations and Technology Relevance[64]

Distribution of the total number of citations				Distribution of the Technology Relevance metric			
Number of total citations	Number of patent families	Percentage of patent families	Cumulative percentage	Number of total citations	Number of patent families	Percentage of patent families	Cumulative percentage
0	[…]	22%	22%	0-0,5	[…]	29%	29%
1-5	[…]	48%	71%	0.5-1	[…]	21%	50%
6-10	[…]	13%	84%	1-1,5	[…]	18%	68%
11-15	[…]	6%	89%	1.5-2	[…]	10%	77%
16-20	[…]	3%	93%	2-2,5	[…]	5%	82%
21-25	[…]	2%	95%	2.5-3	[…]	3%	86%
26-30	[…]	1%	96%	3-3,5	[…]	2%	88%
31-35	[…]	1%	97%	3.5-4	[…]	2%	90%
36-40	[…]	0%	97%	4-4,5	[…]	1%	91%
41-45	[…]	0%	98%	4.5-5	[…]	1%	92%
46-50	[…]	0%	98%	5-5,5	[…]	1%	93%
51-55	[…]	0%	98%	5.5-6	[…]	1%	94%
56-60	[…]	0%	98%	6-6,5	[…]	0%	94%
61-65	[…]	0%	98%	6.5-7	[…]	1%	95%
66-70	[…]	0%	98%	7-35	[…]	5%	100%
71-75	[…]	0%	99%	Total	[…]	100%	
76-80	[…]	0%	99%				
81-85	[…]	0%	99%				
86-90	[…]	0%	99%				
91-95	[…]	0%	99%				
96-100	[…]	0%	99%				
101-105	[…]	0%	99%				
106-110	[…]	0%	99%				
111-115	[…]	0%	100%				
116-120	[…]	0%	100%				
121-125	[…]	0%	100%				
126-130	[…]	0%	100%				
131-135	[…]	0%	100%				
160	[…]	0%	100%				
165	[…]	0%	100%				
180	[…]	0%	100%				
255	[…]	0%	100%				
305	[…]	0%	100%				
390	[…]	0%	100%				
Total	[…]	100%					

[64] The Commission notes that the Parties did not comment on this evidence in the response to the statement of Objections. Similar findings apply when active patents are considered (i.e. excluding inactive patents).

3.4. Methodological issues

3.4.1. Sector of origin of the citations

(82) In its analysis, the Commission has taken into account the origin of the citations received by the patents. This is because citations for a given patent may come from a range of sectors, including related sectors like biotech or agrochemicals, but also from other sectors, which may be less relevant to assess the relevance of an invention for the biotech sector.

(83) In order to account for this, the citations from Patentsight were matched to the Thomson dataset provided by Bayer, which allows identifying citations related to the biotech and agrochemical sectors (see Sections 4.1.2 and 4.1.3).

(84) In addition, using the IPC codes available from PatentSight, the Commission has further identified as biotech-related a number of additional citing patents that were not identified as biotech-related based on the Thomson dataset (see Section 4.1.4).

(85) The Commission notes that the Parties did not comment on this methodological issue in the response to the Statement of Objections.

3.4.2. The role of internal citations

(86) Citations received by a given patent from subsequent patents can be classified according to whether they are:

(a) Internal citations (also called self-citations): when the citing patent is owned by the same firm as the one owning the cited patent;

(b) External citations: when the citing patent is owned by a firm that is different from the one owning the cited patent.

(87) While the economic literature (see Hall, Jaffe, Tratjenberg, 2005) mentions that internal citations are valuable, in particular because firms citing their own patents may be a reflection of the cumulative nature of innovation (within a certain field or technology trajectory), the same economic literature also mentions a potential difficulty in interpreting internal citations due to a mechanical effect since internal citations tend to increase mechanically with the size of the patent portfolio. In particular, the more patents a firm has, the higher is the probability that a citation from a new patent will be given to a patent that it already owns. Similarly, the more patents a firm has, the higher is the probability that a citation will come from its own portfolio. Therefore, firms with a larger portfolio size can have mechanically a larger number of internal citations, regardless of whether internal citations are indicative of the value of a patent. Moreover, a firm's tendency to self-cite ("self-bias") can increase with the size of its patent portfolio. Last, while Hall, Jaffe, Tratjenberg (2005) show that internal citations have an important impact of firm's value, they also show that the relevance of internal citations for explaining the value of a company declines with the size of the company's patent portfolio.

(88) As regards this specific case, the Commission has analysed the portfolio sizes of the companies for the citing patents. When a company exhibits a high share of internal citations and owns a relatively high number of (citing) patents, it cannot be excluded that this high share of internal citation may be driven by the "mechanical" effect described above. However, if a firm has a high share of internal citations but does not own a particularly large portfolio of (citing) patents, then this high number of internal citations would rather suggest that a firm has innovated cumulatively for several years in a certain innovation trajectory.

(89) In its analysis, the Commission founds that Bayer has both an important number of internal citations coming from its agrochemical patent portfolio and the largest patent portfolio in agrochemicals (see Section 4.1.2, where Bayer owns close to [60-70]% of the agrochemical patents, the next one being DowDuPont at [10-20]%). In order to remove any potential mechanical effect that may lead to an overestimation of the share of Bayer, the Commission has calculated patent shares when the citations coming exclusively from the agrochemicals category (i.e. not biotech-related) are excluded (see Sections 4.1.3 and 4.1.4).

(90) The Commission notes that the Parties did not comment on this methodological issue in the response to the Statement of Objections.

(91) In their economic submissions, the Parties mention instead a technical issue related to internal citations for DowDuPont. The Parties argue that historic citations between Dow and DuPont should not be counted as internal citations, but rather as external citations. The Parties mention that one should consider the current owner of the citing patent at the time of citation (as opposed to the current owner provided by PatentSight). While the Parties do not explain what type of bias this issue would generate for the patent shares of the Parties, the Commission understands that the Parties' claim is that the Commission's approach would lead to an underestimation of the patent shares for DowDuPont when based on external citations.

(92) The Commission considers that this technical issue related to internal citations for DowDuPont is unlikely to create any significant bias in the results from its analysis. As discussed in Section 4, the Commission considers that patent shares based on total citations (and not external citations only) from patents that are related to the biotech sector are the most reliable. Therefore, for the results of the Commission's preferred scenario (see Section 4.1.4), the Commission considers that it does not matter whether citations between Dow and DuPont are treated as internal or external.

3.4.3. Non-linear weights applied to citations

(93) The Commission considers that there is support in the economic literature to apply non-linear weights to patent citations in order to measure the quality of patents. Compared to citation counts only, applying non-linear weights to citation counts gives more weights to highly cited patents and less weights to patents receiving a low number of citations.

(94) Tratjenberg (1990) finds that the value of an innovation for customers is more skewed than what could be inferred from a count of citations, and that a non-linear weight should be applied to citations to better measure the value of an innovation. Tratjenberg (1990) proposes two non-linear weights: (i) a 1.1 non-linear weight to measure the value for all customers that benefit from the innovation (this a considered as a proxy for the size of the market affected by an innovation), and (ii) a 1.3 non-linear weight to measure the value of an innovation for a representative customer. As discussed in Tratjenberg (1990), the fact the non-linearity is stronger for a representative customer means that citations are more informative of the value of the innovation per se, rather than of the size of the market for the products embedding those innovations.[65]

[65] Tratjenberg (1990), "A penny for your quotes: patent citations and the value of innovations", The Rand Journal of Economics, pages 182-183.

(95) This finding of Tratjenberg (1990) is also consistent with another paper from Scherer, Harhoff, and Vopel (1997). In this paper, the authors estimate the value of inventions by using estimates obtained directly from patent holders through a survey. The authors find the distribution of patented innovation values to be highly skewed, and find that for the top quality patents their estimated value from surveyed customers is significantly larger than other estimates from the literature using metric based on patent data. This finding is similar to Tratjenberg (1990), suggesting that metrics based on patent data (like citations counts) do not fully account for the value of innovations, in particular for the highest quality patents.

(96) Moreover, adjusting citation counts for the full sample of patents using non-linear weights is also similar to considering citation counts only for a sample of patents above a certain quality threshold. In particular, the Commission considers that there is support in the economic literature to consider only the patents above the median in term of quality. Hall, Jaffe, Tratjenberg (2005) show that for firms with fewer than the median number of citations per patents, it makes no difference how far below the median they fall (which includes as well patents with zero citations), while firms with more than the median number of citations per patent exhibit a very significant increase in market value.[66] These findings suggest that patents whose quality is below the median quality do not bring a significant value to firms.

(97) Another paper from Coad and Rao (2008) studies the relation between firm's growth and innovativeness.[67] The innovativeness is a composite index, including notably patents and R&D expense of the firms considered. Firm's growth rates at a given year are calculated by taking differences of logs of total sales across two consecutive years. Coad and Rao (2008) find that innovativeness appears to have a small influence on firm growth for the median firm. Actually, for most of the sectors considered, there is no impact of innovativeness on firm's growth for the median firm. For firms below the median, there is clearly no impact of innovativeness on firm's growth, and sometimes the impact is even negative (even though most of the coefficients are not significantly different from zero). On the contrary, the impact of innovativeness on growth is significantly higher for the 90th percentile, compared to the median firm.[68] Overall, this paper suggests that innovations appear to have a small influence on firm growth below the median.

(98) The last two papers discussed above therefore suggest that innovations are unlikely to have an impact on firm's value/firm's growth when innovations are below the median quality.

(99) On the basis of the above, the Commission will report patent shares by considering the full sample of patents and by applying a 1.1 non-linear weight to citation counts, as suggested by Tratjenberg (1990). Moreover, using a 1.1 non-linear weight allows to use the full sample of patents, while using citation counts for the top 50% patents leads to a decrease in sample sizes. Appendix B reports patent shares with the top 50% of patents (i.e. the patents above the median quality) and using citation counts without non-linear weights. The Commission finds that these patent shares are similar to the

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66 Hall, Jaffe, Tratjenberg (2005), "Market value and patent citations", RAND Journal of Economics, pages 29-30.

67 Coad and Rao (2008), "Innovation and firm growth in high-tech sectors: A quantile regression approach", Research Policy.

68 Coad and Rao (2008), "Innovation and firm growth in high-tech sectors: A quantile regression approach", Research Policy, pages 642-645.

ones where a 1.1 non-linear weight is applied to citation counts. This finding is consistent with the economic literature discussed above.

(100) Appendix B also reports the results of a similar analysis using the top 25% patents (i.e. patents above the 75th percentile in term of quality) with citation counts only. The Commission finds that these patent shares are similar to the ones where a 1.3 non-linear weight is applied to citation counts. This finding is consistent with the economic literature discussed above. Using a 1.3 non-linear weight gives more value to the highly cited patents and therefore allows to give more importance to breakthrough innovations.

(101) The Commission notes that the Parties did not comment on this methodological issue in the response to the Statement of Objections.

3.4.4. Control for age

(102) Older patents are likely to receive a bigger number of citations than patents that were published more recently. Therefore, if a firm has been active in research for many years, its patents are likely to receive a higher number of citations than the patents of a firm that has recently increased its research activity.

(103) The Technology Relevance measure provided by PatentSight allows controlling for the effect of age. However, using the PatentSight metric of Technology Relevance is not possible when one carries out further analysis by restricting the origins of the citations (see Sections 4.1.2, 4.1.3, and 4.1.4).

(104) In order to control for the age effect, i.e. that some companies may have been relatively more active than others recently, the Commission reports in Section 4.2 patent shares for patents published after 2011, based on the forward-citation analysis that it considers the most reliable (this methodology allows to control for the effect that older patents have a tendency to receive more citations, by excluding the "oldest" patents from the analysis). This year-threshold was actually suggested by the Parties in their economic submission on patents.[69] The Commission notes that this methodology may not encompass innovation spaces where: (i) no patents have been published after 2011, while these innovation spaces may still be research targets for the Parties, or (ii) the Parties' activities do not overlap in some innovation spaces because one of the two companies has not published patents after 2011, while this innovation space is still a research target for both Parties.

(105) The Commission notes that the Parties did not comment on this methodological issue in the response to the Statement of Objections.

(106) In their economic submissions, the Parties argue that only the patents published after 2011 are relevant for the assessment, since patents published before 2011 results in overlaps in areas where the Parties are no longer actively researching. The Commission disagrees with the Parties for the following reasons.

(107) First, as regards the areas that are still active research targets for the Parties, the Commission considers that the quality of the innovations discovered by all companies before 2011 provides reliable information to assess the innovation strength of all companies involved in research for these innovation spaces (see also paragraph (104)).

[69] Source: Parties' submission entitled "Patent analysis in broad acre seeds and traits", page 13, dated 22 November 2017, ID8696-4.

(108) Second, focusing only on patents published after 2011 would remove some innovation spaces where the Parties overlap with current innovation activities. For example, according to the Parties' methodology, not including patents published before 2011 would lead to the absence of overlaps between the merging parties in [pipeline product]. However, this innovation space is still an active research target for the Parties, and the Parties are close innovation competitors with their current lines of research, with a lack of alternatives in that specific innovation space (see Section X.1.7.5.4 of the Decision for further details).

(109) Third, it is standard practice in the economic literature to consider a long enough time horizon in order to have a robust analysis (the higher is the time horizon, the higher is the number of citations considered), and to control for the age effect in a second stage.[70]

(110) Fourth, while the Commission agrees with the Parties that patents published before 2011 can lead to overlaps in areas where the Parties are no longer active, this methodological issue is already taken into account in the Commission's assessment. For example, even if merged entity represents a significant patent share in cotton-enabling technology or canola-quality traits on the basis of their past innovations, the Commission does not raise innovation concerns in the Decision on cotton-enabling technology or canola-quality traits [R&D strategy].[71]

(111) On the basis of the above, the Commission disagrees with the Parties' views that only patents published after 2011 should be considered for the assessment of the proposed Transaction. Instead, the Commission considers its approach to take patents from 2007 onward more reliable to assess the innovation strength of companies involved in research for traits. The Commission also consider patent shares for patents published after 2011 only as a sensitivity analysis to control for the effect of age.

4. RESULTS OF THE COMMISSION'S ANALYSIS OF PATENT DATA

4.1. Bayer and Monsanto are important innovators, representing a significant patent share in several innovation areas

(112) As discussed below, the Parties have overlapping research activities in several innovation areas. Table 5 reports the patent counts for these innovation areas under the three patent classification: (i) "*SO-analysis*", (ii) "*RSO+all patents*", and (iii) "*RSO+active patents*".

(113) The Commission notes that using only active patents lead to remove only two overlaps in "Fruits&Vegetables/quality traits" and "Not crop-specific/Other traits". However, this does not affect the Commission's conclusions since: (i) the combined patent share of the Parties was relatively low even under the Commission's analysis carried out in the Statement of Objections ([0-5]% for "Fruits&Vegetables/quality traits"

[70] For example, a long time horizon is used in the following patent analyses: Tratjenberg (1990) considers patents published from 1971 to 1986, Hall, Jaffe, and Tratjenberg (2005) consider patents published from 1963 to 1995. Aghion, Bloom, Blundell, Griffith, Howitt (2005) consider patents published from 1973 to 1994. Bloom, Schankerman, Van Reenen (2013), consider a sample of firms who patented at least once between 1980 and 2001. A long time horizon was also used in the Case M.7932 Dow/DuPont, and the age effect was separately controlled for.

[71] Moreover, even in areas where the merging parties represent a high combined patent share and which are still active research targets for the merging parties, the Commission did not rely only on patent shares, but has also assessed the degree of closeness in term of innovation between the merging parties and the alternatives available.

and [5-10]% for "Not crop-specific/Other traits"),[72] and (ii) the Commission did not raise innovation concerns related to these two innovation areas in the Statement of Objections.

Table 5 – Patent counts for the overlapping innovation spaces

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others
Canola	Quality Traits	SO	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO+all patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO +act. patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Canola	Weed Control	SO	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO+all patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO +act. patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Cotton	Enabling Tech.	SO	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO+all patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO +act. patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Cotton	Insect Control	SO	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO+all patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO +act. patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Cotton	Weed Control	SO	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO+all patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO +act. patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Fruit/ Vegetables	Crop Efficiency	SO	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO+all patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO +act. patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Fruit/ Vegetables	Disease Control	SO	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO+all patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO +act. patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Fruit/ Vegetables	Other Traits	SO	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO+all patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO +act. patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Fruit/Vegetables	Quality Traits	SO	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO+all patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO +act. patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Not crop specific	Crop Efficiency	SO	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO+all patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO +act. patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Not crop specific	Disease Control	SO	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO+all patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO +act. patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Not crop specific	Enabling Tech.	SO	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO+all patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO +act. patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Not crop specific	Other Traits	SO	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO+all patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO +act. patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Not crop specific	Insect Control	SO	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO+all patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO +act. patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Not crop specific	Quality Traits	SO	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO+all patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO +act. patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]

[72] These two innovation areas are not listed in Table 16, where the Commission lists the innovation areas with a significant combined patent share of the merged entity.

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others
Not crop specific	Weed Control	SO	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO+all patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO +act. patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Soybean	Quality Traits	SO	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO+all patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO +act. patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
Soybean	Weed Control	SO	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO+all patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]
		RSO +act. patents	[…]	[…]	[…]	[…]	[…]	[…]	[…]	[…]

4.1.1. Forward-citation analysis using all citations

(114) The Commission finds that the […] patent families received collectively […] citations. Table 6 reports patent shares for the innovation spaces where Bayer and Monsanto are both active.

(115) Based on the patent classification used by the Commission in the Statement of Objections, this table shows that the merging parties represent a significant patent share in several innovation spaces, which are concentrated post-merger (with relatively high post-merger HHIs) and with a significant increase in concentration due to the proposed Transaction (relatively high Delta HHIs):

(a) Canola-quality traits: with a significant patent share of [40-50]% (Bayer: [20-30]%, Monsanto: [20-30]%), a post-merger HHI of [3500-4000], and a Delta HHI of [1100-1200];

(b) Canola-weed control: with a significant patent share of [60-70]% (Bayer: [20-30]%, Monsanto: [30-40]%), a post-merger HHI of [5000-5500], and a Delta HHI of [1500-2000];[73]

(c) Cotton-enabling technology: with a significant patent share of [90-100]% (Bayer: [70-80]%, Monsanto: [10-20]%), a post-merger HHI of [9000-9500], and a Delta HHI of [2500-3000];

(d) Cotton-insect control: with a significant patent share of [90-100]% (Bayer: [90-100]%, Monsanto: [0-5]%), a post-merger HHI of [9000-9500], and a Delta HHI of [400-500];

(e) Cotton-weed control: with a significant patent share of [80-90]% (Bayer: [70-80]%, Monsanto: [10-20]%), a post-merger of [7500-8000], and a Delta HHI of [2000-2500];

(f) Fruit/vegetables-disease control: with a significant patent share of [60-70]% (Bayer: [5-10]%, Monsanto: [60-70]%), a post-merger HHI of [5000-5500], and a Delta HHI of [900-1000];

[73] The Commission notes that for canola-weed control, the only competitor to the Parties with a significant patent share is Cibus, which according to the Parties own a patent for "Brassica". The Commission has taken a conservative approach by considering that Cibus was active on canola, but the Commission notes that in its own submission on patents (Parties' submission entitled "Patent analysis in broad acre seeds and traits", dated 22 November 2017, ID8696-4), the Parties consider "Brassica" as a different field than "Canola". Following the Parties' approach would lead to an even higher patent share for the Parties in canola/weed control.

(g) Fruit/vegetables-other traits: with a significant patent share of [70-80]% (Bayer: [30-40]%, Monsanto: [40-50]%), a post-merger HHI of [5500-6000], and a Delta HHI of [2500-3000];

(h) Not crop specific-insect control: with a significant patent share of [50-60]% (Bayer: [20-30]%, Monsanto: [30-40]%), a post-merger HHI of [3000-3500], and a Delta HHI of [1500-2000];

(i) Not crop specific-quality traits: with a significant patent share of [40-50]% (Bayer: [40-50]%, Monsanto: [0-5]%), a post-merger HHI of [3000-3500], and a Delta HHI of [200-300];

(j) Not crop specific-weed control: with a significant patent share of [40-50]% (Bayer: [10-20]%, Monsanto: [30-40]%), a post-merger HHI of [3500-4000], and a Delta HHI of [1000-1100];

(k) Soybean-weed control: with a significant patent share of [40-50]% (Bayer: [0-5]%, Monsanto: [40-50]%), a post-merger HHI of [4000-4500], and a Delta HHI of [300-400].

(116) The Commission notes that the patent classification used by the Parties in the response to the Statement of Objections leads to similar results (if not identical) for most of the innovation areas: cotton/enabling technologies, cotton/insect control, cotton/weed control, fruits&vegetables/disease control, fruits&vegetables/other traits, not crop specific/crop efficiency, not crop-specific/enabling technologies, not crop-specific/ insect control, not crop-specific/quality traits, not crop specific/weed control, soybean/quality traits, and soybean/weed control.

(117) There are three innovation areas where the classification used by the Parties in the response to the Statement of Objections leads to lower combined patent shares, "not crop-specific/disease control", "not crop-specific/other traits", and "fruits&vegetables/quality traits". However, this does not affect the Commission conclusion since: (i) the combined patent share of the Parties was relatively low even under the Commission's analysis carried out in the SO ([…]% for "not crop-specific/disease control", […]% for "Not crop-specific/Other traits", […]% for "fruits&vegetables/quality traits"),[74] and (ii) the Commission did not raise innovation concerns related to these two innovation areas in the Statelent of Objections.

(118) Last, there are three innovation areas where the classification used by the Parties in the response to the Statement of Objections leads to higher combined patent shares and higher concentration, "canola/quality traits", "canola/weed control", and "fruits&vegetables/crop efficiency".

(a) As regards "canola/quality traits", the combined patent share is increasing from [40-50]% based on the classification used in the Statement of Objections to [50-60]% when active patents are considered and with the classification used by the Parties in the response to the Statement of Objections.

(b) As regards "canola/weed control", the combined patent share is increasing from [60-70]% in the Statement of Objections to [90-100]% based on the classification used by the Parties in response to the Statement of Objections. The main change concerns the patent share of Bayer when active patents are

[74] These two innovation areas are not listed in Table 16, where the Commission lists the innovation areas with a significant combined patent share of the merged entity.

considered, with a decrease from [20-30]% in the Statement of Objections to [0-5]% under the scenario "*RSO+active patents*". This is because one patent of Bayer that received a significant number of citations became inactive. However, the Commission considers that the high level of the combined patent share ([90-100]%), the high level of HHI ([9000-9500]) and Delta HHI ([800-900]), with DowDuPont being the only additional alternative to the Parties (and at the same level as Bayer), constitute important initial indicators of potential competition concerns. Moreover, the Commission notes that the Parties did not contest in its response to the Statement of Objections the evidence on closeness for the innovation efforts made by the Parties and the lack of alternatives for that specific innovation space. Last, given that Bayer is still active in research for weed control in canola, the Commission considers that this inactive patent of Bayer is still relevant to assess the technological strength of Bayer in that specific innovation space.

(c) As regards "fruits&vegetables/crop efficiency", based on the classification of the Parties in the response to the Statement of Objections and considering active patents only, the combined entity represents a significant combined patent share of [60-70]% (Monsanto: [60-70]%, Bayer: [5-10]%) in a concentrated area (HHI of [4500-5000]) and with a further increase in concentration due to the proposed Transaction (Delta HHI of [500-600]).

Table 6 – Share of total citations (based on all citation categories, 1.1 non-linear weight, full period)

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHHI
Canola	Quality Traits	SO	[20-30]%	[20-30]%	[40-50]%	[0-5]%		[30-40]%	[80-90]%	[10-20]%	[3500-4000]	[1100-1200]
		RSO+all patents	[20-30]%	[30-40]%	[50-60]%			[40-50]%	[90-100]%	[0-5]%	[5000-5500]	[1500-2000]
		RSO+act. patents	[20-30]%	[30-40]%	[50-60]%			[40-50]%	[90-100]%	[0-5]%	[5000-5500]	[1500-2000]
Canola	Weed Control	SO	[20-30]%	[30-40]%	[60-70]%			[0-5]%	[60-70]%	[30-40]%	[5000-5500]	[1500-2000]
		RSO+all patents	[30-40]%	[50-60]%	[90-100]%			[0-5]%	[90-100]%		[9000-9500]	[4000-4500]
		RSO+act. patents	[5-10]%	[90-100]%	[90-100]%			[5-10]%	[90-100]%		[9000-9500]	[800-900]
Cotton	Enabling Tech.	SO	[70-80]%	[10-20]%	[90-100]%				[90-100]%	[0-5]%	[9000-9500]	[2500-3000]
		RSO+all patents	[70-80]%	[10-20]%	[90-100]%				[90-100]%	[0-5]%	[9000-9500]	[2500-3000]
		RSO+act. patents	[70-80]%	[10-20]%	[90-100]%				[90-100]%	[0-5]%	[9000-9500]	[2500-3000]
Cotton	Insect Control	SO	[90-100]%	[0-5]%	[90-100]%			[0-5]%	[90-100]%	[0-5]%	[9000-9500]	[400-500]
		RSO+all patents	[90-100]%	[0-5]%	[90-100]%			[0-5]%	[90-100]%	[0-5]%	[9000-9500]	[400-500]
		RSO+act. patents	[90-100]%	[0-5]%	[90-100]%			[0-5]%	[90-100]%	[0-5]%	[9000-9500]	[400-500]
Cotton	Weed Control	SO	[70-80]%	[10-20]%	[80-90]%			[5-10]%	[90-100]%	[5-10]%	[7500-8000]	[2000-2500]
		RSO+all patents	[70-80]%	[10-20]%	[80-90]%			[5-10]%	[90-100]%	[5-10]%	[7500-8000]	[2000-2500]
		RSO+act. patents	[70-80]%	[10-20]%	[80-90]%			[5-10]%	[90-100]%	[5-10]%	[7500-8000]	[2000-2500]

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHHI
Fruit/ Vegetables	Crop Eff.	SO	[0-5]%	[50-60]%	[50-60]%		[20-30]%	[0-5]%	[80-90]%	[20-30]%	[3000-3500]	[0-100]
		RSO+all patents	[0-5]%	[50-60]%	[50-60]%		[20-30]%	[0-5]%	[80-90]%	[20-30]%	[3500-4000]	[300-400]
		RSO+act. patents	[5-10]%	[60-70]%	[60-70]%		[5-10]%	[5-10]%	[70-80]%	[20-30]%	[4500-5000]	[500-600]
Fruit/ Vegetables	Disease Control	SO	[5-10]%	[60-70]%	[60-70]%		[0-5]%		[70-80]%	[20-30]%	[5000-5500]	[900-1000]
		RSO+all patents	[5-10]%	[60-70]%	[60-70]%		[0-5]%		[70-80]%	[20-30]%	[5000-5500]	[900-1000]
		RSO+act. patents	[5-10]%	[60-70]%	[60-70]%		[0-5]%		[70-80]%	[20-30]%	[4500-5000]	[700-800]
Fruit /Vegetables	Other Traits	SO	[30-40]%	[40-50]%	[70-80]%		[5-10]%		[80-90]%	[10-20]%	[5500-6000]	[2500-3000]
		RSO+all patents	[30-40]%	[40-50]%	[70-80]%		[5-10]%		[80-90]%	[10-20]%	[5500-6000]	[2500-3000]
		RSO+act. patents	[30-40]%	[40-50]%	[70-80]%		[5-10]%		[80-90]%	[10-20]%	[5500-6000]	[2500-3000]
Fruit/ Vegetables	Quality Traits	SO	[0-5]%	[10-20]%	[10-20]%				[10-20]%	[80-90]%	[4000-4500]	[0-100]
		RSO+all patents	[0-5]%	[10-20]%	[10-20]%				[10-20]%	[80-90]%	[4000-4500]	[0-100]
		RSO+act. patents	[0-5]%		[0-5]%				[0-5]%	[90-100]%	[6000-6500]	
Not crop specific	Crop Eff.	SO	[5-10]%	[10-20]%	[20-30]%	[30-40]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%	[1500-2000]	[100-200]
		RSO+all patents	[5-10]%	[10-20]%	[20-30]%	[30-40]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%	[1500-2000]	[100-200]
		RSO+act. patents	[5-10]%	[20-30]%	[20-30]%	[20-30]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%	[1500-2000]	[200-300]
Not crop specific	Disease Control	SO	[10-20]%	[10-20]%	[20-30]%	[10-20]%	[0-5]%	[10-20]%	[40-50]%	[50-60]%	[1000-1100]	[200-300]
		RSO+all patents	[0-5]%	[10-20]%	[10-20]%	[10-20]%	[0-5]%	[10-20]%	[40-50]%	[50-60]%	[800-900]	[0-100]
		RSO+act. patents	[0-5]%	[10-20]%	[10-20]%	[10-20]%	[0-5]%	[10-20]%	[30-40]%	[60-70]%	[800-900]	[0-100]
Not crop specific	Enabling Tech.	SO	[0-5]%	[10-20]%	[10-20]%	[5-10]%	[0-5]%	[30-40]%	[50-60]%	[40-50]%	[1500-2000]	[0-100]
		RSO+all patents	[0-5]%	[10-20]%	[10-20]%	[5-10]%	[0-5]%	[30-40]%	[50-60]%	[40-50]%	[1400-1500]	[0-100]
		RSO+act. patents	[0-5]%	[10-20]%	[20-30]%	[0-5]%	[0-5]%	[30-40]%	[50-60]%	[40-50]%	[1500-2000]	[0-100]
Not crop specific	Other Traits	SO	[0-5]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[5-10]%	[40-50]%	[50-60]%	[800-900]	[0-100]
		RSO+all patents	[0-5]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[5-10]%	[40-50]%	[50-60]%	[700-800]	[0-100]
		RSO+act. patents		[10-20]%	[10-20]%		[10-20]%	[5-10]%	[30-40]%	[60-70]%	[800-900]	
Not crop specific	Insect Control	SO	[20-30]%	[30-40]%	[50-60]%	[5-10]%	[10-20]%	[20-30]%	[90-100]%	[0-5]%	[3000-3500]	[1500-2000]
		RSO+all patents	[20-30]%	[30-40]%	[50-60]%	[5-10]%	[10-20]%	[20-30]%	[90-100]%	[0-5]%	[3000-3500]	[1500-2000]
		RSO+act. patents	[20-30]%	[30-40]%	[60-70]%	[0-5]%	[10-20]%	[20-30]%	[90-100]%	[0-5]%	[3500-4000]	[1500-2000]
Not crop specific	Quality Traits	SO	[40-50]%	[0-5]%	[40-50]%	[10-20]%	[0-5]%	[30-40]%	[80-90]%	[10-20]%	[3000-3500]	[200-300]
		RSO+all patents	[30-40]%	[0-5]%	[40-50]%	[10-20]%	[0-5]%	[30-40]%	[80-90]%	[10-20]%	[2500-3000]	[200-300]
		RSO+act. patents	[30-40]%	[0-5]%	[30-40]%	[10-20]%	[0-5]%	[30-40]%	[80-90]%	[10-20]%	[2500-3000]	[200-300]

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHHI
Not crop specific	Weed Control	SO	[10-20]%	[30-40]%	[40-50]%	[0-5]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3500-4000]	[1100-1200]
		RSO+all patents	[10-20]%	[30-40]%	[40-50]%	[0-5]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3500-4000]	[1100-1200]
		RSO+act. patents	[10-20]%	[30-40]%	[40-50]%	[0-5]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3500-4000]	[1100-1200]
Soybean	Quality Traits	SO	[0-5]%	[70-80]%	[70-80]%			[20-30]%	[90-100]%	[0-5]%	[5500-6000]	[0-100]
		RSO+all patents	[0-5]%	[70-80]%	[70-80]%			[20-30]%	[90-100]%	[0-5]%	[5500-6000]	[0-100]
		RSO+act. patents	[0-5]%	[70-80]%	[70-80]%			[20-30]%	[90-100]%	[0-5]%	[5500-6000]	[0-100]
Soybean	Weed Control	SO	[0-5]%	[40-50]%	[40-50]%		[5-10]%	[40-50]%	[90-100]%	[0-5]%	[4000-4500]	[300-400]
		RSO+all patents	[0-5]%	[40-50]%	[40-50]%		[5-10]%	[40-50]%	[90-100]%	[0-5]%	[4000-4500]	[300-400]
		RSO+act. patents	[0-5]%	[40-50]%	[40-50]%		[5-10]%	[40-50]%	[90-100]%	[5-10]%	[4000-4500]	[300-400]

(119) Table 7 reports patent shares based on the Technology Relevance metric. Based on the patent classification used by the Commission in the Statement of Objections, this table shows high combined patent shares for the same innovation areas. The Commission notes that for the innovation space "not crop specific-weed control", while the combined patent share of the Parties is decreasing, it is still significant at [40-50]%.

(120) The Commission notes that the patent classification used by the Parties in the response to the Statement of Objections leads to similar results (if not identical) for most of the innovation areas: cotton/enabling technologies, cotton/insect control, cotton/weed control, fruits&vegetables/disease control, fruits&vegetables/other traits, not crop specific/crop efficiency, not crop-specific/enabling technologies, not crop-specific/insect control, not crop-specific/quality traits, not crop specific/weed control, soybean/quality traits, and soybean/weed control.

(121) There are three innovation areas where the classification used by the Parties in the response to the Statement of Objections leads to lower combined patent shares, fruits&vegetables/quality traits", "not crop-specific/disease control" and "not crop-specific/other traits". However, this does not affect the Commission conclusion since: (i) the combined patent share of the Parties was relatively low even under the Commission's analysis carried out in the Statement of Objections,[75] and (ii) the Commission did not raise innovation concerns related to these three innovation areas in the Statement of Objections.

(122) Last, there are two innovation areas where the classification used by the Parties in the response to the Statement of Objections leads to higher combined patent shares and higher concentration, "canola/quality traits" and "canola/weed control".

(a) As regards "canola/quality traits", the combined patent share is increasing from [50-60]% based on the classification used in the Statement of Objections to [70-80]% when active patents are considered and with the classification used by the Parties in the response to the Statement of Objections.

(b) As regards "canola/weed control", the combined patent share is increasing from [70-80]% in the Statement of Objections to [90-100]% based on the

[75] These three innovation areas are not listed in Table 16, where the Commission lists the innovation areas with a significant combined patent share of the merged entity.

classification used by the Parties in response to the SO. The main change concerns the patent share of Bayer when active patents are considered, with a decrease from [30-40]% in the Statement of Objections to [10-20]% under the scenario "*RSO+active patents*". This is because one patent of Bayer that received a significant number of citations became inactive. On the other hand, the patent share of Monsanto is increasing from [40-50]% to [80-90]%, while the patent share of DowDuPont remains at [0-5]%. The Commission considers that the high level of the combined patent share ([90-100]%), the high level of HHI ([9500-10000]) and Delta HHI ([2000-2500]), with Bayer and Monsanto being the main two innovators, constitute important initial indicators of potential competition concerns. Moreover, the Commission notes that the Parties did not contest in its response to the Statement of Objections evidence on closeness for the innovation efforts made by the Parties and the lack of alternatives for that specific innovation space. Last, given that Bayer is still active in research for weed control in canola, the Commission considers that this inactive patent of Bayer is still relevant to assess the technological strength of Bayer in that specific innovation space.

(c) As regards "fruits&vegetables/crop efficiency", based on the classification of the Parties used in the response to the Statement of Objections and considering active patents only, the combined entity represents a significant combined patent share of [60-70]% (Monsanto: [40-50]%, Bayer: [20-30]%) in a concentrated area (HHI of [4500-5000]) and with a further increase in concentration due to the proposed Transaction (Delta HHI of [2000-2500]).

Table 7 – Share of Technology Relevance (based on all citation categories, 1.1 non-linear weight, full period)

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Other	HHI	ΔHHI
Canola	Quality Traits	SO	[40-50]%	[10-20]%	[50-60]%	[0-5]%		[20-30]%	[70-80]%	[20-30]%	[3500-4000]	[900-1000]
		RSO+all patents	[50-60]%	[10-20]%	[70-80]%			[20-30]%	[90-100]%	[0-5]%	[5500-6000]	[1500-2000]
		RSO+act. Patents	[50-60]%	[10-20]%	[70-80]%			[20-30]%	[90-100]%	[0-5]%	[6000-6500]	[1500-2000]
Canola	Weed Control	SO	[30-40]%	[40-50]%	[70-80]%			[0-5]%	[70-80]%	[20-30]%	[6000-6500]	[2500-3000]
		RSO+all patents	[30-40]%	[60-70]%	[90-100]%			[0-5]%	[90-100]%		[9500-10000]	[4500-5000]
		RSO+act. Patents	[10-20]%	[80-90]%	[90-100]%			[0-5]%	[90-100]%		[9500-10000]	[2000-2500]
Cotton	Enabling Tech.	SO	[70-80]%	[10-20]%	[80-90]%				[80-90]%	[10-20]%	[7500-8000]	[1500-2000]
		RSO+all patents	[70-80]%	[10-20]%	[80-90]%				[80-90]%	[10-20]%	[7500-8000]	[1500-2000]
		RSO+act. Patents	[70-80]%	[10-20]%	[80-90]%				[80-90]%	[10-20]%	[7500-8000]	[1500-2000]
Cotton	Insect Control	SO	[80-90]%	[0-5]%	[80-90]%			[5-10]%	[90-100]%	[5-10]%	[7500-8000]	[400-500]
		RSO+all patents	[80-90]%	[0-5]%	[80-90]%			[5-10]%	[90-100]%	[5-10]%	[7500-8000]	[400-500]
		RSO+act. Patents	[80-90]%	[0-5]%	[80-90]%			[5-10]%	[90-100]%	[5-10]%	[7500-8000]	[400-500]
Cotton	Weed Control	SO	[60-70]%	[10-20]%	[80-90]%			[10-20]%	[90-100]%	[0-5]%	[7000-7500]	[2000-2500]
		RSO+all patents	[60-70]%	[10-20]%	[80-90]%			[10-20]%	[90-100]%	[0-5]%	[7000-7500]	[2000-2500]
		RSO+act. Patents	[60-70]%	[10-20]%	[80-90]%			[10-20]%	[90-100]%	[0-5]%	[7000-7500]	[2000-2500]

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Other	HHI	ΔHHI
Fruit/ Vegetables	Crop Eff.	SO	[10-20]%	[30-40]%	[50-60]%		[10-20]%	[0-5]%	[70-80]%	[20-30]%	[3500-4000]	[1300-1400]
		RSO+all patents	[10-20]%	[30-40]%	[50-60]%		[10-20]%	[0-5]%	[70-80]%	[20-30]%	[3500-4000]	[1400-1500]
		RSO+act. Patents	[20-30]%	[40-50]%	[60-70]%		[0-5]%	[0-5]%	[70-80]%	[20-30]%	[4500-5000]	[2000-2500]
Fruit/ Vegetables	Disease Control	SO	[20-30]%	[30-40]%	[60-70]%		[5-10]%		[60-70]%	[30-40]%	[3500-4000]	[1500-2000]
		RSO+all patents	[20-30]%	[30-40]%	[60-70]%		[5-10]%		[60-70]%	[30-40]%	[3500-4000]	[1500-2000]
		RSO+act. Patents	[20-30]%	[30-40]%	[50-60]%		[5-10]%		[60-70]%	[30-40]%	[3500-4000]	[1500-2000]
Fruit/ Vegetables	Other Traits	SO	[40-50]%	[30-40]%	[80-90]%		[5-10]%		[90-100]%	[5-10]%	[6500-7000]	[3000-3500]
		RSO+all patents	[40-50]%	[30-40]%	[80-90]%		[5-10]%		[90-100]%	[5-10]%	[6500-7000]	[3000-3500]
		RSO+act. Patents	[40-50]%	[30-40]%	[80-90]%		[5-10]%		[90-100]%	[5-10]%	[6500-7000]	[3000-3500]
Fruit/ Vegetables	Quality Traits	SO	[5-10]%	[20-30]%	[30-40]%				[30-40]%	[70-80]%	[4500-5000]	[200-300]
		RSO+all patents	[5-10]%	[20-30]%	[30-40]%				[30-40]%	[70-80]%	[4500-5000]	[200-300]
		RSO+act. Patents	[5-10]%		[5-10]%				[5-10]%	[90-100]%	[6000-6500]	
Not crop specific	Crop Eff.	SO	[5-10]%	[10-20]%	[20-30]%	[20-30]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%	[1500-2000]	[100-200]
		RSO+all patents	[5-10]%	[10-20]%	[20-30]%	[20-30]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%	[14000-1500]	[100-200]
		RSO+act. Patents	[5-10]%	[10-20]%	[20-30]%	[20-30]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%	[1400-1500]	[100-200]
Not crop specific	Disease Control	SO	[5-10]%	[10-20]%	[20-30]%	[10-20]%	[0-5]%	[5-10]%	[40-50]%	[50-60]%	[800-900]	[200-300]
		RSO+all patents	[0-5]%	[10-20]%	[10-20]%	[10-20]%	[0-5]%	[5-10]%	[30-40]%	[60-70]%	[700-800]	[0-100]
		RSO+act. patents	[0-5]%	[10-20]%	[10-20]%	[10-20]%	[0-5]%	[5-10]%	[30-40]%	[60-70]%	[700-800]	[0-100]
Not crop specific	Enabling Tech.	SO	[0-5]%	[5-10]%	[10-20]%	[0-5]%	[0-5]%	[20-30]%	[40-50]%	[50-60]%	[1100-1200]	[0-100]
		RSO+all patents	[0-5]%	[5-10]%	[10-20]%	[0-5]%	[0-5]%	[20-30]%	[40-50]%	[50-60]%	[1100-1200]	[0-100]
		RSO+act. patents	[0-5]%	[5-10]%	[10-20]%	[0-5]%	[0-5]%	[20-30]%	[40-50]%	[60-70]%	[1100-1200]	[0-100]
Not crop specific	Other Traits	SO	[5-10]%	[5-10]%	[10-20]%	[10-20]%	[10-20]%	[5-10]%	[40-50]%	[50-60]%	[600-700]	[0-100]
		RSO+all patents	[0-5]%	[5-10]%	[5-10]%	[10-20]%	[10-20]%	[5-10]%	[30-40]%	[60-70]%	[600-700]	[0-100]
		RSO+act. patents		[5-10]%	[5-10]%		[10-20]%	[5-10]%	[20-30]%	[70-80]%	[600-700]	
Not crop specific	Insect Control	SO	[20-30]%	[20-30]%	[40-50]%	[0-5]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3000-3500]	[900-1000]
		RSO+all patents	[20-30]%	[20-30]%	[40-50]%	[0-5]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3000-3500]	[900-1000]
		RSO+act. patents	[20-30]%	[20-30]%	[40-50]%	[0-5]%	[10-20]%	[40-50]%	[90-100]%	[0-5]%	[3000-3500]	[900-1000]
Not crop specific	Quality Traits	SO	[30-40]%	[0-5]%	[30-40]%	[10-20]%	[0-5]%	[30-40]%	[80-90]%	[10-20]%	[2500-3000]	[100-200]
		RSO+all patents	[30-40]%	[0-5]%	[30-40]%	[10-20]%	[0-5]%	[30-40]%	[80-90]%	[10-20]%	[2500-3000]	[100-200]
		RSO+act. patents	[30-40]%	[0-5]%	[30-40]%	[10-20]%	[0-5]%	[30-40]%	[80-90]%	[10-20]%	[2500-3000]	[100-200]

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Other	HHI	ΔHHI
Not crop specific	Weed Control	SO	[20-30]%	[10-20]%	[40-50]%	[5-10]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3000-3500]	[700-800]
		RSO+all patents	[20-30]%	[10-20]%	[40-50]%	[5-10]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3000-3500]	[700-800]
		RSO+act. patents	[20-30]%	[10-20]%	[30-40]%	[5-10]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3000-3500]	[700-800]
Soybean	Quality Traits	SO	[0-5]%	[70-80]%	[70-80]%			[20-30]%	[90-100]%	[0-5]%	[5500-6000]	[0-100]
		RSO+all patents	[0-5]%	[70-80]%	[70-80]%			[20-30]%	[90-100]%	[0-5]%	[5500-6000]	[0-100]
		RSO+act. patents	[0-5]%	[70-80]%	[70-80]%			[20-30]%	[90-100]%	[0-5]%	[5500-6000]	[0-100]
Soybean	Weed Control	SO	[0-5]%	[20-30]%	[20-30]%		[10-20]%	[50-60]%	[90-100]%	[5-10]%	[3500-4000]	[100-200]
		RSO+all patents	[0-5]%	[20-30]%	[20-30]%		[10-20]%	[50-60]%	[90-100]%	[5-10]%	[3500-4000]	[100-200]
		RSO+act. Patents	[5-10]%	[20-30]%	[30-40]%		[10-20]%	[40-50]%	[90-100]%	[5-10]%	[3500-4000]	[200-300]

(123) In its analysis, the Commission also considers the origin of the […] citations (corresponding to […] unique citing patent families). The classification of the citations is done by matching the citing patent families with the patent document numbers from the Thomson dataset provided by Bayer (see paragraph (49)).

(124) The Commission notes that […] citations out of […] were not matched with the Thomson dataset provided by Bayer. Therefore, some of these citations may come from industries less related to biotech, and therefore may be less relevant to assess the strength of firms involved in trait research.

(125) In order to control for this, the Commission has carried out a forward citation analysis by removing the citations unrelated to the biotech sector according to the Thomson dataset (the category "Other" in Figure 3). This analysis is discussed in the next Section.

Figure 3 – Distribution of citations per category (all patents)[76]

[…]

4.1.2. Forward-citation analysis using all biotech and agrochemicals citations

(126) Table 8 below reports patent shares in several innovation spaces where the Parties have overlapping research activities.

(127) Based on the patent classification used by the Commission in the Statement of Objections, Table 8 shows that the Parties represent a significant patent share in several innovation spaces, which are concentrated post-merger (with relatively high post-merger HHIs) and with a significant increase in concentration due to the proposed Transaction (relatively high Delta HHIs):

(a) Canola-quality traits: with a significant patent share of [60-70]% (Bayer: [40-50]%, Monsanto: [20-30]%), a post-merger HHI of [5000-5500], and a Delta HHI of [2000-2500];

[76] Similar findings apply when active patents are considered (i.e. excluding inactive patents).

(b) Canola-weed control: with a significant patent share of [60-70]% (Bayer: [20-30]%, Monsanto: [30-40]%), a post-merger HHI of [5000-5500] and a Delta HHI of [1500-2000];

(c) Cotton-insect control: with a significant patent share of [90-100]% (Bayer: [90-100]%, Monsanto: [0-5]%), a post-merger HHI of [9500-10000], and a Delta HHI of [400-500];

(d) Cotton-weed control: with a significant patent share of [90-100]% (Bayer: [80-90]%, Monsanto: [5-10]%), a post-merger of [8000-8500] and a Delta HHI of [900-1000];

(e) Fruit/vegetables-disease control: with a significant patent share of [60-70]% (Bayer: [5-10]%, Monsanto: [50-60]%), a post-merger HHI of [4500-5000], and a Delta HHI of [900-1000];

(f) Fruit/vegetables-other traits: with a significant patent share of [70-80]% (Bayer: [40-50]%, Monsanto: [30-40]%), a post-merger HHI of [5500-6000], and a Delta HHI of [2500-3000];

(g) Not crop specific-insect control: with a significant patent share of [60-70]% (Bayer: [20-30]%, Monsanto: [30-40]%), a post-merger HHI of [3500-4000], and a Delta HHI of [1500-2000];

(h) Not crop specific-quality traits: with a significant patent share of [60-70]% (Bayer: [60-70]%, Monsanto: [0-5]%), a post-merger HHI of [4000-4500], and a Delta HHI of [100-200];

(i) Not crop specific-weed control: with a significant patent share of [30-40]% (Bayer: [20-30]%, Monsanto: [5-10]%), a post-merger HHI of [3000-3500], and a Delta HHI of [400-500];

(128) The Commission also notes the decrease of the patent share in soybean-weed control, with a combined share at [20-30]% (Bayer: [5-10]%; Monsanto: [10-20]%). However, the Commission notes that this innovation space is still concentrated with a HHI of [4500-5000] and a Delta HHI above 150,[77] Monsanto is still the number 2 innovator (behind DuPont), with Bayer and ChemChina-Syngenta being the challengers. The Commission also notes that, as discussed in Sections 4.1.1 and 4.1.4, a more complete sample of citations leads to a significantly higher share of Monsanto in soybean-weed control.

(129) The Commission notes that the patent classification used by the Parties in the response to the Statement of Objections leads to similar results (if not identical) for most of the innovation areas: canola/quality traits, cotton/enabling technologies, cotton/insect control, cotton/weed control, fruits&vegetables/disease control, fruits&vegetables/other traits, not crop specific/crop efficiency, not crop-specific/enabling technologies, not crop-specific/insect control, not crop-specific/quality traits, not crop specific/weed control, soybean/quality traits, and soybean/weed control.

(130) There are two innovation areas where the classification used by the Parties in the response to the Statement of Objections leads to lower combined patent shares, "not crop-specific/disease control" and "not crop-specific/other traits". However, this does not affect the Commission conclusion since: (i) the combined patent share of the

[77] Guidelines on the assessment of horizontal mergers, 2004, paragraph 20.

Parties was relatively low even under the Commission's analysis carried out in the Statement of Objections ([20-30]% for "not crop-specific/disease control", and [20-30]% for "Not crop-specific/Other traits"),[78] and (ii) the Commission did not raise innovation concerns related to these three innovation areas in the Statement of Objections.

(131) Last, there are three innovation areas where the classification used by the Parties in the response to the Statement of Objections leads to higher combined patent shares and higher concentration, "canola/quality traits", "canola/weed control", and "fruits&vegetables/crop efficiency".

(a) As regards "canola/quality traits", the combined patent share is increasing from [60-70]% based on the classification used in the Statement of Objections to [70-80]% when active patents are considered and with the classification used by the Parties in the response to the Statement of Objections.

(b) As regards "canola/weed control", the combined patent share is increasing from [60-70]% in the Statement of Objections to [90-100]% based on the classification used by the Parties in the response to the Statement of Objections. The main change concerns the patent share of Bayer when active patents are considered, with a decrease from [20-30]% in the SO to [0-5]% under the scenario "*RSO+active patents*". This is because one patent of Bayer that received a significant number of citations became inactive. On the other hand, the patent share of Monsanto is increasing from [30-40]% to [90-100]%, while the patent share of DowDuPont is at [5-10]%. The Commission considers that the high level of the combined patent share ([90-100]%), the high level of HHI ([8500-9000]) and Delta HHI ([500-600]), with DowDuPont being the only alternative to the Parties, constitute important initial indicators of potential competition concerns. Moreover, the Commission notes that the Parties did not contest in the response to the Statement of Objections the evidence on closeness for the innovation efforts made by the Parties, with a lack of alternatives for that specific innovation space. Last, given that Bayer is still active in research for weed control in canola, the Commission considers that this inactive patent of Bayer is still relevant to assess the technological strength of Bayer in that specific innovation space.

(c) As regards "fruits&vegetables/crop efficiency", the combined patent share is increasing from [30-40]% based on the classification used in the Statement of Objections to [40-50]% when active patents are considered and with the classification used by the Parties in the response to the Statement of Objections. Importantly, the Delta HHI is increasing to [600-700], with a high level of HHI ([2500-3000]).

[78] These two innovation areas are not listed in Table 16, where the Commission lists the innovation areas with a significant combined patent share of the merged entity.

Table 8 – Share of total citations (category "Other" excluded, 1.1 non-linear weight, full period)

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHHI
Canola	Quality Traits	SO	[40-50]%	[20-30]%	[60-70]%	[0-5]%		[20-30]%	[80-90]%	[10-20]%	[5000-5500]	[2000-2500]
		RSO+all patents	[40-50]%	[20-30]%	[70-80]%			[20-30]%	[90-100]%	[0-5]%	[6500-7000]	[2500-3000]
		RSO+act. patents	[50-60]%	[20-30]%	[70-80]%			[20-30]%	[90-100]%	[0-5]%	[6000-6500]	[2500-3000]
Canola	Weed Control	SO	[20-30]%	[30-40]%	[60-70]%			[0-5]%	[60-70]%	[30-40]%	[5000-5500]	[1500-2000]
		RSO+all patents	[40-50]%	[50-60]%	[90-100]%			[0-5]%	[90-100]%		[9000-9500]	[4500-5000]
		RSO+act. patents	[0-5]%	[90-100]%	[90-100]%			[5-10]%	[90-100]%		[8500-9000]	[500-600]
Cotton	Enabling Tech.	SO	[90-100]%	[0-5]%	[90-100]%				[90-100]%	[5-10]%	[8500-9000]	[0-100]
		RSO+all patents	[90-100]%	[0-5]%	[90-100]%				[90-100]%	[5-10]%	[8500-9000]	[0-100]
		RSO+act. patents	[90-100]%	[0-5]%	[90-100]%				[90-100]%	[5-10]%	[8500-9000]	[0-100]
Cotton	Insect Control	SO	[90-100]%	[0-5]%	[90-100]%			[0-5]%	[90-100]%	[0-5]%	[9500-10000]	[400-500]
		RSO+all patents	[90-100]%	[0-5]%	[90-100]%			[0-5]%	[90-100]%	[0-5]%	[9500-10000]	[400-500]
		RSO+act. patents	[90-100]%	[0-5]%	[90-100]%			[0-5]%	[90-100]%	[0-5]%	[9500-10000]	[400-500]
Cotton	Weed Control	SO	[80-90]%	[5-10]%	[90-100]%			[0-5]%	[90-100]%	[5-10]%	[8000-8500]	[900-1000]
		RSO+all patents	[80-90]%	[5-10]%	[90-100]%			[0-5]%	[90-100]%	[5-10]%	[8000-8500]	[900-1000]
		RSO+act. patents	[80-90]%	[5-10]%	[90-100]%			[0-5]%	[90-100]%	[5-10]%	[8000-8500]	[900-1000]
Fruit/ Vegetables	Crop Efficiency	SO	[0-5]%	[30-40]%	[30-40]%		[20-30]%	[5-10]%	[60-70]%	[30-40]%	[2000-2500]	[0-100]
		RSO+all patents	[5-10]%	[30-40]%	[40-50]%		[20-30]%	[5-10]%	[70-80]%	[20-30]%	[2500-3000]	[400-500]
		RSO+act. patents	[5-10]%	[30-40]%	[40-50]%		[5-10]%	[5-10]%	[60-70]%	[30-40]%	[2500-3000]	[600-700]
Fruit/ Vegetables	Disease Control	SO	[5-10]%	[50-60]%	[60-70]%		[5-10]%		[60-70]%	[30-40]%	[4500-5000]	[900-1000]
		RSO+all patents	[5-10]%	[50-60]%	[60-70]%		[5-10]%		[60-70]%	[30-40]%	[4500-5000]	[900-1000]
		RSO+act. patents	[5-10]%	[50-60]%	[60-70]%		[5-10]%		[60-70]%	[30-40]%	[4500-5000]	[900-1000]
Fruit/ Vegetables	Other Traits	SO	[40-50]%	[30-40]%	[70-80]%		[5-10]%		[80-90]%	[20-30]%	[5500-6000]	[2500-3000]
		RSO+all patents	[40-50]%	[30-40]%	[70-80]%		[5-10]%		[80-90]%	[20-30]%	[5500-6000]	[2500-3000]
		RSO+act. patents	[40-50]%	[30-40]%	[70-80]%		[5-10]%		[80-90]%	[20-30]%	[5500-6000]	[2500-3000]
Not crop specific	Crop Efficiency	SO	[5-10]%	[10-20]%	[20-30]%	[20-30]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%	[2000-2500]	[200-300]
		RSO+all patents	[5-10]%	[10-20]%	[20-30]%	[20-30]%	[0-5]%	[5-10]%	[60-70]%	[30-40]%	[1500-2000]	[200-300]
		RSO+act. patents	[5-10]%	[10-20]%	[20-30]%	[20-30]%	[0-5]%	[5-10]%	[60-70]%	[30-40]%	[2000-2500]	[200-300]

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHHI
Not crop specific	Disease Control	SO	[10-20]%	[0-5]%	[20-30]%	[10-20]%	[0-5]%	[10-20]%	[50-60]%	[40-50]%	[1200-1300]	[0-100]
		RSO+all patents	[0-5]%	[0-5]%	[0-5]%	[20-30]%	[0-5]%	[10-20]%	[40-50]%	[50-60]%	[1100-1200]	[0-100]
		RSO+act. patents	[0-5]%	[0-5]%	[0-5]%	[10-20]%	[0-5]%	[10-20]%	[30-40]%	[60-70]%	[1000-1100]	[0-100]
Not crop specific	Enabling Tech.	SO	[0-5]%	[10-20]%	[20-30]%	[5-10]%	[0-5]%	[40-50]%	[70-80]%	[30-40]%	[2000-2500]	[100-200]
		RSO+all patents	[0-5]%	[10-20]%	[20-30]%	[5-10]%	[0-5]%	[40-50]%	[60-70]%	[30-40]%	[2000-2500]	[100-200]
		RSO+act. patents	[0-5]%	[10-20]%	[20-30]%	[0-5]%	[0-5]%	[40-50]%	[60-70]%	[30-40]%	[2000-2500]	[100-200]
Not crop specific	Other Traits	SO	[10-20]%	[5-10]%	[20-30]%	[10-20]%	[5-10]%	[0-5]%	[40-50]%	[50-60]%	[1000-1100]	[100-200]
		RSO+all patents	[0-5]%	[5-10]%	[5-10]%	[10-20]%	[5-10]%	[0-5]%	[30-40]%	[60-70]%	[800-900]	[0-100]
		RSO+act. patents		[10-20]%	[10-20]%		[5-10]%	[0-5]%	[20-30]%	[70-80]%	[800-900]	
Not crop specific	Insect Control	SO	[20-30]%	[30-40]%	[60-70]%	[5-10]%	[10-20]%	[10-20]%	[90-100]%	[0-5]%	[3500-4000]	[1500-2000]
		RSO+all patents	[20-30]%	[30-40]%	[60-70]%	[5-10]%	[10-20]%	[10-20]%	[90-100]%	[0-5]%	[3500-4000]	[1500-2000]
		RSO+act. patents	[20-30]%	[40-50]%	[60-70]%	[0-5]%	[10-20]%	[10-20]%	[90-100]%	[0-5]%	[4000-4500]	[2000-2500]
Not crop specific	Quality Traits	SO	[60-70]%	[0-5]%	[60-70]%	[5-10]%	[0-5]%	[20-30]%	[90-100]%	[5-10]%	[4000-4500]	[100-200]
		RSO+all patents	[60-70]%	[0-5]%	[60-70]%	[5-10]%	[0-5]%	[20-30]%	[90-100]%	[5-10]%	[4000-4500]	[100-200]
		RSO+act. patents	[50-60]%	[0-5]%	[50-60]%	[5-10]%	[0-5]%	[20-30]%	[90-100]%	[10-20]%	[4000-4500]	[100-200]
Not crop specific	Weed Control	SO	[20-30]%	[5-10]%	[30-40]%	[0-5]%	[10-20]%	[40-50]%	[90-100]%	[0-5]%	[3000-3500]	[400-500]
		RSO+all patents	[20-30]%	[5-10]%	[30-40]%	[0-5]%	[10-20]%	[40-50]%	[90-100]%	[0-5]%	[3000-3500]	[400-500]
		RSO+act. patents	[20-30]%	[5-10]%	[30-40]%	[0-5]%	[10-20]%	[40-50]%	[90-100]%	[0-5]%	[3000-3500]	[400-500]
Soybean	Quality Traits	SO	[0-5]%	[70-80]%	[70-80]%			[20-30]%	[90-100]%	[0-5]%	[5500-6000]	[0-100]
		RSO+all patents	[0-5]%	[70-80]%	[70-80]%			[20-30]%	[90-100]%	[0-5]%	[5500-6000]	[0-100]
		RSO+act. patents	[0-5]%	[70-80]%	[70-80]%			[20-30]%	[90-100]%	[0-5]%	[5500-6000]	[0-100]
Soybean	Weed Control	SO	[5-10]%	[10-20]%	[20-30]%		[5-10]%	[60-70]%	[90-100]%	[5-10]%	[4500-5000]	[100-200]
		RSO+all patents	[5-10]%	[10-20]%	[20-30]%		[5-10]%	[60-70]%	[90-100]%	[5-10]%	[4500-5000]	[100-200]
		RSO+act. patents	[5-10]%	[10-20]%	[20-30]%		[5-10]%	[60-70]%	[90-100]%	[5-10]%	[4000-4500]	[200-300]

(132) In its analysis, the Commission also distinguishes between internal citations and external citations (see Section 3.4.2). The data shows that Bayer has a particular characteristic, with the highest share of internal citations coming from its agrochemical patent portfolio, at [60-70]%. Other firms have a very different pattern, with a share of internal citations from their agrochemical patent portfolio between [0-5]% and [0-5]% (BASF: [0-5]%, CCSYN: [0-5]%, DDP: [0-5]%, MNS: <[0-5]%).

(133) On the one hand, this specific pattern for Bayer could be due to its particular strategy of [R&D strategy], suggesting that Bayer is better than other firms at implementing this strategy. This particular strategy of Bayer can be found in several internal documents.

(134) First, Bayer's research for traits is [R&D strategy].[79] […] is also confirmed when Bayer defines its research targets for HT traits as: [R&D strategy; quote from internal document].[80] Another internal document also shows that trait [R&D strategy; quote from internal document].[81]

(135) Second, as regards the [R&D strategy] project [pipeline product] Bayer mentions the following R&D target: [R&D strategy; quote from internal document].[82] Later, when considering whether or not to move its [R&D strategy] research project [pipeline product] forward, Bayer mentions that it should [R&D strategy; quote from internal document].[83] Bayer also mentions that the strength of the [R&D strategy] research project [pipeline product] is the [R&D strategy; quote from internal document].[84] In another document, as regards the [pipeline product] research project in herbicides, Bayer mentions that it has [R&D strategy; quote from internal document].[85]

(136) Third, in another document discussing potential licensing projects, in the [internal document] section, Bayer considers in combination all its patents on traits ([R&D and IP strategy; quote from internal document]) and herbicides with the [R&D and IP strategy; quote from internal document] and [R&D and IP strategy; quote from internal document] (defined as [R&D and IP strategy; quote from internal document]).[86]

(137) Fourth, when developing its [R&D strategy; quote from internal document].[87]

(138) Fifth, when analysing the strength of its competitors, Monsanto considers [R&D strategy; quote from internal document].[88]

(139) Further evidence is discussed in the Decision (Section XI.1.5 on herbicide-tolerant systems).

(140) On the other hand, one cannot exclude that this high share of internal citations from Bayer's agrochemical portfolio may be driven by a mechanical effect due the size of its agrochemical patent portfolio. Indeed, firms with larger portfolios are likely to have for "mechanical" reasons a larger share of internal citations (see Section 3.4.2).

(141) Table 9 shows that portfolio size of the Big5 firms for agrochemical patents. Given that Bayer accounts for [50-60]% of the patents in agrochemicals, which is significantly bigger than its compactors, one cannot exclude that high share of internal citation of Bayer coming from its own agrochemical patent portfolio may be potentially driven by a mechanical effect (see Section 3.4.2).

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79 Source: Bayer's meeting with the Commission, 21 November 2017, slide 13.
80 Source: BI-EDISC-0968427, [internal document], ID5610-11989, slide 5.
81 Source: BI-EDISC-0203039, [internal document], ID5893-32081, slide 47.
82 Source: BI 01281, [internal document], ID451-1443, slides 8-11.
83 Source: BI 01281, [internal document], ID451-1443, slide 13.
84 Source: BI-EDISC-0548272, [internal document], ID5609-43988, slide 38.
85 Source: BI-EDISC-0548272, [internal document], ID5609-43988, slide 47.
86 Source: BI 03125, [internal document], ID2298-28, slide 24.
87 Source: BI 03735, [internal document], ID4592-64, slide 4.
88 Source: MI 000227784.00001, [internal document], ID6152-10770, slide 26.

Table 9 – Portfolio size of the Big5 firms for agrochemical patents

	SO		RSO+all patents		RSO+active patents	
Companies	Nb. Patents	% Patents	Nb. Patents	% Patents	Nb. Patents	% Patents
BASF	[…]	[10-20]%	[…]	[10-20]%	[…]	[10-20]%
BAY	[…]	[50-60]%	[…]	[50-60]%	[…]	[50-60]%
CCSYN	[…]	[5-10]%	[…]	[5-10]%	[…]	[5-10]%
DDP	[…]	[10-20]%	[…]	[10-20]%	[…]	[10-20]%
MNS	[…]	[0-5]%	[…]	[0-5]%	[…]	[0-5]%
Others	[…]	[10-20]%	[…]	[10-20]%	[…]	[10-20]%
Total	[…]	100%	[…]	100%	[…]	100%

(142) In order to control for the bias due to a potential mechanical effect related to the important Bayer's portfolio in agrochemicals patents, the Commission has carried another forward citation analysis by excluding the citations related only to the agrochemical category. The results are presented in the Section below

4.1.3. Forward-citation analysis using only biotech citations

(143) For the sake of clarity, the Commission notes that biotech citations include citations that are only biotech-related, but also related to both the biotech and agrochemical sectors, biotech and biocontrol sectors, and biotech and formulation sectors (see Figure 3).

(144) Table 10 below reports patent shares in several innovation spaces where the Parties have overlapping research activities.

(145) Based on the patent classification used by the Commission in the Statement of Objections, Table 10 shows that the Parties represent a significant patent share in several innovation spaces, which are concentrated post-merger (with relatively high post-merger HHIs) and with a significant increase in concentration due to the proposed Transaction (relatively high Delta HHIs):

(a) Canola-quality traits: with a significant patent share of [60-70]% (Bayer: [30-40]%, Monsanto: [30-40]%), a post-merger HHI of [4500-5000], and a Delta HHI of [1500-2000];

(b) Canola-weed control: with a significant patent share of [30-40]% (Bayer: [10-20]%, Monsanto: [20-30]%), a post-merger HHI of [5000-5500], and a Delta HHI of [600-700];

(c) Cotton-insect control: with a significant patent share of [90-100]% (Bayer: [80-90]%, Monsanto: [10-20]%), a post-merger HHI of [8500-9000], and a Delta HHI of [1500-2000];

(d) Cotton-weed control: with a significant patent share of [60-70]% (Bayer: [40-50]%, Monsanto: [10-20]%), a post-merger of [4500-5000], and a Delta HHI of [1400-1500];

(e) Fruit/vegetables-disease control: with a significant patent share of [60-70]% (Bayer: [5-10]%, Monsanto: [50-60]%), a post-merger HHI of [4500-5000], and a Delta HHI of [900-1000];

(f) Fruit/vegetables-other traits: with a significant patent share of [70-80]% (Bayer: [40-50]%, Monsanto: [20-30]%), a post-merger HHI of [5000-5500], and a Delta HHI of [2000-2500];

(g) Not crop specific-insect control: with a significant patent share of [50-60]% (Bayer: [20-30]%, Monsanto: [20-30]%), a post-merger HHI of [2500-3000], and a Delta HHI of [1200-1300];

(h) Not crop specific-weed control: with a significant patent share of [30-40]% (Bayer: [20-30]%, Monsanto: [10-20]%), a post-merger HHI of [3000-3500], and a Delta HHI of [500-600];

(i) Soybean-weed control: while the patent share is lower at [20-30]% (Bayer: [10-20]%, Monsanto: [10-20]%), it is a concentrated innovation space with a post-merger HHI of [4000-4500] and a Delta HHI of [200-300].

(146) The Commission notes that the patent classification used by the Parties in the response to the Statement of Objections leads to similar results (if not identical) for most of the innovation areas: cotton/enabling technologies, cotton/insect control, cotton/weed control, fruits&vegetables/disease control, fruits&vegetables/other traits, not crop specific/crop efficiency, not crop-specific/enabling technologies, not crop-specific/other trait, not crop-specific/insect control, not crop-specific/quality traits, not crop specific/weed control, soybean/quality traits, and soybean/weed control.

(147) There is one innovation area where the classification used by the Parties in the response to the Statement of Objections leads to lower combined patent shares, namely "not crop-specific/disease control". However, this does not affect the Commission conclusion since: (i) the combined patent share of the Parties was relatively low even under the Commission's analysis carried out in the Statement of Objections ([20-30]%),[89] and (ii) the Commission did not raise innovation concerns related to this innovation area in the Statement of Objections.

(148) Last, there are three innovation areas where the classification used by the Parties in the response to the Statement of Objections leads to higher combined patent shares and higher concentration, "canola/quality traits", "canola/weed control", and "fruits&vegetables/crop efficiency".

(a) As regards "canola/quality traits", the combined patent share is increasing from [60-70]% based on the classification used in the Statement of Objections to [70-80]% when active patents are considered and with the classification used by the Parties in the response to the Statement of Objections.

(b) As regards "canola/weed control", the combined patent share is increasing from [30-40]% in the Statement of Objections to [90-100]% based on the classification used by the Parties in the response to the Statement of Objections. The main change concerns the patent share of Bayer when active patents are considered, with a decrease from [10-20]% in the SO to [10-20]% under the scenario "*RSO+active patents*". This is because one patent of Bayer that received a significant number of citations became inactive. On the other hand, the patent share of Monsanto is increasing from [20-30]% to [80-90]%, while DowDuPont being at the same level as Bayer. The Commission considers that the high level of the combined patent share ([90-100]%), the high level of HHI ([8000-8500])

[89] This innovation area is not listed in Table 16, where the Commission lists the innovation areas with a significant combined patent share of the merged entity.

and Delta HHI ([1500-2000]), with DowDuPont being the only alternative to the Parties, constitute important initial indicators of potential competition concerns. Moreover, the Commission notes that the Parties did not contest in the response to the Statement of Objections evidence on closeness for the innovation efforts made by the Parties, with a lack of alternatives for that specific innovation space. Last, given that Bayer is still active in research for weed control in canola, the Commission considers that this inactive patent of Bayer is still relevant to assess the technological strength of Bayer in that specific innovation space.

(c) As regards "fruits&vegetables/crop efficiency", based on the classification of the Parties in the response to the Statement of Objections and considering active patents only, the combined entity represents a significant combined patent share of [40-50]% (Monsanto: [20-30]%, Bayer: [5-10]%) in a concentrated area (HHI of [2500-3000]) and with a further increase in concentration due to the proposed Transaction (Delta HHI of [600-700]).

Table 10 – Share of total citations (citations coming from biotech-related patents, 1.1 non-linear weight, full period)

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHH
Canola	Quality Traits	SO	[30-40]%	[30-40]%	[60-70]%	[0-5]%		[20-30]%	[80-90]%	[10-20]%	[4500-5000]	[1500-2000]
		RSO+all patents	[30-40]%	[30-40]%	[70-80]%			[20-30]%	[90-100]%	[0-5]%	[6000-6500]	[2500-3000]
		RSO+act. patents	[40-50]%	[30-40]%	[70-80]%			[20-30]%	[90-100]%	[0-5]%	[5500-6000]	[2000-2500]
Canola	Weed Control	SO	[10-20]%	[20-30]%	[30-40]%			[0-5]%	[30-40]%	[60-70]%	[5000-5500]	[600-700]
		RSO+all patents	[40-50]%	[50-60]%	[90-100]%			[5-10]%	[90-100]%		[8500-9000]	[4000-4500]
		RSO+act. Patents	[10-20]%	[80-90]%	[90-100]%			[10-20]%	[90-100]%		[8000-8500]	[1500-2000]
Cotton	Enabling Tech.	SO	[90-100]%	[0-5]%	[90-100]%				[90-100]%	[5-10]%	[8500-9000]	[0-100]
		RSO+all patents	[90-100]%	[0-5]%	[90-100]%				[90-100]%	[5-10]%	[8500-9000]	[0-100]
		RSO+act. Patents	[90-100]%	[0-5]%	[90-100]%				[90-100]%	[5-10]%	[8500-9000]	[0-100]
Cotton	Insect Control	SO	[80-90]%	[10-20]%	[90-100]%			[0-5]%	[90-100]%	[0-5]%	[8500-9000]	[1500-2000]
		RSO+all patents	[80-90]%	[10-20]%	[90-100]%			[0-5]%	[90-100]%	[0-5]%	[8500-9000]	[1500-2000]
		RSO+act. patents	[80-90]%	[10-20]%	[90-100]%			[0-5]%	[90-100]%	[0-5]%	[8500-9000]	[1500-2000]
Cotton	Weed Control	SO	[40-50]%	[10-20]%	[60-70]%			[10-20]%	[70-80]%	[20-30]%	[4500-5000]	[1400-1500]
		RSO+all patents	[40-50]%	[10-20]%	[60-70]%			[10-20]%	[70-80]%	[20-30]%	[4500-5000]	[1400-1500]
		RSO+act. patents	[40-50]%	[10-20]%	[60-70]%			[10-20]%	[70-80]%	[20-30]%	[4500-5000]	[1400-1500]
Fruit/ Vegetables	Crop Efficiency	SO	[0-5]%	[30-40]%	[30-40]%		[20-30]%	[5-10]%	[60-70]%	[30-40]%	[2000-2500]	[0-100]
		RSO+all patents	[5-10]%	[30-40]%	[40-50]%		[20-30]%	[5-10]%	[70-80]%	[20-30]%	[2500-3000]	[400-500]
		RSO+act. patents	[5-10]%	[30-40]%	[40-50]%		[5-10]%	[5-10]%	[60-70]%	[30-40]%	[2500-3000]	[600-700]

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHH
Fruit/ Vegetables	Disease Control	SO	[5-10]%	[50-60]%	[60-70]%		[0-5]%		[60-70]%	[30-40]%	[4500-5000]	[900-1000]
		RSO+all patents	[5-10]%	[50-60]%	[60-70]%		[0-5]%		[60-70]%	[30-40]%	[4500-5000]	[900-1000]
		RSO+act. patents	[5-10]%	[50-60]%	[60-70]%		[0-5]%		[60-70]%	[30-40]%	[4500-5000]	[900-1000]
Fruit/ Vegetables	Other Traits	SO	[40-50]%	[20-30]%	[70-80]%		[5-10]%		[70-80]%	[20-30]%	[5000-5500]	[2000-2500]
		RSO+all patents	[40-50]%	[20-30]%	[70-80]%		[5-10]%		[70-80]%	[20-30]%	[5000-5500]	[2000-2500]
		RSO+act. patents	[40-50]%	[20-30]%	[70-80]%		[5-10]%		[70-80]%	[20-30]%	[5000-5500]	[2000-2500]
Not crop specific	Crop Efficiency	SO	[0-5]%	[20-30]%	[20-30]%	[30-40]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%	[2000-2500]	[0-100]
		RSO+all patents	[0-5]%	[20-30]%	[20-30]%	[30-40]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%	[2000-2500]	[0-100]
		RSO+act. patents	[0-5]%	[20-30]%	[20-30]%	[30-40]%	[0-5]%	[5-10]%	[60-70]%	[40-50]%	[2000-2500]	[0-100]
Not crop specific	Disease Control	SO	[10-20]%	[0-5]%	[20-30]%	[20-30]%	[0-5]%	[10-20]%	[50-60]%	[40-50]%	[1200-1300]	[0-100]
		RSO+all patents	[0-5]%	[0-5]%	[0-5]%	[20-30]%	[0-5]%	[10-20]%	[40-50]%	[50-60]%	[1100-1200]	[0-100]
		RSO+act. patents	[0-5]%	[0-5]%	[0-5]%	[10-20]%	[0-5]%	[10-20]%	[30-40]%	[60-70]%	[1000-1100]	[0-100]
Not crop specific	Enabling Tech.	SO	[0-5]%	[20-30]%	[20-30]%	[5-10]%	[0-5]%	[20-30]%	[60-70]%	[30-40]%	[1500-2000]	[100-200]
		RSO+all patents	[0-5]%	[20-30]%	[20-30]%	[5-10]%	[0-5]%	[20-30]%	[60-70]%	[30-40]%	[1400-1500]	[100-200]
		RSO+act. patents	[0-5]%	[20-30]%	[20-30]%	[5-10]%	[0-5]%	[20-30]%	[60-70]%	[40-50]%	[1500-2000]	[100-200]
Not crop specific	Other Traits	SO	[0-5]%	[5-10]%	[10-20]%	[20-30]%	[5-10]%	[5-10]%	[40-50]%	[50-60]%	[900-1000]	[0-100]
		RSO+all patents	[0-5]%	[5-10]%	[10-20]%	[20-30]%	[5-10]%	[5-10]%	[40-50]%	[50-60]%	[800-900]	[0-100]
		RSO+act. patents		[10-20]%	[10-20]%		[5-10]%	[5-10]%	[20-30]%	[70-80]%	[700-800]	
Not crop specific	Insect Control	SO	[20-30]%	[20-30]%	[50-60]%	[10-20]%	[10-20]%	[20-30]%	[90-100]%	[5-10]%	[2500-3000]	[1200-1300]
		RSO+all patents	[20-30]%	[20-30]%	[50-60]%	[10-20]%	[10-20]%	[20-30]%	[90-100]%	[0-5]%	[2500-3000]	[1300-1400]
		RSO+act. patents	[20-30]%	[30-40]%	[50-60]%	[5-10]%	[10-20]%	[20-30]%	[90-100]%	[0-5]%	[3000-3500]	[1500-2000]
Not crop specific	Quality Traits	SO	[20-30]%	[0-5]%	[20-30]%	[10-20]%	[0-5]%	[40-50]%	[80-90]%	[10-20]%	[2500-3000]	[100-200]
		RSO+all patents	[20-30]%	[0-5]%	[20-30]%	[10-20]%	[0-5]%	[40-50]%	[80-90]%	[20-30]%	[2500-3000]	[100-200]
		RSO+act. patents	[20-30]%	[0-5]%	[20-30]%	[10-20]%	[0-5]%	[40-50]%	[70-80]%	[20-30]%	[2500-3000]	[100-200]
Not crop specific	Weed Control	SO	[20-30]%	[10-20]%	[30-40]%	[5-10]%	[10-20]%	[40-50]%	[90-100]%	[0-5]%	[3000-3500]	[500-600]
		RSO+all patents	[20-30]%	[10-20]%	[30-40]%	[5-10]%	[10-20]%	[40-50]%	[90-100]%	[0-5]%	[3000-3500]	[500-600]
		RSO+act. patents	[20-30]%	[10-20]%	[30-40]%	[5-10]%	[10-20]%	[40-50]%	[90-100]%	[0-5]%	[3000-3500]	[500-600]

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHH
Soybean	Quality Traits	SO	[0-5]%	[60-70]%	[60-70]%			[30-40]%	[90-100]%	[5-10]%	[4500-5000]	[0-100]
		RSO+all patents	[0-5]%	[60-70]%	[60-70]%			[30-40]%	[90-100]%	[5-10]%	[4500-5000]	[0-100]
		RSO+act. patents	[0-5]%	[50-60]%	[50-60]%			[30-40]%	[90-100]%	[5-10]%	[4500-5000]	[0-100]
Soybean	Weed Control	SO	[10-20]%	[10-20]%	[20-30]%		[5-10]%	[50-60]%	[90-100]%	[10-20]%	[4000-4500]	[200-300]
		RSO+all patents	[10-20]%	[10-20]%	[20-30]%		[5-10]%	[50-60]%	[90-100]%	[10-20]%	[4000-4500]	[200-300]
		RSO+act. patents	[10-20]%	[10-20]%	[20-30]%		[5-10]%	[50-60]%	[80-90]%	[10-20]%	[3500-4000]	[200-400]

(149) The Commission notes that Bayer has the highest share of internal citations, with [60-70]% of citations coming from its own patent portfolio. Other firms have also a relatively high share of internal citations, like BASF ([40-50]%) and DDP ([50-60]%), followed by MNS ([20-30]%) and CCSYN ([10-20]%).

(150) Table 11 reports the size of the patent portfolio for each category of citations. This table shows that Bayer is not overrepresented in any category,[90] and therefore the share of internal citations from Bayer is unlikely to be related to any mechanical effect.

Table 11 – Portfolio size of the citing patent families that are biotech-related

SO-analysis					
Owner	Biotech only	Biotech_Agro	Biotech_BioControl	Biotech_Formul	Total
BASF	[…]	[…]	[…]	[…]	[…]
BAY	[…]	[…]	[…]	[…]	[…]
CCSYN	[…]	[…]	[…]	[…]	[…]
DDP	[…]	[…]	[…]	[…]	[…]
MNS	[…]	[…]	[…]	[…]	[…]
Others	[…]	[…]	[…]	[…]	[…]
Total	[…]	[…]	[…]	[…]	[…]
RSO-all patents					
Owner	Biotech only	Biotech_Agro	Biotech_BioControl	Biotech_Formul	Total
BASF	[…]	[…]	[…]	[…]	[…]
BAY	[…]	[…]	[…]	[…]	[…]
CCSYN	[…]	[…]	[…]	[…]	[…]
DDP	[…]	[…]	[…]	[…]	[…]
MNS	[…]	[…]	[…]	[…]	[…]
Others	[…]	[…]	[…]	[…]	[…]
Total	[…]	[…]	[…]	[…]	[…]

[90] Under the patent classification used in the Statement of Objections, even if Bayer has the biggest portfolio in the category […] with […] patents out of […] patents ([30-40]%), this level is still closer to the level of DowDuPont ([…] out of […] patents, [20-30]%) and Monsanto ([…] out of […] patents, [10-20]%), compared to the proportion of [50-60]% of agrochemical patents discussed in paragraph (141). Similar findings apply to the other two patent classifications.

RSO-active patents					
Owner	Biotech only	Biotech_Agro	Biotech_BioControl	Biotech_Formul	Total
BASF	[…]	[…]	[…]	[…]	[…]
BAY	[…]	[…]	[…]	[…]	[…]
CCSYN	[…]	[…]	[…]	[…]	[…]
DDP	[…]	[…]	[…]	[…]	[…]
MNS	[…]	[…]	[…]	[…]	[…]
Others	[…]	[…]	[…]	[…]	[…]
Total	[…]	[…]	[…]	[…]	[…]

(151) The Commission therefore considers that the high share of internal biotech-related citations of Bayer represents the cumulative nature of Bayer's innovation, with Bayer innovating over time in similar trajectory (see Section 3.4.2). This is consistent with Bayer's internal documents, indicating for example that Bayer has been particularly active in research in the [pipeline products] class for weed control (see Figure 4). The important activity of Bayer in the [pipeline products] class for HT trait is also confirmed in the patent data based on the classification used in the Statement of Objections, where among the […] patents belonging to this class, Bayer is the most important owner with […] patents, followed by BASF ([…] patents), CCSYN ([…] patents), DDP ([…] patents), and MNS ([…] patent). The patent data also shows that Bayer has an important presence for the [pipeline products] class for HT traits, by owning the largest number of patents ([…] patents), followed by DDP ([…] patents), MNS ([…] patents), ChemChina-Syngenta ([…] patents), and MSTech ([…] patents).[91] The Commission notes that the [pipeline products] class and [pipeline products] class are two of the most important herbicides families for HT trait patents (see Figure 5).[92]

Figure 4 – Focus on Bayer on patents related to the [pipeline products] chemistry[93]

[…]

Figure 5 – [Pipeline products] and [pipeline products] are two important herbicides families for HT trait patents[94]

[…]

[91] Similar findings apply when only active patents are considered: as regard the [pipeline products] class for HT traits, Bayer owns […] patents, BASF […] patents, CCSYN […] patents, DDP […] patents and MNS […] patent. As regards the [pipeline products] class for HT traits, Bayer still owns a significant number of patents ([…] patents), DDP […] patents, MNS […] patents, ChemChina-Syngenta […] patents and MSTech […] patents.

[92] The Commission notes that the data provided does not allow to carry out a similar analysis by class for insect control.

[93] Source: BI-EDISC-0548254, [internal document], ID5609-43970, slides 19 and 20.

[94] Source: BI-EDISC-0548254, [internal document], ID5609-43970, slide 23.

(152) Overall, the Commission considers that the approach discussed in this Section is reliable since:

(a) This approach allows removing any potential mechanical effect which may affect the relevance of Bayer's internal citations and therefore its patent shares, due to the importance of its agrochemical patent portfolio.

(b) This approach guarantees that all citations are related to the biotech industry, and therefore are relevant to assess the quality of biotech patents provided by Bayer (see Section 3.4.1).

(153) However, the Commission found that a significant number of citations related to the biotech sector were discarded since the corresponding patents were not present in the Thomson dataset provided by Bayer (see Figure 3, where […] citations belong to the category "Others"). In the next Section, the Commission has completed the classification of citations into the biotech sector by using the IPC codes of the corresponding patents.

4.1.4. Forward-citation analysis using only biotech citations, including the citations from the category "Others" that can be classified as biotech

(154) In this Section, the Commission presents the results of the analysis of patents when the biotech patents of the category "Others" are included. In order to classify these patents, the Commission has used the following IPC codes:

(a) The patents with IPC code "C12N15"[95] are classified as biotech patents;

(b) The patents with IPC codes "A01N33", [96] "A01N37", [97] "A01N41", [98] "A01N43"[99] and "A01N57"[100] are classified as agrochemicals patents.

(155) The patents from the category "Other" which are not classified either as a biotech or agrochemical patents are excluded.

(156) The Commission has also excluded the patents that are classified only as biocontrol or formulation patents. This is because these patents are not related to the biotech sector. As Figure 3 shows, these patents account for a minor share of citations.

(157) Moreover, the Commission has also excluded the citing patents that are exclusively related only to the agrochemical category (i.e. not related to the biotech category). As discussed in paragraph (142), this allows to control for any mechanical effect due to the size of Bayer for its portfolio of agrochemical patents.

(158) Overall, with this approach, the Commission has included in the sample of citations all citations that are related to the biotech sector (i.e. with the code C12N15, see

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95 Source: www.wipo.int. *"Mutation or genetic engineering; DNA or RNA concerning genetic engineering, vectors, e.g. plasmids, or their isolation, preparation or purification; Use of hosts therefor"*.

96 Source: www.wipo.int. "Biocides, *pest repellants or attractants, or* plant growth regulators *containing organic nitrogen compounds*".

97 Source: www.wipo.int. "*Biocides, pest repellants or attractants, or plant growth regulators containing organic compounds containing a carbon atom having three bonds to hetero atoms with at the most two bonds to halogen, e.g. carboxylic acids"*.

98 Source: www.wipo.int. *"Biocides, pest repellants or attractants, or plant growth regulators containing organic compounds containing a sulfur atom bound to a hetero atom"*.

99 Source: www.wipo.int. "*Biocides, pest repellants or attractants, or plant growth regulators containing heterocyclic compounds*".

100 Source: www.wipo.int. "*Biocides, pest repellants or attractants, or plant growth regulators, containing organic phosphorus compounds*".

paragraph (154)), and therefore all patents that are relevant to assess the quality of biotech patents. This approach complements the classification of citing patents done with the Thomson dataset provided by the Parties (see paragraph (49)). Moreover, by excluding all patents related only to the agrochemical category, this approach allows to control for any mechanical effect which may affect the relevance of Bayer's internal citations and therefore its patent shares, due to the importance of its agrochemical patent portfolio (see paragraph (140)-(141)). The Commission therefore considers this approach as the most reliable.

(159) This leads to […] citations received, with the following distribution: biotech only ([…] citations), biotech and agrochemicals ([…] citations), biotech and biocontrol ([…] citations), and biotech and formulations ([…] citations).[101]

(160) Table 12 below reports patent shares in several innovation spaces where the Parties have overlapping research activities.

(161) Based on the patent classification used by the Commission in the Statement of Objections, Table 12 shows that the Parties represent a significant patent share in several innovation spaces, which are concentrated post-merger (with relatively high post-merger HHIs) and with a significant increase in concentration due to the proposed Transaction (relatively high Delta HHIs):

(a) Canola-quality traits: with a significant patent share of [40-50]% (Bayer: [20-30]%, Monsanto: [20-30]%), a post-merger HHI of [3500-4000], and a Delta HHI of [1000-1100];

(b) Canola-weed control: with a significant patent share of [30-40]% (Bayer: [10-20]%, Monsanto: [20-30]%), a post-merger HHI of [5000-5500] and a Delta HHI of [600-700]. The Commission also notes that the only significant player in addition to the Parties is called Cibus (see footnote 73);

(c) Cotton-enabling technologies: with a significant patent share of [90-100]% (Bayer: [90-100]%, Monsanto: [0-5]%), a post-merger HHI of [8500-9000] and a Delta HHI of [400-500];

(d) Cotton-insect control: with a significant patent share of [80-90]% (Bayer: [70-80]%, Monsanto: [10-20]%), a post-merger HHI of [7000-7500], and a Delta HHI of [1500-2000];

(e) Cotton-weed control: with a significant patent share of [70-80]% (Bayer: [40-50]%, Monsanto: [20-30]%), a post-merger of [6000-6500], and a Delta HHI of [2500-3000];

(f) Fruit/vegetables-disease control: with a significant patent share of [70-80]% (Bayer: [5-10]%, Monsanto: [60-70]%), a post-merger HHI of [5000-5500], and a Delta HHI of [800-900];

[101] Similar results apply with the patent classification provided by the Parties in response to the statement of Objections. Considering all patents, the distribution of citations received is the following: biotech only (10358 citations), biotech and agrochemicals (807 citations), biotech and biocontrol (95 citations), and biotech and formulations (5 citations). Considering only active patents, the distribution is the following: biotech only (9159 citations), biotech and agrochemicals (745 citations), biotech and biocontrol (88 citations), and biotech and formulations (4 citations).

(g) Fruit/vegetables-other traits: with a significant patent share of [70-80]% (Bayer: [30-40]%, Monsanto: [30-40]%), a post-merger HHI of [5500-6000], and a Delta HHI of [2500-3000];

(h) Not crop specific-insect control: with a significant patent share of [40-50]% (Bayer: [20-30]%, Monsanto: [20-30]%), a post-merger HHI of [3000-3500], and a Delta HHI of [1000-1100]. As discussed in paragraph (48), Monsanto owned jointly with Syngenta a patent on insect control. This patent is reallocated to Monsanto because to the extent that the proposed Transaction will affect the incentives of Monsanto to continue its own research (because of an overlap with a line of research of Bayer), it will also affect the incentives of Monsanto to continue its research in collaboration with other companies. In any event, allocating this patent both to Monsanto and Syngenta by splitting its value equally across the two companies would still lead to a significant patent share of [10-20]% for Monsanto, and therefore a significant combined patent share of [40-50]%.

(i) Not crop specific-weed control: with a significant patent share of [50-60]% (Bayer: [10-20]%, Monsanto: [40-50]%), a post-merger HHI of [4000-4500], and a Delta HHI of [1200-1300];

(j) Soybean-weed control: with a significant patent share of [70-80]% (Bayer: [0-5]%, Monsanto: [60-70]%), a post-merger HHI of [5000-5500], and a Delta HHI of [400-500].

(162) The Commission notes that the patent classification used by the Parties in the response to the Statement of Objections leads to similar results (if not identical) for most of the innovation areas: cotton/enabling technologies, cotton/insect control, cotton/weed control, fruits&vegetables/disease control, fruits&vegetables/other traits, not crop specific/crop efficiency, not crop-specific/enabling technologies, not crop-specific/other traits, not crop-specific/insect control, not crop-specific/quality traits, not crop specific/weed control, soybean/quality traits, and soybean/weed control.

(163) There is one innovation area where the classification used by the Parties in the response to the Statement of Objections leads to lower combined patent shares, "not crop-specific/disease control". However, this does not affect the Commission conclusion since: (i) the combined patent share of the Parties was relatively low even under the Commission's analysis carried out in the Statement of Objections ([10-20]% for "not crop-specific/disease control), [102] and (ii) the Commission did not raise innovation concerns related to this innovation area in the Statement of Objections.

(164) Last, there are three innovation areas where the classification used by the Parties in the response to the Statement of Objections leads to higher combined patent shares and higher concentration, "canola/quality traits", "canola/weed control", and "fruits&vegetables/crop efficiency".

(a) As regards "canola/quality traits", the combined patent share is increasing from [40-50]% based on the classification used in the Statement of Objections to [50-60]% when active patents are considered and with the classification used by the Parties in the response to the Statement of Objections.

[102] This innovation area is not listed in Table 16, where the Commission lists the innovation areas with a significant combined patent share of the merged entity.

(b) As regards "canola/weed control", the combined patent share is increasing from [30-40]% in the Statement of Objections to [90-100]% based on the classification used by the Parties in the response to the Statement of Objections. The main change concerns the patent share of Bayer when active patents are considered, with a decrease from [10-20]% in the Statement of Objections to [5-10]% under the scenario "*RSO+active patents*". This is because one patent of Bayer that received a significant number of citations became inactive. On the other hand, the patent share of Monsanto is increasing from [20-30]% to [80-90]%, with DowDuPont being at the same level as Bayer. The Commission considers that the high level of the combined patent share ([90-100]%), the high level of HHI ([8500-9000]) and Delta HHI ([1100-1200]), with DowDuPont being the only alternative to the Parties, constitute important initial indicators of potential competition concerns. Moreover, the Commission notes that the Parties did not contest in the response to the Statement of Objections evidence on closeness for the innovation efforts made by the Parties, with a lack of alternatives for that specific innovation space. Last, given that Bayer is still active in research for weed control in canola, the Commission considers that this inactive patent of Bayer is still relevant to assess the technological strength of Bayer in that specific innovation space.

(c) As regards "fruits&vegetables/crop efficiency", based on the classification of the Parties in the response to the Statement of Objections and considering active patents only, the combined entity represents a significant combined patent share of [60-70]% (Monsanto: [50-60]%, Bayer: [5-10]%) in a concentrated area (HHI of [4000-4500]) and with a further increase in concertation due to the prosed Transaction (Delta HHI of [600-700]).

Table 12 – Share of total citations (category "Others" classified, focus on biotech-related citations, 1.1 non-linear weight, full period)

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHHI
Canola	Quality Traits	SO RSO+all patents	[20-30]%	[20-30]%	[40-50]%	[0-5]%		[30-40]%	[80-90]%	[10-20]%	[3500-4000]	[1000-1100]
		RSO+act. patents	[20-30]%	[30-40]%	[50-60]%			[40-50]%	[90-100]%	[0-5]%	[5000-5500]	[1400-1500]
			[20-30]%	[30-40]%	[50-60]%			[40-50]%	[90-100]%	[0-5]%	[5000-5500]	[1500-2000]
Canola	Weed Control	SO RSO+all patents	[10-20]%	[20-30]%	[30-40]%			[0-5]%	[30-40]%	[60-70]%	[5000-5500]	[600-700]
		RSO+act. patents	[30-40]%	[60-70]%	[90-100]%			[5-10]%	[90-100]%		[9000-9500]	[4000-4500]
			[5-10]%	[80-90]%	[90-100]%			[5-10]%	[90-100]%		[8500-9000]	[1100-1200]
Cotton	Enabling Tech.	SO RSO+all patents	[90-100]%	[0-5]%	[90-100]%				[90-100]%	[5-10]%	[8500-9000]	[400-500]
		RSO+act. patents	[90-100]%	[0-5]%	[90-100]%				[90-100]%	[5-10]%	[8500-9000]	[400-500]
			[90-100]%	[0-5]%	[90-100]%				[90-100]%	[5-10]%	[8500-9000]	[400-500]
Cotton	Insect Control	SO RSO+all patents	[70-80]%	[10-20]%	[80-90]%			[5-10]%	[80-90]%	[10-20]%	[7000-7500]	[1500-2000]
		RSO+act. patents	[70-80]%	[10-20]%	[80-90]%			[5-10]%	[80-90]%	[10-20]%	[7000-7500]	[1500-2000]
			[70-80]%	[10-20]%	[80-90]%			[5-10]%	[80-90]%	[10-20]%	[7000-7500]	[1500-2000]

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHHI
Cotton	Weed Control	SO	[40-50]%	[20-30]%	[70-80]%			[0-5]%	[80-90]%	[10-20]%	[6000-6500]	[2500-3000]
		RSO+all patents	[40-50]%	[20-30]%	[70-80]%			[0-5]%	[80-90]%	[10-20]%	[6000-6500]	[2500-3000]
		RSO+act. patents	[40-50]%	[20-30]%	[70-80]%			[0-5]%	[80-90]%	[10-20]%	[6000-6500]	[2500-3000]
Fruit/ Vegetables	Crop Efficiency	SO	[0-5]%	[50-60]%	[50-60]%		[10-20]%	[0-5]%	[70-80]%	[20-30]%	[3500-4000]	[0-100]
		RSO+all patents	[5-10]%	[50-60]%	[50-60]%		[10-20]%	[0-5]%	[70-80]%	[20-30]%	[3500-4000]	[500-600]
		RSO+act. patents	[5-10]%	[50-60]%	[60-70]%		[5-10]%	[0-5]%	[70-80]%	[20-30]%	[4000-4500]	[600-700]
Fruit/ Vegetables	Disease Control	SO	[5-10]%	[60-70]%	[70-80]%		[0-5]%		[70-80]%	[20-30]%	[5000-5500]	[800-900]
		RSO+all patents	[5-10]%	[60-70]%	[70-80]%		[0-5]%		[70-80]%	[20-30]%	[5000-5500]	[800-900]
		RSO+act. patents	[5-10]%	[60-70]%	[70-80]%		[0-5]%		[70-80]%	[20-30]%	[5000-5500]	[700-800]
Fruit/ Vegetables	Other Traits	SO	[30-40]%	[30-40]%	[70-80]%		[5-10]%		[70-80]%	[20-30]%	[5500-6000]	[2500-3000]
		RSO+all patents	[30-40]%	[30-40]%	[70-80]%		[5-10]%		[70-80]%	[20-30]%	[5500-6000]	[2500-3000]
		RSO+act. patents	[30-40]%	[30-40]%	[70-80]%		[5-10]%		[70-80]%	[20-30]%	[5500-6000]	[2500-3000]
Not crop specific	Crop Efficiency	SO	[0-5]%	[10-20]%	[20-30]%	[30-40]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%	[1500-2000]	[0-100]
		RSO+all patents	[0-5]%	[10-20]%	[20-30]%	[30-40]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%	[1500-2000]	[0-100]
		RSO+act. patents	[0-5]%	[20-30]%	[20-30]%	[30-40]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%	[1500-2000]	[0-100]
Not crop specific	Disease Control	SO	[10-20]%	[0-5]%	[10-20]%	[10-20]%	[0-5]%	[10-20]%	[40-50]%	[50-60]%	[900-1000]	[0-100]
		RSO+all patents	[0-5]%	[0-5]%	[5-10]%	[10-20]%	[0-5]%	[10-20]%	[30-40]%	[60-70]%	[800-900]	[0-100]
		RSO+act. patents	[0-5]%	[0-5]%	[5-10]%	[10-20]%	[0-5]%	[10-20]%	[30-40]%	[60-70]%	[800-900]	[0-100]
Not crop specific	Enabling Tech.	SO	[0-5]%	[10-20]%	[20-30]%	[5-10]%	[0-5]%	[20-30]%	[50-60]%	[40-50]%	[1200-1300]	[0-100]
		RSO+all patents	[0-5]%	[20-30]%	[20-30]%	[5-10]%	[0-5]%	[20-30]%	[50-60]%	[40-50]%	[1100-1200]	[0-100]
		RSO+act. patents	[0-5]%	[20-30]%	[20-30]%	[0-5]%	[0-5]%	[20-30]%	[50-60]%	[40-50]%	[1200-1300]	102
Not crop specific	Other Traits	SO	[0-5]%	[5-10]%	[5-10]%	[20-30]%	[5-10]%	[0-5]%	[40-50]%	[50-60]%	[900-1000]	[0-100]
		RSO+all patents	[0-5]%	[5-10]%	[5-10]%	[20-30]%	[5-10]%	[0-5]%	[40-50]%	[60-70]%	[900-1000]	[0-100]
		RSO+act. patents		[5-10]%	[5-10]%		[10-20]%	[0-5]%	[20-30]%	[70-80]%	[700-800]	
Not crop specific	Insect Control	SO	[20-30]%	[20-30]%	[40-50]%	[5-10]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3000-3500]	[1000-1100]
		RSO+all patents	[20-30]%	[20-30]%	[40-50]%	[5-10]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3000-3500]	[1000-1100]
		RSO+act. patents	[20-30]%	[20-30]%	[40-50]%	[0-5]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3000-3500]	[1100-1200]

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHHI
Not crop specific	Quality Traits	SO	[10-20]%	[0-5]%	[10-20]%	[10-20]%	[0-5]%	[40-50]%	[80-90]%	[10-20]%	[2500-3000]	[100-200]
		RSO+all patents	[10-20]%	[0-5]%	[10-20]%	[10-20]%	[0-5]%	[40-50]%	[80-90]%	[10-20]%	[2500-3000]	[100-200]
		RSO+act. patents	[10-20]%	[0-5]%	[10-20]%	[10-20]%	[0-5]%	[40-50]%	[80-90]%	[20-30]%	[2500-3000]	[0-100]
Not crop specific	Weed Control	SO	[10-20]%	[40-50]%	[50-60]%	[5-10]%	[5-10]%	[20-30]%	[90-100]%	[5-10]%	[4000-4500]	[1200-1300]
		RSO+all patents	[10-20]%	[40-50]%	[50-60]%	[5-10]%	[5-10]%	[20-30]%	[90-100]%	[5-10]%	[4000-4500]	[1200-1300]
		RSO+act. patents	[10-20]%	[40-50]%	[50-60]%	[5-10]%	[5-10]%	[20-30]%	[90-100]%	[0-5]%	[4000-4500]	[1100-1200]
Soybean	Quality Traits	SO	[0-5]%	[60-70]%	[60-70]%			[30-40]%	[90-100]%	[5-10]%	[4500-5000]	[0-100]
		RSO+all patents	[0-5]%	[60-70]%	[60-70]%			[30-40]%	[90-100]%	[5-10]%	[4500-5000]	[0-100]
		RSO+act. patents	[0-5]%	[60-70]%	[60-70]%			[30-40]%	[90-100]%	[5-10]%	[4500-5000]	[0-100]
Soybean	Weed Control	SO	[0-5]%	[60-70]%	[70-80]%		[0-5]%	[20-30]%	[90-100]%	[0-5]%	[5000-5500]	[400-500]
		RSO+all patents	[0-5]%	[60-70]%	[70-80]%		[0-5]%	[20-30]%	[90-100]%	[0-5]%	[5000-5500]	[400-500]
		RSO+act. patents	[0-5]%	[60-70]%	[70-80]%		[0-5]%	[20-30]%	[90-100]%	[0-5]%	[5500-6000]	[500-600]

(165) The Commission also notes that for the innovation spaces where the Parties represent a significant combined patent share, the Big5 companies also represent an overall patent share in the range of [70-80]-[90-100]%, indicating that there are generally no other important innovators outside the Big5 companies. The only exception is the innovation space "canola-weed control" (based on the classification used in the Statement of Objections), but the Commission notes that there is only one additional innovator in the category "Other".[103]

(166) Similarly to Section 4.1.3, based on the patent classification used in the Statement of Objections, Bayer has a significant share of internal citations, around [40-50]%. As regards other companies, BASF has a [30-40]% share of internal citations, CCSYN of [10-20]%, MNS of [40-50]%, and DDP of [40-50]%.[104]

(167) Table 13 reports the size of the patent portfolio for each category of citations. This table shows that Bayer is not overrepresented in any category, and therefore the share of internal citations from Bayer is unlikely to be related to any mechanical effect.

[103] See footnote 73 for a description of the conservative approach used by the Commission.

[104] Similar results apply with the patent classification provided by the Parties in the response to the Statement of Objections.

Table 13 – Number of citing patent families that are biotech-related (category "Others" classified)

SO-analysis					
Owner	**Biotech only**	**Biotech-Agro**	**Biotech-BioControl**	**Biotech-Formul**	**Total**
BASF	[…]	[…]	[…]	[…]	[…]
BAY	[…]	[…]	[…]	[…]	[…]
CCSYN	[…]	[…]	[…]	[…]	[…]
DDP	[…]	[…]	[…]	[…]	[…]
MNS	[…]	[…]	[…]	[…]	[…]
Others	[…]	[…]	[…]	[…]	[…]
Total	[…]	[…]	[…]	[…]	[…]
RSO-all patents					
Owner	**Biotech only**	**Biotech-Agro**	**Biotech-BioControl**	**Biotech-Formul**	**Total**
BASF	[…]	[…]	[…]	[…]	[…]
BAY	[…]	[…]	[…]	[…]	[…]
CCSYN	[…]	[…]	[…]	[…]	[…]
DDP	[…]	[…]	[…]	[…]	[…]
MNS	[…]	[…]	[…]	[…]	[…]
Others	[…]	[…]	[…]	[…]	[…]
Total	[…]	[…]	[…]	[…]	[…]
RSO-active patents					
Owner	**Biotech only**	**Biotech-Agro**	**Biotech-BioControl**	**Biotech-Formul**	**Total**
BASF	[…]	[…]	[…]	[…]	[…]
BAY	[…]	[…]	[…]	[…]	[…]
CCSYN	[…]	[…]	[…]	[…]	[…]
DDP	[…]	[…]	[…]	[…]	[…]
MNS	[…]	[…]	[…]	[…]	[…]
Others	[…]	[…]	[…]	[…]	[…]
Total	[…]	[…]	[…]	[…]	[…]

4.2. Controlling for the effect of age confirms the robustness of the results

(168) In order to control for the age effect, i.e. that some companies may have been relatively more active recently than others, the Commission reports in Table 14 patent shares for patents published after 2011 for the case that it considers the most reliable (Section 4.1.4). This year-threshold has been suggested by the Parties in their economic submission on patents.[105] The Commission notes that this methodology may not encompass innovation spaces where: (i) no patents were published after 2011, while these innovation spaces may still be research targets for the Parties, or (ii) the Parties' activities do not overlap in some innovation spaces because one of the two

[105] Source: Parties' submission entitled "Patent analysis in broad acre seeds and traits", dated 22 November 2017, page 13, ID8696-4.

companies has not published patents after 2011, while this innovation space is still a research target for both Parties (see comparison with Table 12).

(169) Based on the patent classification used by the Commission in the Statement of Objections, the Commission notes that the combined patent shares of the Parties are significant in all innovation spaces discussed above in paragraph (161) (and sometimes even higher than in Table 12, for example for cotton-weed control). The Commission notes there are two innovation spaces where the combined patent shares of the Parties is decreasing:

(a) Not crop specific-weed control: with a combined patent share which is still significant at [50-60]%.

(b) Not crop specific-insect control: where the Parties have a combined patent share of [20-30]%. However, the Commission considers this patent share as being significant since: the concentration in this innovation space is high with a HHI of [4000-4500] and with a Delta HHI of [400-500], Bayer is the number 2 innovator and Monsanto is the number 3 innovator (the main innovator being DDP for this more recent period). Moreover, it appears that there are no other significant innovators outside the Big5 companies, which represent an overall patent share of [90-100]%. Last, the Commission notes that the patent jointly owned by Monsanto and Syngenta does not matter anymore since it was published before 2011 (see paragraphs (48) and (161)(h)).

(170) The Commission notes that there is only innovation space where the patent shares change when the classification used by the parties in the response to the Statement of Objections is used. This concerns the innovation "canola/weed control". The main change concerns the patent share of Bayer when active patents are considered, with a decrease from [30-40]% in the Statement of Objections to [5-10]% under the scenario "*RSO+active patents*". This is because one patent of Bayer that received a significant number of citations became inactive. On the other hand, the patent share of Monsanto is increasing from [60-70]% to [80-90]%, with DowDuPont being at the same level as Bayer. The Commission considers that the high level of the combined patent share ([90-100]%), the high level of HHI ([8500-9000]) and Delta HHI ([1100-1200]), with DowDuPont being the only alternative to the Parties, constitute important initial indicators of potential competition concerns. Moreover, the Commission notes that the Parties did not contest in its response to Statement of Objections evidence on closeness for the innovation efforts made by the Parties, with a lack of alternatives for that specific innovation space. Last, given that Bayer is still active in research for weed control in canola, the Commission considers that this inactive patent of Bayer is still relevant to assess the technological strength of Bayer in that specific innovation space.

Table 14 – Share of total citations (category "Other" classified, focus on biotech-related patents, 1.1 non-linear weight, patents published after 2011)

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHHI
Canola	Weed Control	SO	[30-40]%	[60-70]%	[90-100]%			[5-10]%	[90-100]%		[9000-9500]	[4000-4500]
		RSO+all patents	[30-40]%	[60-70]%	[90-100]%			[5-10]%	[90-100]%		[9000-9500]	[4000-4500]
		RSO+act. patents	[5-10]%	[80-90]%	[90-100]%			[5-10]%	[90-100]%		[8500-9000]	[1100-1200]
Cotton	Weed Control	SO	[40-50]%	[40-50]%	[90-100]%			[5-10]%	[90-100]%		[8500-9000]	[4000-4500]
		RSO+all patents	[40-50]%	[40-50]%	[90-100]%			[5-10]%	[90-100]%		[8500-9000]	[4000-4500]
		RSO+act. patents	[40-50]%	[40-50]%	[90-100]%			[5-10]%	[90-100]%		[8500-9000]	[4000-4500]
Fruit/ Vegetables	Crop Eff.	SO	[0-5]%	[40-50]%	[40-50]%		[0-5]%		[40-50]%	[60-70]%	[5000-5500]	[0-100]
		RSO+all patents	[0-5]%	[40-50]%	[40-50]%		[0-5]%		[40-50]%	[60-70]%	[5000-5500]	[0-100]
		RSO+act. patents	[0-5]%	[40-50]%	[40-50]%				[40-50]%	[60-70]%	[5000-5500]	[0-100]
Fruit/ Vegetables	Disease Control	SO	[10-20]%	[40-50]%	[50-60]%		[5-10]%		[60-70]%	[30-40]%	[3500-4000]	[1300-1400]
		RSO+all patents	[10-20]%	[40-50]%	[50-60]%		[5-10]%		[60-70]%	[30-40]%	[3500-4000]	[1300-1400]
		RSO+act. patents	[10-20]%	[40-50]%	[50-60]%		[5-10]%		[60-70]%	[30-40]%	[3500-4000]	[1200-1300]
Fruit/ Vegetables	Other Traits	SO	[40-50]%	[40-50]%	[80-90]%		[10-20]%		[90-100]%		[7500-8000]	[3500-4000]
		RSO+all patents	[40-50]%	[40-50]%	[80-90]%		[10-20]%		[90-100]%		[7500-8000]	[3500-4000]
		RSO+act. patents	[40-50]%	[40-50]%	[80-90]%		[10-20]%		[90-100]%		[7500-8000]	[3500-4000]
Not crop specific	Crop Eff.	SO	[0-5]%	[0-5]%	[5-10]%	[10-20]%	[0-5]%	[10-20]%	[40-50]%	[50-60]%	[1500-2000]	[0-100]
		RSO+all patents	[0-5]%	[0-5]%	[5-10]%	[10-20]%	[0-5]%	[10-20]%	[40-50]%	[50-60]%	[1500-2000]	[0-100]
		RSO+act. patents	[0-5]%	[0-5]%	[5-10]%	[10-20]%	[0-5]%	[10-20]%	[30-40]%	[60-70]%	[1500-2000]	[0-100]
Not crop specific	Disease Control	SO	[5-10]%	[5-10]%	[10-20]%	[30-40]%	[5-10]%	[5-10]%	[50-60]%	[40-50]%	[1400-1500]	[0-100]
		RSO+all patents	[5-10]%	[5-10]%	[10-20]%	[30-40]%	[5-10]%	[0-5]%	[50-60]%	[40-50]%	[1500-2000]	[0-100]
		RSO+act. patents	[5-10]%	[10-20]%	[10-20]%	[20-30]%	[5-10]%	[0-5]%	[50-60]%	[40-50]%	[1300-1400]	[100-200]
Not crop specific	Enabling Tech.	SO	[0-5]%	[5-10]%	[5-10]%	[5-10]%	[0-5]%	[20-30]%	[30-40]%	[60-70]%	[1000-1100]	[0-100]
		RSO+all patents	[0-5]%	[5-10]%	[5-10]%	[5-10]%	[0-5]%	[10-20]%	[30-40]%	[60-70]%	[900-1000]	[0-100]
		RSO+act. patents	[0-5]%	[5-10]%	[5-10]%	[0-5]%	[0-5]%	[10-20]%	[30-40]%	[60-70]%	[1000-1100]	[0-100]
Not crop specific	Insect Control	SO	[10-20]%	[10-20]%	[20-30]%	[0-5]%	[5-10]%	[50-60]%	[90-100]%	[0-5]%	[4000-4500]	[400-500]
		RSO+all patents	[10-20]%	[10-20]%	[20-30]%	[0-5]%	[5-10]%	[50-60]%	[90-100]%	[0-5]%	[4000-4500]	[400-500]
		RSO+act. patents	[10-20]%	[10-20]%	[30-40]%		[5-10]%	[50-60]%	[90-100]%	[0-5]%	[4000-4500]	[400-500]

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHHI
Not crop specific	Weed Control	SO	[30-40]%	[20-30]%	[50-60]%	[10-20]%	[5-10]%	[20-30]%	[90-100]%	[5-10]%	[3000-3500]	[1200-1300]
		RSO+all patents	[30-40]%	[20-30]%	[50-60]%	[10-20]%	[5-10]%	[20-30]%	[90-100]%	[5-10]%	[3000-3500]	[1200-1300]
		RSO+act. patents	[30-40]%	[20-30]%	[50-60]%	[10-20]%	[5-10]%	[20-30]%	[90-100]%	[5-10]%	[3000-3500]	[1200-1300]
Soybean	Weed Control	SO	[0-5]%	[70-80]%	[70-80]%		[0-5]%	[10-20]%	[90-100]%	[5-10]%	[5500-6000]	[500-600]
		RSO+all patents	[0-5]%	[70-80]%	[70-80]%		[0-5]%	[10-20]%	[90-100]%	[5-10]%	[5500-6000]	[500-600]
		RSO+act. patents	[0-5]%	[70-80]%	[70-80]%		[0-5]%	[10-20]%	[90-100]%	[5-10]%	[6000-6500]	[600-700]

4.3. The Parties' analysis of patent data confirms the significant patent shares of the merged entity for the same innovation spaces as in the Commission's analysis

(171) The Parties submitted their own analysis of patent data on 22 November 2017.[106,107] In their submission, the Parties proceed essentially in two steps:

(a) In a first step, the Parties allocate the patents of Bayer which would be part of a divestment package to an entity called "Bayer divestment";

(b) In a second step, the Parties make essentially two claims: (i) after a potential divestment of these patents, the share increment of the proposed Transaction is negligible for the overlapping research targets, between [0-5]% and [0-5]%, and (ii) for the remaining overlapping research target areas (as defined by the Parties), which are related to "canola-quality traits" and "not crop specific-crop efficiency traits", the increment will generally be small post-divestment (below [5-10]%) and/or the combined post-merger share will not exceed [30-40]% (even on the basis of a very conservative analysis that does not include innovators other than the Big 5).

(c) Moreover, according to the Parties, the only patent that Bayer retains post-divestment for canola is related to Brassica juncea (brown mustard) which is a different family from Brassica Napus (oil seed rape).

(d) Last, as regards the innovation space "not crop specific-crop efficiency", the Parties will have a limited combined patent share between [5-10]% and [10-20]%.

(172) Overall, the Parties conclude that their patent analysis [quote from confidential submission].[108]

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106 Source: Parties' submission entitled "Patent analysis in broad acre seeds and traits", dated 22 November 2017, ID8696-4.

107 In their response to the Article 6(1)(c) Decision, the Parties submitted an annex related to the patent analysis done by the Commission in the Article 6(1)(c) Decision. The Commission presented in the Article 6(1)(c) Decision a preliminary analysis of patent data for the interest of transparency of the investigation (see Article 6(1)(c) Decision, paragraph 543). In their response to the Article 6(1)(c) Decision, the Parties made the following critiques: (i) the Commission focused only on the Big5 innovators, (ii) the level of aggregation (all biotech innovations) was too broad, (iii) the Commission used only the number of citations for the full period and does not attempt to control for the age effect. The Commission notes that these limitations were already mentioned in the Commission's Article 6(1)(c) Decision. These criticisms are addressed in the analysis carried out in this Annex (see Section 3).

(173) First, the Commission notes that the Parties' submission is essentially related to the assessment of a divestment of specific patents of Bayer. Therefore, this submission is not directly related to the competitive assessment.

(174) Second, in their economic submissions, the Parties consider the patents of Bayer that are divested in a separate entity, called "Bayer divestment". However, given that BASF is the purchaser of the proposed remedy, the Commission considers that a reliable approach should reallocate the divested patents of Bayer to BASF. Since this is not done in the Parties' analysis, the Commission considers that the analysis of the remedy proposed by the Parties is not reliable.

(175) Third, the Parties define innovation spaces at the level of sub-technology. For example, they consider that Bayer's HT traits related to the [pipeline product] class do not compete with Monsanto's HT traits related to [pipeline product]. On that basis, the Parties argues that there are essentially no overlaps for HT traits. As discussed in Section 3.2.1, the Commission disagrees with this approach since the qualitative evidence indicates that Bayer (with its [pipeline product] HT trait) and Monsanto (with its [pipeline product] HT traits) see each other as close innovation competitors. The Commission therefore considers that, in their economic submissions, the Parties define innovation spaces too narrowly, leading to an "artificial" lack of overlaps in research activities that is inconsistent with the qualitative evidence. The Commission notes that the Parties did not contest this evidence in the response to the Statement of Objections.

(176) Fourth, the Commission was able to recover from the Parties' code the patent shares for each crop/technology combination, which is equivalent to the innovation spaces discussed above in the Commission's analysis.[109] The Commission notes that the Parties' analysis leads to high combined patent shares for the same innovation spaces as in the Commission's analysis (see paragraph (161)), therefore confirming the robustness of the Commission's analysis.

(177) Appendix C reports patent shares for the crop and technology combinations discussed in paragraph (161), where the Commission found that the Parties have a high combined patent share with a significant increment.[110] In their analysis, the Parties provides patent shares using eights different measures, but the Commission notes that they do not provide any ground to argue that some measures would be more reliable than others.

(178) When reporting the patent shares calculated by the Parties, the Commission also uses the convention on names adopted by the Parties, namely by splitting Bayer into two entities: Bayer post-divestment and Bayer-divestment. For the sake of clarity, the Commission notes that "Combined" refers to the combination of the patent shares of Monsanto and Bayer-post-divestment, excluding Bayer-divestment. However, for the

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108 Source: Parties' submission entitled "Patent analysis in broad acre seeds and traits" (page 25), dated 22 November 2017, ID8696-4.

109 The Commission notes that patent shares at the level of crop/technology were not reported in the Parties' submission for all possible crops and technologies combinations, but rather for a limited number of cases (the patent shares reported were only at the global level across all traits, for canola overall and crop efficiency overall, with a further breakdown for crop efficiency for stress tolerance and yield/biomass).

110 In order to recover the patent shares for all possible crop and technology combinations, the Commission has changed one line in the code provided by the Parties in their economic submission on patents: in the do file number 9, at line 139, the condition "*if overlap_postdivest==1*" was removed. The Excel file generated by the code provided by the Parties (with the corresponding log file) was attached with the code to replicate the patent analysis in the access-to-file procedure related to the Statement of Objections.

purpose of the competitive assessment, the Commission reports below patent shares that includes, in addition to Monsanto, Bayer-post-divestment and Bayer-divestment (see Appendix C).

(179) The patent shares calculated by the Parties show a high combined patent share with a significant increment for the following innovation spaces:

(a) Canola-quality traits (see Table 20 in Appendix C): with a significant combined patent share in the range of [50-60]%-[80-90]%. For the patents published after 2011, Bayer has a patent share in the range of [90-100]%. While Monsanto has not published any new patent after 2011, the Commission notes only Monsanto had been in the past a significant competitor to Bayer in that innovation space, i.e. no other significant competitor appears in this more recent period.

(b) Canola-weed control (see Table 21 in Appendix C): with a significant combined patent share in the range of [80-90]%-[90-100]%. For the patents published after 2011, the merged entity has also a combined patent share in the range of [80-90]-[90-100]%.

(c) Cotton-enabling technologies (see Table 22 in Appendix C): with a significant combined patent share in the range of [60-70]%-[90-100]%. Looking at the patents published after 2011 also indicates that no other Big5 firms emerge as a competitor to Bayer, the additional firm being "Texas Tech University System".

(d) Cotton-insect control (see Table 23 in Appendix C): with a significant combined patent share in the range of [50-60]%-[90-100]%. For the patents published after 2011, Bayer does not appear since it did not publish any patents after 2011. However, the Commission notes that [R&D strategy] (see Statement of Objections, Section X.1.7.5), and therefore its past innovations are still relevant to assess its capability to innovate in that specific innovation space.

(e) Cotton-weed control (see Table 24 in Appendix C): with a significant combined patent share in the range of [30-40]%-[80-90]%. For the patents published after 2011, the combined share is in the range of [60-70]-[80-90]%.

(f) Not crop specific-insect control (see Table 25 in Appendix C): with a significant combined patent share in the range of [40-50]%-[50-60]%. For the patents published after 2011, the combined patent share is still significant in the range of [20-30]-[30-40]%. The case that is the closest to the Commission's analysis (Section 4.1.3 and 4.1.4), which is based on biotech citations, leads to a significant combined patent share of [40-50]% for the full period and [30-40]% for the patents published after 2011.

(g) Not crop specific-weed control (see Table 26 in Appendix C): with a significant combined patent share in the range of [20-30]%-[50-60]%. For the patents published after 2011, the combined patent share is in the range of [10-20]-[60-70]%. The case that is the closest to the Commission's analysis (Section 4.1.3 and 4.1.4), which is based on biotech citations, leads to a significant combined patent share of [30-40]% for the full period and [50-60]% for the patents published after 2011.

(180) The Commission notes that the Parties have excluded the fruits and vegetables crops from their analysis.

(181) Moreover, the Commission notes that Parties' analysis, based on the patent classification also used in the response to the Statement of Objections, leads to similar

patent shares for the same innovation spaces as in the Commission's analysis (see paragraph (161)), therefore confirming the robustness of the Commission's analysis (see Appendix D). The only exception concerns "canola-wed control" where the Parties find no overlaps. However, as discussed in paragraphs (56)-(59), this is because the Parties re-classify a patent of Monsanto from canola to brassica, which removes the overlap with the research activities of Bayer in canola-weed control. As discussed in paragraphs (56)-(59), the Commission disagrees with the re-classification of this specific patent of Monsanto done by the Parties in the response to the Statement of Objections.

(182) As regards the innovation space "soybean-weed control", while the Parties find a lower combined patent share based on citations related to the biotech sector ([20-30]%) compared to the Commission's preferred analysis (in the range of [70-80]%, see Section 4.1.4), this is explained by the incomplete sample of citing patents used by the Parties. Indeed, while the Parties identify citations belonging to the biotech sector only from on the Thomson 200 dataset, the Commission uses a more complete sample of citations (see Section 4.1.4 for further details). Moreover, patent shares based on total citations are actually similar between the Parties' analysis ([40-50]%) and the Commission's analysis ([40-50]%).

(183) As regards the comments of the Parties in the response to the second Letter of Facts, the Commission considers that they are not well-founded for the following reasons.[111]

(184) First, the Parties argue that some innovation areas have a small sample size, and therefore it is not possible to draw robust conclusions. The Commission disagrees with the Parties since the Commission has collected data on the whole universe of patents related to trait research (see Section 3.2.2). The Commission also notes that the Parties agrees with the Commission's methodology to collect patent data for all possible organisations doing trait research in the response to the request for information RFI 70 (see Section 3.2.2).

(185) Second, the Parties argue that there are a number of clerical errors for some tables where the Commission reports patent shares for non-overlapping innovation areas. The Commission notes that some patent shares are indeed equal to zero based on some metrics for Bayer in some specific innovation spaces (e.g. soybean-quality traits), but the Commission reported these innovation areas in the tables since Bayer is present with some patents (see Table 5). Moreover, the Commission notes that the Parties did not explain how these alleged "clerical errors" affects the results of the Commission's analysis (see Section 4.4).

(186) Third, the Parties make a number of technical comments on the treatment of multi-owner patents for the HHI calculation.

(a) The Parties mention that for the multi-owner patents not involving the Big5 companies, the Commission allocates the patents to separate "combined" owners (rather than allocating the patents to one of the owners). This is because the Commission relies on the ownership variable provided by PatentSight in its raw form, and therefore treats each permutation as a separate owner. For example, in the second Letter of Facts, the Commission treats the owner "TREE OF KNOWLEDGE PATENTS; Wageningen University" as a separate owner from "Wageningen University; TREE OF KNOWLEDGE PATENTS". The

[111] The Commission addressed below the comments that have not been already addressed.

Commission notes that this treatment of the data actually increase "artificially" the number of companies involved in research for traits, which actually leads to underestimate the HHI measures. Therefore, the Parties' comment is immaterial for the Commission's conclusions.

(b) The Parties mention that in the Commission's analysis, for five selected organisations, some patents that are co-owned by one of these organisations and another company (which is a non Big5 company) are reallocated to these five specific companies.[112] The Parties disagrees with this approach. The Commission notes that this technical issue is unlikely to affect the HHI calculations reported in Table 16 since: (i) these patents which are jointly owned do not seem to be particularly important for the innovation areas listed in Table 16, and (ii) the innovation areas reported in Table 16 generally shows a very high of concentration. This is also confirmed in Table 15, which shows that the HHIs reported in Table 16 are similar to the HHIs when these jointly owned patents are considered to belong to separate entities.[113] Therefore, the Parties' comment is immaterial for the Commission's conclusions.

(c) Last, the Parties mention that the Commission erroneously allocates a Monsanto patent (PatentSight identifier […]) to ChemChina-Syngenta, which leads to the incorrect calculation of (post-merger) HHIs for the segment "Not crop specific – Insect Control". The Commission notes that this issue actually leads to underestimate the HHI for that specific innovation area in the Commission's analysis. This is confirmed in Table 15 with the "HHI adjusted" when the comment of the parties are taken into account.

[112] The companies are: CSIRO, Enza Zaden, EvoGene, Limagrain, and MSTech.

[113] The Parties also suggest that the citations corresponding to the patents jointly owned by two non-Big5 companies should be splitted equally between each of the owner. The Commission notes that this technical issue is unlikely to affect the HHI calculations reported in Table 16 since: (i) these patents which are jointly owned do not seem to be particularly important for the innovation areas listed in Table 16, and (ii) the innovation areas reported in Table 16 generally shows a very high of concentration.

Table 15 – HHI post merger

Crop	Technology	Classification	HHI	HHI Adjusted
Canola	Quality Traits	RSO+all patents	[5000-5500]	[5000-5500]
		RSO+act. Patents	[5000-5500]	[5000-5500]
Canola	Weed Control	RSO+all patents	[9000-9500]	[9000-9500]
		RSO+act. Patents	[8500-9000]	[8500-9000]
Cotton	Enabling Tech.	RSO+all patents	[8500-9000]	[8500-9000]
		RSO+act. Patents	[8500-9000]	[8500-9000]
Cotton	Insect Control	RSO+all patents	[7000-7500]	[7000-7500]
		RSO+act. Patents	[7000-7500]	[7000-7500]
Cotton	Weed Control	RSO+all patents	[6000-6500]	[6000-6500]
		RSO+act. Patents	[6000-6500]	[6000-6500]
Fruit/ Vegetables	Crop Efficiency	RSO+all patents	[3500-4000]	[3500-4000]
		RSO+act. Patents	[4000-4500]	[4000-4500]
Fruit/ Vegetables	Disease Control	RSO+all patents	[5000-5500]	[5000-5500]
		RSO+act. Patents	[5000-5500]	[5000-5500]
Fruit/ Vegetables	Other Traits	RSO+all patents	[5500-6000]	[5500-6000]
		RSO+act. Patents	[5500-6000]	[5500-6000]
Not crop specific	Crop Efficiency	RSO+all patents	[1500-2000]	[1500-2000]
		RSO+act. Patents	[1500-2000]	[1500-2000]
Not crop specific	Disease Control	RSO+all patents	[800-900]	[800-900]
		RSO+act. Patents	[800-900]	[800-900]
Not crop specific	Enabling Tech.	RSO+all patents	[1100-1200]	[1100-1200]
		RSO+act. patents	[1200-1300]	[1200-1300]
Not crop specific	Other Traits	RSO+all patents	[900-1000]	[900-1000]
		RSO+act. patents	[700-800]	[700-800]
Not crop specific	Insect Control	RSO+all patents	[3000-3500]	[3000-3500]
		RSO+act. patents	[3000-3500]	[3500-4000]
Not crop specific	Quality Traits	RSO+all patents	[2500-3000]	[2500-3000]
		RSO+act. patents	[2500-3000]	[2500-3000]
Not crop specific	Weed Control	RSO+all patents	[4000-4500]	[4000-4500]
		RSO+act. patents	[4000-4500]	[4000-4500]
Soybean	Quality Traits	RSO+all patents	[4500-5000]	[4500-5000]
		RSO+act. patents	[4500-5000]	[4500-5000]
Soybean	Weed Control	RSO+all patents	[5000-5500]	[5000-5500]
		RSO+act. patents	[5500-6000]	[5500-6000]

4.4. Conclusion: the Commission's analysis of patent data shows that Bayer and Monsanto are important innovators, representing a significant combined patent share in several innovation areas

(187) The Commission considers that a patent analysis allows to identify the innovation activities and capabilities of the Parties and their competitors, as well as the innovation areas (defined by crops/traits combinations) where the Parties overlap in term of research activities and capabilities, based on the quality of past innovations.

(188) Overall, the Commission considers the forward citation analysis presented in Section 4.1.4 as being the most reliable since:

(a) It removes any potential mechanical effect which may affect the relevance of Bayer's internal citations and therefore its patent shares, due to the importance of its agrochemical patent portfolio;

(b) It ensures that all citations relate to the biotech industry and are relevant to assess the quality of biotech patents for traits.

(189) First, Table 16 reports the combined patent share of the Parties for the innovation spaces where the Parties have overlapping research activities, with a significant combined patent share in innovation areas that are concentrated (high post-Transaction HHI), and with a significant increase in concentration due to the proposed Transaction (Delta HHI). The Commission considers that the high level of the patent shares of the merged entity, in a concentrated market structure (high HHI) and with a further significant increase in concentration due to the proposed Transaction (high delta HHI), constitute important initial indicators of potential competition concerns.

(190) As discussed in the main body of the Decision, the patent analysis should be considered in combination with other evidence on what are the Parties' recent key active innovation areas, closeness between the Parties' recent innovation efforts, as well evidence on the alternative R&D efforts available from rivals. Overall, the importance of the Parties as measured by patent shares, evidence on their recent innovation areas, closeness and availability of rival R&D programs are important elements that inform the Commission's decision to raise innovation concerns for specific innovation spaces (i.e. for the combination of specific crops and type of traits). In this respect, the Commission notes that an innovation concern has not been raised for all innovation spaces where the merging parties represent a significant combined patent share (for example, "cotton-enabling technologies" or "canola-quality traits").

(191) In particular, the Decision (Section X.1.7.5.3-X.1.7.5.6) contains evidence on closeness for the innovation efforts made by the Parties for several innovation spaces related to: (i) HT (weed control) for soybean, cotton, and canola, and (ii) IR (insect control) traits for soybean, and cotton, and (iii) cross-crops trait research for HT and IR traits, and (iv) with a lack of alternatives for the related innovation spaces. The Commission notes that the Parties did not contest this evidence in the response to the Statement of Objections.

(192) When interpreting the results of this table, the Commission notes the following:

(a) For canola-weed control, based on the patent classification used in the Statement of Objections, where the combined patent share of the Parties is at [30-40]%, the Commission notes that: (i) this innovation space is still concentrated (HHI: [5000-5500], Delta HHI: [600-700]), and (ii) the only competitor to the Parties with a significant patent share is Cibus, which according to the Parties own a patent for “Brassica”. The Commission has taken a conservative approach by considering that Cibus was active on canola, but the Commission notes that in its own submission on patents dated 22 November 2017, the Parties consider “Brassica” as a different field than “Canola”. Following the Parties' approach would lead to an even higher patent share for the Parties in canola/weed control. Last, after controlling for the effect of age, the combined patent share increases significantly to [90-100]% when one considers patents published after 2011.

(b) Moreover, for "canola-weed control", when focusing on active patents and using the classification provided by the Parties in the response to the Statement of Objections, the combined patent share of the merged entity is increasing to [80-90]%, with Monsanto being the number 1 innovator ([80-90]%), with Bayer ([5-10]%) and DowDuPont ([5-10]%) being the only two alternatives. The Commission considers that the high level of the combined patent share ([80-90]%), the high level of HHI ([8500-9000]) and Delta HHI ([11000-1200]), with DowDuPont being the only alternative to the Parties, constitute important initial indicators of potential competition concerns. Moreover, the Commission notes that the Parties did not contest in the response to the Statement of Objections evidence on closeness for the innovation efforts made by the Parties,

with a lack of alternatives for that specific innovation space. Similar findings apply after controlling for the effect of age.

(c) For the soybean-weed control, the patent shares indicate that Monsanto is the leader with a [60-70]% patent share, followed by DowDuPont with a [20-30]% patent share. The two challengers are Bayer ([0-5]%) and ChemChina-Syngenta ([0-5]%). The combined share of the merged entity is significant at [70-80]%.

(d) Controlling for the effect of age by focusing on the patents published after 2011 (as suggested by the Parties in their patent submission) does not change the conclusions of the analysis. The Commission still notes the following:

- For "not crop specific-insect control", even if the combined patent share is decreasing ([20-30]% for patents published after 2011), the Commission considers that this is still significant given: the high concentration and the significant increase in concentration due to the proposed Transaction, the fact that Monsanto is the number 2 innovator and Bayer is the number 3 innovator, and the fact that no other innovators other than Big5 companies appears as a significant innovator in the past (the Big5 companies have an overall patent share of [90-100]%).
- For "not crop specific-weed control", the combined patent share of the merged entity, while decreasing, remains significant at [50-60]%.

(e) The Commission notes that, for the innovation spaces listed in Table 16 where the Parties have a significant patent share, it is often the case that not all Big5 companies are active in these innovation spaces. Moreover, generally no other innovator other the Big5 companies seems to represent a significant patent share (the Big5 companies represent overall a patent share often above [70-80]%, and sometime close to [90-100]%).

(f) Last, the Commission notes that the changes in patent classification made by the Parties in the response to the Statement of Objections does not affect the innovation areas listed below, except for Canola-Weed control where the combined patent share is actually higher than in the Commission's analysis carried out in the Statement of Objections.

Table 16 – Summary of the results of the patent analysis (category "Others" classified)

Crop	Technology	Classification	Bayer	Monsanto	Combined	%Big5	HHI	Delta HHI
Full period								
Canola	Quality Traits	SO	[20-30]%	[20-30]%	[40-50]%	[80-90]%	[3500-4000]	[1000-1100]
		RSO+all patents	[20-30]%	[30-40]%	[50-60]%	[90-100]%	[5000-5500]	[1400-1500]
		RSO+act. Patents	[20-30]%	[30-40]%	[50-60]%	[90-100]%	[5000-5500]	[1500-2000]
Canola	Weed Control	SO	[10-20]%	[20-30]%	[30-40]%	[30-40]%	[5000-5500]	[600-700]
		RSO+all patents	[30-40]%	[60-70]%	[90-100]%	[90-100]%	[9000-9500]	[4000-4500]
		RSO+act. Patents	[5-10]%	[80-90]%	[90-100]%	[90-100]%	[8500-9000]	[1100-1200]

Crop	Technology	Classification	Bayer	Monsanto	Combined	%Big5	HHI	Delta HHI
Cotton	Enabling Tech.	SO	[90-100]%	[0-5]%	[90-100]%	[90-100]%	[8500-9000]	[400-500]
		RSO+all patents	[90-100]%	[0-5]%	[90-100]%	[90-100]%	[8500-9000]	[400-500]
		RSO+act. Patents	[90-100]%	[0-5]%	[90-100]%	[90-100]%	[8500-9000]	[400-500]
Cotton	Insect Control	SO	[70-80]%	[10-20]%	[80-90]%	[80-90]%	[7000-7500]	[1500-2000]
		RSO+all patents	[70-80]%	[10-20]%	[80-90]%	[80-90]%	[7000-7500]	[1500-2000]
		RSO+act. Patents	[70-80]%	[10-20]%	[80-90]%	[80-90]%	[7000-7500]	[1500-2000]
Cotton	Weed Control	SO	[40-50]%	[20-30]%	[70-80]%	[80-90]%	[6000-6500]	[2500-3000]
		RSO+all patents	[40-50]%	[20-30]%	[70-80]%	[80-90]%	[6000-6500]	[2500-3000]
		RSO+act. Patents	[40-50]%	[20-30]%	[70-80]%	[80-90]%	[6000-6500]	[2500-3000]
Fruit/ Vegetables	Crop eff.	SO	[0-5]%	[50-60]%	[50-60]%	[70-80]%	[3500-4000]	[0-100]
		RSO+all patents	[5-10]%	[50-60]%	[50-60]%	[70-80]%	[3500-4000]	[500-600]
		RSO+act. Patents	[5-10]%	[50-60]%	[60-70]%	[70-80]%	[4000-4500]	[600-700]
Fruit/ Vegetables	Dis. Control	SO	[5-10]%	[60-70]%	[70-80]%	[70-80]%	[5000-5500]	[800-900]
		RSO+all patents	[5-10]%	[60-70]%	[70-80]%	[70-80]%	[5000-5500]	[800-900]
		RSO+act. Patents	[5-10]%	[60-70]%	[70-80]%	[70-80]%	[5000-5500]	[700-800]
Fruit/ Vegetables	Other Traits	SO	[30-40]%	[30-40]%	[70-80]%	[70-80]%	[5500-6000]	[2500-3000]
		RSO+all patents	[30-40]%	[30-40]%	[70-80]%	[70-80]%	[5500-6000]	[2500-3000]
		RSO+act. Patents	[30-40]%	[30-40]%	[70-80]%	[70-80]%	[5500-6000]	[2500-3000]
Not crop specific	Insect Control	SO	[20-30]%	[20-30]%	[40-50]%	[90-100]%	[3000-3500]	[1000-1100]
		RSO+all patents	[20-30]%	[20-30]%	[40-50]%	[90-100]%	[3000-3500]	[1000-1100]
		RSO+act. Patents	[20-30]%	[20-30]%	[40-50]%	[90-100]%	[3000-3500]	[1100-1200]
Not crop specific	Weed Control	SO	[10-20]%	[40-50]%	[50-60]%	[90-100]%	[4000-4500]	[1200-1300]
		RSO+all patents	[10-20]%	[40-50]%	[50-60]%	[90-100]%	[4000-4500]	[1200-1300]
		RSO+act. Patents	[10-20]%	[40-50]%	[50-60]%	[90-100]%	[4000-4500]	[1100-1200]
Soybean	Weed Control	SO	[0-5]%	[60-70]%	[70-80]%	[90-100]%	[5000-5500]	[400-500]
		RSO+all patents	[0-5]%	[60-70]%	[70-80]%	[90-100]%	[5000-5500]	[400-500]
		RSO+act. Patents	[0-5]%	[60-70]%	[70-80]%	[90-100]%	[5500-6000]	[500-600]

Crop	Technology	Classification	Bayer	Monsanto	Combined	%Big5	HHI	Delta HHI
Patents published after 2011								
Canola	Weed Control	SO	[30-40]%	[60-70]%	[90-100]%	[90-100]%	[9000-9500]	[4000-4500]
		RSO+all patents	[30-40]%	[60-70]%	[90-100]%	[90-100]%	[9000-9500]	[4000-4500]
		RSO+act. Patents	[5-10]%	[60-70]%	[90-100]%	[90-100]%	[8500-9000]	[1100-1200]
Cotton	Weed Control	SO	[40-50]%	[40-50]%	[90-100]%	[90-100]%	[8500-9000]	[4000-4500]
		RSO+all patents	[40-50]%	[40-50]%	[90-100]%	[90-100]%	[8500-9000]	[4000-4500]
		RSO+act. patents	[40-50]%	[40-50]%	[90-100]%	[90-100]%	[8500-9000]	[4000-4500]
Fruit/Vegetables	Dis. Control	SO	[10-20]%	[40-50]%	[50-60]%	[60-70]%	[3500-4000]	[1300-1400]
		RSO+all patents	[10-20]%	[40-50]%	[50-60]%	[60-70]%	[3500-4000]	[1300-1400]
		RSO+act. patents	[10-20]%	[40-50]%	[50-60]%	[60-70]%	[3500-4000]	[1200-1300]
Fruit/Vegetables	Other Traits	SO	[40-50]%	[40-50]%	[80-90]%	[90-100]%	[7500-8000]	[3500-4000]
		RSO+all patents	[40-50]%	[40-50]%	[80-90]%	[90-100]%	[7500-8000]	[3500-4000]
		RSO+act. patents	[40-50]%	[40-50]%	[80-90]%	[90-100]%	[7500-8000]	[3500-4000]
Not crop specific	Insect Control	SO	[10-20]%	[10-20]%	[20-30]%	[90-100]%	[4000-4500]	[400-500]
		RSO+all patents	[10-20]%	[10-20]%	[20-30]%	[90-100]%	[4000-4500]	[400-500]
		RSO+act. patents	[10-20]%	[10-20]%	[30-40]%	[90-100]%	[4000-4500]	[400-500]
Not crop specific	Weed Control	SO	[30-40]%	[20-30]%	[50-60]%	[90-100]%	[3000-3500]	[1200-1300]
		RSO+all patents	[30-40]%	[20-30]%	[50-60]%	[90-100]%	[3000-3500]	[1200-1300]
		RSO+act. patents	[30-40]%	[20-30]%	[50-60]%	[90-100]%	[3000-3500]	[1200-1300]
Soybean	Weed Control	SO	[0-5]%	[70-80]%	[70-80]%	[90-100]%	[5500-6000]	[500-600]
		RSO+all patents	[0-5]%	[70-80]%	[70-80]%	[90-100]%	[5500-6000]	[500-600]
		RSO+act. patents	[0-5]%	[70-80]%	[70-80]%	[90-100]%	[6000-6500]	[600-700]

(193) Second, the analysis of patent data indicates that the Parties are particularly important innovators for further innovation spaces, where either Bayer or Monsanto have a significant patent share (close to [40-50]%). These innovation spaces are:

(a) For Bayer: considering the patent classification used in the Statement of Objections, canola-crop efficiency ([40-50]% patent share), cotton-crop efficiency ([40-50]%), cotton-enabling technologies ([90-100]%), cotton-insect control ([70-80]%), cotton-weed control ([40-50]%), rice-crop efficiency ([60-70]%), rice-insect control ([90-100]%), sugarbeet-weed

control ([90-100]%);[114] considering the sample of active patents and the patent classification used by the Parties in the response to the Statement of Objections, canola-crop efficiency ([50-60]% patent share), cotton-crop efficiency ([40-50]%), cotton-enabling technologies ([90-100]%), cotton-insect control ([70-80]%), cotton-quality traits ([30-40]%), cotton-weed control ([40-50]%), rice-insect control ([90-100]%), sugarbeet-weed control ([90-100]%), fruits&vegetables-other trait ([30-40]%);[115]

(b) For Monsanto: considering the patent classification used in the Statement of Objections, corn-breeding ([90-100]% patent share), corn-crop efficiency ([40-50]%), corn-germplasm ([90-100]%), corn-disease control ([70-80]%), corn-other traits ([90-100]%), cross crops-germplas ([40-50]%), cross crops-weed control ([40-50]%), rice-weed control ([90-100]%), soybean-breeding ([90-100]%), soybean-crop efficiency ([90-100]%), soybean-breeding ([90-100]%), soybean-crop efficiency ([90-100]%); soybean-disease control ([40-50]%), soybean-germplasm ([90-100]%), soybean-other traits ([90-100]%), soybean-insect control ([50-60]%), soybean-quality traits ([60-70]%), soybean-weed control ([60-70]%), fruits&vegetables-crop efficiency ([50-60]%); fruits&vegetables-disease control ([60-70]%), potato-insect control ([90-100]%).[116] considering the sample of active patents and the patent classification used by the Parties in the response to the Statement of Objections, canola-weed control ([90-100]%), corn-crop efficiency ([40-50]%), corn-breeding/germplasm ([90-100]%), corncrop efficiency ([40-50]%), corn-disease control ([60-70]%), corn-insect control ([30-40]%), corn-other traits ([90-100]%), cross crops-weed control ([40-50]%), rice-weed control ([90-100]%), soybean-breeding/gerplasm ([90-100]%), soybean-crop efficiency ([90-100]%), soybean-disease control ([60-70]%), soybean-other traits ([90-100]%), soybean-insect control ([70-80]soybean-quality traits ([60-70]%), soybean-weed control ([60-70]%), fruits&vegetables-crop efficiency ([50-60]%), fruits&vegetables-desease control ([60-70]%), fruits and vegetables-other traits ([30-40]%), potato-insect control ([90-100]%).[117]

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114 For patents published after 2011, Bayer has patent shares above 40% in the following innovation spaces: canola-crop efficiency ([70-80]% patent share), canola-quality traits ([40-50]%), cotton-crop efficiency ([40-50]%), cotton-enabling technologies ([80-90]%), cotton-quality traits ([90-100]%), cotton-weed control ([40-50]%), fruits/vegetables-other traits ([40-50]%), rice-insect control ([90-100]%), sugarbeet-weed control ([90-100]%).

115 For patents published after 2011, the corresponding patent shares of Bayer are: canola-crop efficiency ([60-70]% patent share), cotton-crop efficiency ([40-50]%), cotton-enabling technologies ([80-90]%), cottonquality traits ([90-100]%), cotton-weed control ([40-50]%), rice-insect control ([90-100]%), sugarbeet-weed control ([90-100]%), fruits&vegetables-other trait ([40-50]%). The Commission also notes that Bayer's patent share in disease control traits for fruits and vegetables is at [5-10]% for the full period, increasing to [10-20]% for patents published after 2011.

116 For patents published after 2011, Monsanto has patent shares above 40% in the following innovation spaces: canola-weed control ([60-70]%), corn-breeding ([90-100]%), corn-germplasm ([90-100]%), cotton-weed control ([40-50]%), fruits/vegetables-crop efficiency ([40-50]%), fruits/vegetables-disease control ([40-50]%), fruits/vegetables-other traits ([40-50]%), potato-insect control ([90-100]%), soybean-crop efficiency ([90-100]%), soybean-weed control ([70-80]%).

117 For patents published after 2011, the corresponding patent shares of Monsanto are: canola-weed control ([80-90]%), corn-crop efficiency ([30-40]%), corn-insect control ([40-50]%), soybean-crop efficiency ([90-100]%), soybean-weed control ([70-80]%), fruits&vegetables-crop efficiency ([40-50]%);

(194) While the Parties' patent portfolios do not overlap in term of research activities for several of these innovation areas, the Commission still considers that the high patent shares of either Bayer or Monsanto shows the importance of the Parties as innovators in traits.

fruits&vegetables-desease control ([40-50]%), fruits and vegetables-other traits ([40-50]%), potato-insect control ([90-100]%).

APPENDIX A. NON-LINEAR WEIGHT OF 1.3 APPLIED TO CITATION COUNTS

(195) The Commission presents below several robustness analyses for the case that the Commission considers the most reliable (see Section 4.1.4).

(196) Appendix A reports patent shares with a 1.3 non-linear weight instead of a 1.1 non-linear weight (see Section 3.4.3), showing essentially similar patent shares compared to Table 12 (for which a 1.1 non-linear weight was used).

Table 17 – Share of total citations (category "Others" classified, focus on biotech-related patents, 1.3 non-linear weight, full period)

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHHI
Canola	Quality Traits	SO	[20-30]%	[20-30]%	[40-50]%	[0-5]%		[40-50]%	[80-90]%	[10-20]%	[4000-4500]	[1000-1100]
		RSO+all patents	[20-30]%	[30-40]%	[50-60]%			[40-50]%	[90-100]%	[0-5]%	[5000-5500]	[1400-1500]
		RSO+act. patents	[20-30]%	[30-40]%	[50-60]%			[40-50]%	[90-100]%	[0-5]%	[5000-5500]	[1500-2000]
Canola	Weed Control	SO	[10-20]%	[20-30]%	[30-40]%			[0-5]%	[30-40]%	[60-70]%	[5000-5500]	[400-500]
		RSO+all patents	[30-40]%	[60-70]%	[90-100]%			[0-5]%	[90-100]%	[0-5]%	[9000-9500]	[4000-4500]
		RSO+act. patents	[5-10]%	[90-100]%	[90-100]%			[5-10]%	[90-100]%		[9000-9500]	[800-900]
Cotton	Enabling Tech	SO	[90-100]%	[0-5]%	[90-100]%				[90-100]%	[5-10]%	[9000-9500]	[300-400]
		RSO+all patents	[90-100]%	[0-5]%	[90-100]%				[90-100]%	[5-10]%	[9000-9500]	[300-400]
		RSO+act. patents	[90-100]%	[0-5]%	[90-100]%				[90-100]%	[5-10]%	[9000-9500]	[300-400]
Cotton	Insect Control	SO	[70-80]%	[5-10]%	[80-90]%			[0-5]%	[90-100]%	[5-10]%	[7500-8000]	[1400-1500]
		RSO+all patents	[70-80]%	[5-10]%	[80-90]%			[0-5]%	[90-100]%	[5-10]%	[7500-8000]	[1400-1500]
		RSO+act. patents	[70-80]%	[5-10]%	[80-90]%			[0-5]%	[90-100]%	[5-10]%	[7500-8000]	[1400-1500]
Cotton	Weed Control	SO	[50-60]%	[30-40]%	[80-90]%			[0-5]%	[80-90]%	[10-20]%	[6500-7000]	[3000-3500]
		RSO+all patents	[50-60]%	[30-40]%	[80-90]%			[0-5]%	[80-90]%	[10-20]%	[6500-7000]	[3000-3500]
		RSO+act. patents	[50-60]%	[30-40]%	[80-90]%			[0-5]%	[80-90]%	[10-20]%	[6500-7000]	[3000-3500]
Fruit/ Vegetables	Crop Efficiency	SO	[0-5]%	[60-70]%	[60-70]%		[10-20]%	[0-5]%	[70-80]%	[20-30]%	[4000-4500]	[0-100]
		RSO+all patents	[5-10]%	[50-60]%	[60-70]%		[10-20]%	[0-5]%	[70-80]%	[20-30]%	[4000-4500]	[500-600]
		RSO+act. patents	[5-10]%	[60-70]%	[60-70]%		[5-10]%	[0-5]%	[70-80]%	[20-30]%	[4500-5000]	[600-700]
Fruit/ Vegetables	Disease Control	SO	[5-10]%	[70-80]%	[70-80]%		[0-5]%		[70-80]%	[20-30]%	[6000-6500]	[600-700]
		RSO+all patents	[5-10]%	[70-80]%	[70-80]%		[0-5]%		[70-80]%	[20-30]%	[6000-6500]	[600-700]
		RSO+act. patents	[0-5]%	[70-80]%	[70-80]%		[0-5]%		[70-80]%	[20-30]%	[6000-6500]	[600-700]

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHHI
Fruit/ Vegetables	Other Traits	SO	[40-50]%	[30-40]%	[70-80]%		[0-5]%		[70-80]%	[20-30]%	[5500-6000]	[2500-3000]
		RSO+all patents	[40-50]%	[30-40]%	[70-80]%		[0-5]%		[70-80]%	[20-30]%	[5500-6000]	[2500-3000]
		RSO+act. patents	[40-50]%	[30-40]%	[70-80]%		[0-5]%		[70-80]%	[20-30]%	[5500-6000]	[2500-3000]
Not crop specific	Crop Efficiency	SO	[0-5]%	[20-30]%	[20-30]%	[30-40]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%	[2000-2500]	[0-100]
		RSO+all patents	[0-5]%	[20-30]%	[20-30]%	[30-40]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%	[2000-2500]	[0-100]
		RSO+act. patents	[0-5]%	[20-30]%	[20-30]%	[30-40]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%	[1500-2000]	[0-100]
Not crop specific	Disease Control	SO	[10-20]%	[0-5]%	[20-30]%	[10-20]%	[0-5]%	[10-20]%	[40-50]%	[50-60]%	[1000-1100]	[0-100]
		RSO+all patents	[0-5]%	[0-5]%	[5-10]%	[10-20]%	[0-5]%	[10-20]%	[30-40]%	[60-70]%	[900-1000]	[0-100]
		RSO+act. patents	[0-5]%	[0-5]%	[5-10]%	[10-20]%	[0-5]%	[10-20]%	[30-40]%	[60-70]%	[900-1000]	[0-100]
Not crop specific	Enabling Tech.	SO	[0-5]%	[20-30]%	[20-30]%	[0-5]%	[0-5]%	[20-30]%	[50-60]%	[40-50]%	[1300-1400]	[0-100]
		RSO+all patents	[0-5]%	[20-30]%	[20-30]%	[5-10]%	[0-5]%	[20-30]%	[50-60]%	[40-50]%	[1200-1300]	[0-100]
		RSO+act. patents	[0-5]%	[20-30]%	[20-30]%	[0-5]%	[0-5]%	[20-30]%	[50-60]%	[50-60]%	[1300-1400]	[0-100]
Not crop specific	Other Traits	SO	[0-5]%	[5-10]%	[5-10]%	[20-30]%	[5-10]%	[0-5]%	[40-50]%	[50-60]%	[1200-1300]	[0-100]
		RSO+all patents	[0-5]%	[5-10]%	[5-10]%	[20-30]%	[5-10]%	[0-5]%	[40-50]%	[50-60]%	[1200-1300]	[0-100]
		RSO+act. patents		[5-10]%	[5-10]%		[10-20]%	[0-5]%	[20-30]%	[70-80]%	[900-1000]	
Not crop specific	Insect Control	SO	[20-30]%	[20-30]%	[50-60]%	[0-5]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3000-3500]	[1200-1300]
		RSO+all patents	[20-30]%	[20-30]%	[50-60]%	[0-5]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3000-3500]	[1200-1300]
		RSO+act. patents	[20-30]%	[20-30]%	[50-60]%	[0-5]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%	[3000-3500]	[1300-1400]
Not crop specific	Quality Traits	SO	[10-20]%	[0-5]%	[10-20]%	[10-20]%	[0-5]%	[40-50]%	[80-90]%	[10-20]%	[2500-3000]	[100-200]
		RSO+all patents	[10-20]%	[0-5]%	[10-20]%	[10-20]%	[0-5]%	[40-50]%	[80-90]%	[10-20]%	[2500-3000]	[100-200]
		RSO+act. patents	[10-20]%	[5-10]%	[10-20]%	[10-20]%	[0-5]%	[50-60]%	[80-90]%	[10-20]%	[3000-3500]	[100-200]
Not crop specific	Weed Control	SO	[10-20]%	[50-60]%	[60-70]%	[0-5]%	[5-10]%	[20-30]%	[90-100]%	[0-5]%	[4500-5000]	[1100-1200]
		RSO+all patents	[10-20]%	[50-60]%	[60-70]%	[0-5]%	[5-10]%	[20-30]%	[90-100]%	[0-5]%	[4500-5000]	[1100-1200]
		RSO+act. patents	[5-10]%	[50-60]%	[60-70]%	[0-5]%	[5-10]%	[20-30]%	[90-100]%	[0-5]%	[4500-5000]	[900-1000]

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others	HHI	ΔHHI
Soybean	Quality Traits	SO	[0-5]%	[60-70]%	[60-70]%			[30-40]%	[90-100]%	[5-10]%	[4500-5000]	[0-100]
		RSO+all patents	[0-5]%	[60-70]%	[60-70]%			[30-40]%	[90-100]%	[5-10]%	[4500-5000]	[0-100]
		RSO+act. patents	[0-5]%	[60-70]%	[60-70]%			[30-40]%	[90-100]%	[5-10]%	[4500-5000]	[0-100]
Soybean	Weed Control	SO	[0-5]%	[70-80]%	[70-80]%		[0-5]%	[10-20]%	[90-100]%	[0-5]%	[6500-7000]	[300-400]
		RSO+all patents	[0-5]%	[70-80]%	[70-80]%		[0-5]%	[10-20]%	[90-100]%	[0-5]%	[6500-7000]	[300-400]
		RSO+act. patents	[0-5]%	[70-80]%	[80-90]%		[0-5]%	[10-20]%	[90-100]%	[0-5]%	[6500-7000]	[300-400]

APPENDIX B. PATENT SHARES FOR TOP50% AND TOP25% SAMPLES OF PATENTS

(197) The Commission presents below several robustness analyses for the case that the Commission considers the most reliable (see Section 4.1.4).

(198) Appendix B reports patent shares when the sample of patents is restricted to the top 50% sample (i.e. patents above the median quality) and to the top 25% sample (i.e. patents above the 75th percentile in terms of quality).

(199) The results show that:

(a) Patent shares based on the full sample of patents and using a 1.1 non-linear weight applied to citation counts (Table 12) are similar to patent shares based on the top 50% sample of patents (Table 18).

Patent shares based on the full sample of patents and using a 1.3 non-linear weight applied to citation counts (Table 17) are similar to patent shares based on the top 25% sample of patents (

(b) Table 19).

(200) These findings are consistent with the economic literature discussed in Section 3.4.3.

(201) The Commission notes that focusing on the top 50% sample and top 25% sample of patents leads to a decrease in sample sizes. This explains why some companies do not appear anymore in several innovation spaces, compared to Table 12. The Commission therefore considers patent shares based on the 1.1 non-linear weight and 1.3 non-linear weight as being more reliable.

Table 18 – Share of total citations (category "Others" classified, focus on biotech-related patents, top 50% of cited patents, full period)

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others
Canola	Quality Traits	SO	[20-30]%	[20-30]%	[40-50]%			[40-50]%	[80-90]%	[10-20]%
		RSO+all patents	[20-30]%	[30-40]%	[50-60]%			[40-50]%	[90-100]%	
		RSO+act. Patents	[30-40]%	[30-40]%	[60-70]%			[40-50]%	[90-100]%	
Canola	Weed Control	SO	[10-20]%	[20-30]%	[40-50]%			[0-5]%	[40-50]%	[50-60]%
		RSO+all patents	[30-40]%	[60-70]%	[90-100]%				[90-100]%	
		RSO+act. Patents	[5-10]%	[80-90]%	[90-100]%			[5-10]%	[90-100]%	

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others
Cotton	Enabling Tech	SO	[90-100]%		[90-100]%				[90-100]%	
		RSO+all patents	[90-100]%		[90-100]%				[90-100]%	
		RSO+act. Patents	[90-100]%		[90-100]%				[90-100]%	
Cotton	Insect Control	SO	[70-80]%	[10-20]%	[80-90]%				[80-90]%	[10-20]%
		RSO+all patents	[70-80]%	[10-20]%	[80-90]%				[80-90]%	[10-20]%
		RSO+act. Patents	[70-80]%	[10-20]%	[80-90]%				[80-90]%	[10-20]%
Cotton	Weed Control	SO	[50-60]%	[30-40]%	[80-90]%				[80-90]%	[10-20]%
		RSO+all patents	[50-60]%	[30-40]%	[80-90]%				[80-90]%	[10-20]%
		RSO+act. Patents	[50-60]%	[30-40]%	[80-90]%				[80-90]%	[10-20]%
Fruit/ Vegetables	Crop Efficiency	SO		[50-60]%	[50-60]%		[10-20]%	[0-5]%	[70-80]%	[20-30]%
		RSO+all patents	[5-10]%	[50-60]%	[50-60]%		[10-20]%	[0-5]%	[70-80]%	[20-30]%
		RSO+act. Patents	[5-10]%	[50-60]%	[60-70]%		[5-10]%	[0-5]%	[70-80]%	[20-30]%
Fruit/ Vegetables	Disease Control	SO	[5-10]%	[60-70]%	[70-80]%		[0-5]%		[70-80]%	[20-30]%
		RSO+all patents	[5-10]%	[60-70]%	[70-80]%		[0-5]%		[70-80]%	[20-30]%
		RSO+act. Patents	[5-10]%	[60-70]%	[70-80]%		[0-5]%		[70-80]%	[20-30]%
Fruit/ Vegetables	Other Traits	SO	[30-40]%	[30-40]%	[70-80]%		[5-10]%		[70-80]%	[20-30]%
		RSO+all patents	[30-40]%	[30-40]%	[70-80]%		[5-10]%		[70-80]%	[20-30]%
		RSO+act. Patents	[30-40]%	[30-40]%	[70-80]%		[5-10]%		[70-80]%	[20-30]%
Not crop specific	Crop Efficiency	SO	[0-5]%	[10-20]%	[20-30]%	[30-40]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%
		RSO+all patents	[0-5]%	[10-20]%	[10-20]%	[30-40]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%
		RSO+act. Patents	[0-5]%	[10-20]%	[20-30]%	[30-40]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%
Not crop specific	Disease Control	SO	[10-20]%	[0-5]%	[10-20]%	[10-20]%	[0-5]%	[10-20]%	[40-50]%	[50-60]%
		RSO+all patents	[0-5]%	[0-5]%	[5-10]%	[10-20]%	[0-5]%	[10-20]%	[40-50]%	[60-70]%
		RSO+act. Patents	[0-5]%	[5-10]%	[5-10]%	[10-20]%	[0-5]%	[10-20]%	[30-40]%	[60-70]%
Not crop specific	Enabling Tech.	SO	[0-5]%	[10-20]%	[20-30]%	[5-10]%	[0-5]%	[20-30]%	[50-60]%	[40-50]%
		RSO+all patents	[0-5]%	[10-20]%	[20-30]%	[5-10]%	[0-5]%	[20-30]%	[50-60]%	[40-50]%
		RSO+act. Patents	[0-5]%	[10-20]%	[20-30]%	[0-5]%	[0-5]%	[20-30]%	[50-60]%	[40-50]%
Not crop specific	Other Traits	SO	[0-5]%	[5-10]%	[10-20]%	[20-30]%	[10-20]%	[5-10]%	[40-50]%	[50-60]%
		RSO+all patents	[0-5]%	[5-10]%	[5-10]%	[20-30]%	[10-20]%	[0-5]%	[40-50]%	[60-70]%
		RSO+act. Patents		[5-10]%	[5-10]%		[10-20]%	[0-5]%	[20-30]%	[70-80]%

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others
Not crop specific	Insect Control	SO	[20-30]%	[20-30]%	[40-50]%	[5-10]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%
		RSO+all patents	[20-30]%	[20-30]%	[40-50]%	[5-10]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%
		RSO+act. Patents	[20-30]%	[20-30]%	[40-50]%	[0-5]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%
Not crop specific	Quality Traits	SO	[10-20]%	[0-5]%	[10-20]%	[10-20]%	[0-5]%	[40-50]%	[80-90]%	[10-20]%
		RSO+all patents	[10-20]%	[0-5]%	[10-20]%	[10-20]%	[0-5]%	[40-50]%	[80-90]%	[10-20]%
		RSO+act. Patents	[10-20]%	[0-5]%	[10-20]%	[10-20]%	[0-5]%	[40-50]%	[80-90]%	[10-20]%
Not crop specific	Weed Control	SO	[10-20]%	[40-50]%	[50-60]%	[5-10]%	[5-10]%	[20-30]%	[90-100]%	[5-10]%
		RSO+all patents	[10-20]%	[40-50]%	[50-60]%	[5-10]%	[5-10]%	[20-30]%	[90-100]%	[5-10]%
		RSO+act. Patents	[10-20]%	[40-50]%	[50-60]%	[5-10]%	[5-10]%	[20-30]%	[90-100]%	[0-5]%
Soybean	Quality Traits	SO		[60-70]%	[60-70]%			[30-40]%	[90-100]%	[5-10]%
		RSO+all patents		[60-70]%	[60-70]%			[30-40]%	[90-100]%	[5-10]%
		RSO+act. Patents		[60-70]%	[60-70]%			[30-40]%	[90-100]%	
Soybean	Weed Control	SO	[0-5]%	[60-70]%	[60-70]%		[0-5]%	[20-30]%	[90-100]%	[0-5]%
		RSO+all patents	[0-5]%	[60-70]%	[60-70]%		[0-5]%	[20-30]%	[90-100]%	[0-5]%
		RSO+act. Patents	[0-5]%	[60-70]%	[70-80]%		[0-5]%	[20-30]%	[90-100]%	[0-5]%

Table 19 – Share of total citations (category "Others" classified, focus on biotech-related patents, top 25% of cited patents, full period)

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others
Canola	Quality Traits	SO	[20-30]%	[20-30]%	[50-60]%			[30-40]%	[80-90]%	[10-20]%
		RSO+all patents	[20-30]%	[30-40]%	[50-60]%			[40-50]%	[90-100]%	
		RSO+act. Patents	[30-40]%	[30-40]%	[70-80]%			[30-40]%	[90-100]%	
Canola	Weed Control	SO		[30-40]%	[30-40]%				[30-40]%	[70-80]%
		RSO+all patents		[90-100]%	[90-100]%				[90-100]%	
		RSO+act. Patents		[90-100]%	[90-100]%				[90-100]%	
Cotton	Enabling Tech	SO	[90-100]%		[90-100]%				[90-100]%	
		RSO+all patents	[90-100]%		[90-100]%				[90-100]%	
		RSO+act. Patents	[90-100]%		[90-100]%				[90-100]%	
Cotton	Insect Control	SO	[70-80]%	[10-20]%	[80-90]%				[80-90]%	[10-20]%
		RSO+all patents	[70-80]%	[10-20]%	[80-90]%				[80-90]%	[10-20]%
		RSO+act. Patents	[70-80]%	[10-20]%	[80-90]%				[80-90]%	[10-20]%

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others
Cotton	Weed Control	SO	[50-60]%	[50-60]%	[90-100]%				[90-100]%	
		RSO+all patents	[50-60]%	[50-60]%	[90-100]%				[90-100]%	
		RSO+act. Patents	[50-60]%	[50-60]%	[90-100]%				[90-100]%	
Fruit/ Vegetables	Crop Efficiency	SO		[50-60]%	[50-60]%		[20-30]%		[80-90]%	[10-20]%
		RSO+all patents	[5-10]%	[50-60]%	[60-70]%		[20-30]%		[80-90]%	[10-20]%
		RSO+act. Patents	[5-10]%	[60-70]%	[70-80]%		[5-10]%		[70-80]%	[20-30]%
Fruit/ Vegetables	Disease Control	SO	[5-10]%	[60-70]%	[70-80]%		[0-5]%		[70-80]%	[20-30]%
		RSO+all patents	[5-10]%	[60-70]%	[70-80]%		[0-5]%		[70-80]%	[20-30]%
		RSO+act. patents	[5-10]%	[60-70]%	[70-80]%		[0-5]%		[70-80]%	[20-30]%
Fruit/ Vegetables	Other Traits	SO	[40-50]%	[30-40]%	[80-90]%				[80-90]%	[10-20]%
		RSO+all patents	[40-50]%	[30-40]%	[80-90]%				[80-90]%	[10-20]%
		RSO+act. patents	[40-50]%	[30-40]%	[80-90]%				[80-90]%	[10-20]%
Not crop specific	Crop Efficiency	SO	[0-5]%	[20-30]%	[20-30]%	[30-40]%		[10-20]%	[60-70]%	[30-40]%
		RSO+all patents	[0-5]%	[20-30]%	[20-30]%	[30-40]%	[0-5]%	[10-20]%	[60-70]%	[30-40]%
		RSO+act. patents	[0-5]%	[20-30]%	[20-30]%	[30-40]%	[0-5]%	[5-10]%	[60-70]%	[30-40]%
Not crop specific	Disease Control	SO	[10-20]%		[10-20]%	[5-10]%	[0-5]%	[10-20]%	[40-50]%	[50-60]%
		RSO+all patents	[0-5]%		[0-5]%	[10-20]%	[0-5]%	[10-20]%	[30-40]	[70-80]%
		RSO+act. patents	[0-5]%		[0-5]%	[5-10]%	[0-5]%	[10-20]%	[20-30]%	[70-80]%
Not crop specific	Enabling Tech.	SO	[0-5]%	[20-30]%	[20-30]%	[5-10]%	[0-5]%	[20-30]%	[50-60]%	[40-50]%
		RSO+all patents	[0-5]%	[20-30]%	[20-30]%	[5-10]%	[0-5]%	[20-30]%	[50-60]%	[40-50]%
		RSO+act. patents	[0-5]%	[20-30]%	[20-30]%	[0-5]%	[0-5]%	[20-30]%	[50-60]%	[40-50]%
Not crop specific	Other Traits	SO	[0-5]%	[5-10]%	[5-10]%	[20-30]%	[10-20]%	[0-5]%	[40-50]%	[50-60]%
		RSO+all patents		[5-10]%	[5-10]%	[20-30]%	[10-20]%	[0-5]%	[40-50]%	[50-60]%
		RSO+act. patents		[10-20]%	[10-20]%		[10-20]%	[0-5]%	[40-50]%	[70-80]%
Not crop specific	Insect Control	SO	[20-30]%	[20-30]%	[50-60]%	[0-5]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%
		RSO+all patents	[20-30]%	[20-30]%	[50-60]%	[0-5]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%
		RSO+act. patents	[20-30]%	[20-30]%	[50-60]%	[0-5]%	[10-20]%	[30-40]%	[90-100]%	[0-5]%
Not crop specific	Quality Traits	SO	[10-20]%	[0-5]%	[10-20]%	[10-20]%		[50-60]%	[80-90]%	[10-20]%
		RSO+all patents	[10-20]%	[0-5]%	[10-20]%	[10-20]%		[50-60]%	[80-90]%	[10-20]%
		RSO+act. patents	[10-20]%	[5-10]%	[10-20]%	[10-20]%		[50-60]%	[80-90]%	[10-20]%
Not crop specific	Weed Control	SO	[10-20]%	[40-50]%	[50-60]%	[0-5]%	[5-10]%	[20-30]%	[90-100]%	[0-5]%
		RSO+all patents	[10-20]%	[40-50]%	[50-60]%	[0-5]%	[5-10]%	[20-30]%	[90-100]%	[0-5]%
		RSO+act. patents	[10-20]%	[40-50]%	[50-60]%	[0-5]%	[5-10]%	[20-30]%	[90-100]%	[0-5]%

Crop	Technology	Classification	BAY	MNS	Combined	BASF	CCSYN	DDP	Big5	Others
Soybean	Quality Traits	SO		[60-70]%	[60-70]%			[30-40]%	[90-100]%	
		RSO+all patents		[60-70]%	[60-70]%			[30-40]%	[90-100]%	
		RSO+act. patents		[60-70]%	[60-70]%			[40-50]%	[90-100]%	
Soybean	Weed Control	SO		[70-80]%	[70-80]%			[20-30]%	[90-100]%	
		RSO+all patents		[70-80]%	[70-80]%			[20-30]%	[90-100]%	
		RSO+act. patents	[0-5]%	[70-80]%	[70-80]%			[20-30]%	[90-100]%	

APPENDIX C. PATENT SHARES FROM THE PARTIES' SUBMISSION DATED 22 NOVEMBER 2017

(202) In their submission dated 22 November 2017, the Parties report patent shares based on eight measures:[118]

(a) Cit: number of citations received

(b) Citex: number of external citations received

(c) Techrel: technology relevance

(d) Techrel_ex: external technology relevance

(e) Pai: patent asset Index;

(f) Pai_ex: external patent asset index

(g) Cit_bio: number of citations received and that are biotech-related

(h) Citex_bio: number of external citations received and that are biotech-related

(203) The Commission reports below the patent shares for the innovation areas discussed in Section 4.1.4 (paragraph (161), see also Section 4.3), for the full period and for the patents published after 2011.

Table 20 – Patent shares from the Parties' submission on patents (canola-quality trait, including all competitors)

All publication years								
Owner	**cit**	**citex**	**techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer (post-divestment)[119]	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Monsanto	[30-40]%	[40-50]%	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[30-40]%	[40-50]%
Combined	[30-40]%	[40-50]%	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[30-40]%	[40-50]%
Bayer divestment	[20-30]%	[20-30]%	[50-60]%	[50-60]%	[60-70]%	[50-60]%	[30-40]%	[30-40]%
Bayer + Monsanto	[50-60]%	[70-80]%	[70-80]%	[70-80]%	[70-80]%	[80-90]%	[70-80]%	[70-80]%
DowDuPont	[40-50]%	[20-30]%	[20-30]%	[20-30]%	[20-30]%	[10-20]%	[30-40]%	[20-30]%
Others	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Publication years after 2011 included								
Owner	**cit**	**citex**	**techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer (post-divestment)[120]	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Combined	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Bayer divestment	[90-100]%	[90-100]%	[90-100]%	[90-100]%	[90-100]%	[90-100]%	[90-100]%	[90-100]%
Bayer + Monsanto	[90-100]%	[90-100]%	[90-100]%	[90-100]%	[90-100]%	[90-100]%	[90-100]%	[90-100]%
DowDuPont	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Others	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%

118 "Patent analysis in broad acre seeds and traits", 22 November 2017, ID8696-4.

119 Bayer post-divestment […] because one patent related to Canola is not included in the simulation of the remedy made by the Parties.

120 Bayer post-divestment […] because one patent related to Canola is not included in the simulation of the remedy made by the Parties.

Table 21 – Patent shares from the Parties' submission on patents (canola-weed control, including all competitors)

All publication years								
Owner	**cit**	**citex**	**techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer (post-divestment)								
Monsanto	[80-90]%	[90-100]%	[80-90]%	[90-100]%	[90-100]%	[90-100]%	[70-80]%	[90-100]%
Combined Bayer divestment	[80-90]%	[90-100]%	[80-90]%	[90-100]%	[90-100]%	[90-100]%	[70-80]%	[90-100]%
Bayer + Monsanto	[5-10]%	[0-5]%	[10-20]%	[5-10]%	[5-10]%	[5-10]%	[10-20]%	[0-5]%
DowDuPont	[90-100]%	[90-100]%	[90-100]%	[90-100]%	[90-100]%	[90-100]%	[80-90]%	[90-100]%
	[5-10]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[10-20]%	[0-5]%
Publication years after 2011 included								
Owner	**cit**	**citex**	**techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer (post-divestment)								
Monsanto	[80-90]%	[90-100]%	[80-90]%	[90-100]%	[90-100]%	[90-100]%	[70-80]%	[90-100]%
Combined Bayer divestment	[80-90]%	[90-100]%	[80-90]%	[90-100]%	[90-100]%	[90-100]%	[70-80]%	[90-100]%
Bayer + Monsanto	[5-10]%	[0-5]%	[10-20]%	[5-10]%	[5-10]%	[5-10]%	[10-20]%	[0-5]%
DowDuPont	[90-100]%	[90-100]%	[90-100]%	[90-100]%	[90-100]%	[90-100]%	[80-90]%	[90-100]%
	[5-10]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[10-20]%	[0-5]%

Table 22 – Patent shares from the Parties' submission on patents (cotton-enabling technology, including all competitors)

All publication years								
Owner	**cit**	**citex**	**techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer (post-divestment)								
Monsanto	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[10-20]%	[10-20]%	[0-5]%	[0-5]%
Combined Bayer divestment	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[10-20]%	[10-20]%	[0-5]%	[0-5]%
Bayer + Monsanto	[70-80]%	[60-70]%	[70-80]%	[50-60]%	[70-80]%	[60-70]%	[90-100]%	[60-70]%
Texas Tech University System	[90-100]%	[90-100]%	[80-90]%	[70-80]%	[80-90]%	[70-80]%	[90-100]%	[60-70]%
	[5-10]%	[5-10]%	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[5-10]%	[30-40]%
Publication years after 2011 included								
Owner	**cit**	**citex**	**techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer (post-divestment)								
Combined Bayer divestment	[80-90]%	[60-70]%	[70-80]%	[50-60]%	[70-80]%	[60-70]%	[80-90]%	[0-5]%
Texas Tech University System	[10-20]%	[40-50]%	[20-30]%	[40-50]%	[20-30]%	[40-50]%	[20-30]%	[90-100]%

Table 23 – Patent shares from the Parties' submission on patents (cotton-insect control, including all competitors)

All publication years								
Owner	**cit**	**citex**	**techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer (post-divestment)								
Monsanto	[0-5]%	[30-40]%	[0-5]%	[20-30]%	[0-5]%	[30-40]%	[10-20]%	[40-50]%
Combined	[0-5]%	[30-40]%	[0-5]%	[20-30]%	[0-5]%	[30-40]%	[10-20]%	[40-50]%
Bayer divestment	[90-100]%	[50-60]%	[80-90]%	[30-40]%	[80-90]%	[50-60]%	[70-80]%	[40-50]%
Bayer + Monsanto	[90-100]%	[80-90]%	[80-90]%	[50-60]%	[90-100]%	[80-90]%	[90-100]%	[80-90]%
DowDuPont	[0-5]%	[5-10]%	[5-10]%	[10-20]%	[5-10]%	[10-20]%	[5-10]%	[10-20]%
Biocentury Transgene China Co.	[0-5]%	[10-20]%	[5-10]%	[20-30]%	[0-5]%	[5-10]%	[5-10]%	[0-5]%
Publication years after 2011 included								
Owner	**cit**	**citex**	**techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Monsanto	[20-30]%	[40-50]%	[10-20]%	[20-30]%	[20-30]%	[50-60]%	[30-40]%	[50-60]%
Combined	[20-30]%	[40-50]%	[10-20]%	[20-30]%	[20-30]%	[50-60]%	[30-40]%	[50-60]%
DowDuPont	[20-30]%	[20-30]%	[40-50]%	[20-30]%	[50-60]%	[20-30]%	[30-40]%	[50-60]%
Biocentury Transgene China Co.	[50-60]%	[40-50]%	[40-50]%	[40-50]%	[10-20]%	[20-30]%	[30-40]%	[0-5]%

Table 24 – Patent shares from the Parties' submission on patents (cotton-weed control, including all competitors)

All publication years								
Owner	**cit**	**citex**	**Techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer (post-divestment)								
Monsanto	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[10-20]%	[20-30]%
Combined	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[10-20]%	[20-30]%
Bayer divestment	[60-70]%	[30-40]%	[60-70]%	[30-40]%	[60-70]%	[40-50]%	[40-50]%	[5-10]%
Bayer + Monsanto	[80-90]%	[50-60]%	[80-90]%	[60-70]%	[80-90]%	[60-70]%	[60-70]%	[30-40]%
DowDuPont	[5-10]%	[10-20]%	[10-20]%	[30-40]%	[10-20]%	[20-30]%	[10-20]%	[10-20]%
University Of Illinois	[5-10]%	[20-30]%	[0-5]%	[5-10]%	[0-5]%	[0-5]%	[20-30]%	[50-60]%
Publication years after 2011 included								
Owner	**cit**	**citex**	**Techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer (post-divestment)								
Monsanto	[40-50]%	[30-40]%	[20-30]%	[20-30]%	[30-40]%	[20-30]%	[30-40]%	[50-60]%
Combined	[40-50]%	[30-40]%	[20-30]%	[20-30]%	[30-40]%	[20-30]%	[30-40]%	[50-60]%
Bayer divestment	[30-40]%	[40-50]%	[40-50]%	[40-50]%	[40-50]%	[40-50]%	[30-40]%	[10-20]%
Bayer + Monsanto	[80-90]%	[70-80]%	[70-80]%	[60-70]%	[70-80]%	[70-80]%	[70-80]%	[70-80]%
DowDuPont	[10-20]%	[20-30]%	[30-40]%	[30-40]%	[20-30]%	[30-40]%	[20-30]%	[20-30]%

Table 25 – Patent shares from the Parties' submission on patents (not crop specific-insect control, including all competitors)

All publication years								
Owner	**cit**	**Citex**	**techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer (post-divestment)								
Monsanto	[20-30]%	[30-40]%	[20-30]%	[20-30]%	[20-30]%	[30-40]%	[20-30]%	[20-30]%
Combined Bayer divestment	[20-30]%	[30-40]%	[20-30]%	[20-30]%	[20-30]%	[30-40]%	[20-30]%	[20-30]%
Bayer + Monsanto	[20-30]%	[10-20]%	[20-30]%	[20-30]%	[10-20]%	[20-30]%	[20-30]%	[20-30]%
DowDuPont	[50-60]%	[50-60]%	[40-50]%	[40-50]%	[40-50]%	[50-60]%	[40-50]%	[40-50]%
ChemChina-Syngenta	[20-30]%	[20-30]%	[40-50]%	[20-30]%	[40-50]%	[20-30]%	[20-30]%	[10-20]%
BASF	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[10-20]%	[10-20]%	[10-20]%	[20-30]%
Others	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[5-10]%	[0-5]%
	[0-5]%	[0-5]%	[0-5]%	[5-10]%	[0-5]%	[0-5]%	[0-5]%	[5-10]%
Publication years after 2011 included								
Owner	**cit**	**Citex**	**techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer (post-divestment)								
Monsanto	[10-20]%	[5-10]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%
Combined Bayer divestment	[10-20]%	[5-10]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%
Bayer + Monsanto	[20-30]%	[20-30]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[20-30]%	[20-30]%
DowDuPont	[30-40]%	[20-30]%	[20-30]%	[30-40]%	[20-30]%	[20-30]%	[30-40]%	[30-40]%
ChemChina-Syngenta	[50-60]%	[50-60]%	[60-70]%	[40-50]%	[60-70]%	[40-50]%	[40-50]%	[40-50]%
Keygene	[5-10]%	[10-20]%	[5-10]%	[10-20]%	[5-10]%	[10-20]%	[5-10]%	[10-20]%
Iowa State University	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
University Of Missouri System	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Others	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[5-10]%
	[0-5]%	[0-5]%	[0-5]%	[5-10]%	[0-5]%	[0-5]%	[0-5]%	[5-10]%

Table 26 – Patent shares from the Parties' submission on patents (not crop specific-weed control, including all competitors)

All publication years								
Owner	**cit**	**Citex**	**techrel**	**techrel ex**	**pai**	**pai ex**	**cit bio**	**citex bio**
Bayer (post-divestment)								
Monsanto	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[20-30]%	[5-10]%
Combined Bayer divestment	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[20-30]%	[5-10]%
Bayer + Monsanto	[40-50]%	[10-20]%	[30-40]%	[5-10]%	[40-50]%	[10-20]%	[30-40]%	[10-20]%
DowDuPont	[60-70]%	[20-30]%	[40-50]%	[20-30]%	[50-60]%	[30-40]%	[50-60]%	[10-20]%
BASF	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[10-20]%	[10-20]%	[10-20]%	[20-30]%
ChemChina-Syngenta	[10-20]%	[10-20]%	[20-30]%	[30-40]%	[20-30]%	[20-30]%	[10-20]%	[10-20]%
Cibus	[5-10]%	[10-20]%	[5-10]%	[10-20]%	[5-10]%	[10-20]%	[5-10]%	[20-30]%
Keygene	[0-5]%	[5-10]%	[0-5]%	[5-10]%	[0-5]%	[5-10]%	[0-5]%	[5-10]%
Others	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[5-10]%	[0-5]%	[0-5]%
Publication years after 2011 included								
Owner	**cit**	**citex**	**techrel**	**techrel ex**	**pai**	**pai ex**	**cit bio**	**citex bio**
Bayer (post-divestment)								
Monsanto	[30-40]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[5-10]%
Combined Bayer divestment	[30-40]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[5-10]%
Bayer + Monsanto	[20-30]%	[5-10]%	[20-30]%	[5-10]%	[30-40]%	[10-20]%	[20-30]%	[10-20]%
DowDuPont	[50-60]%	[10-20]%	[40-50]%	[20-30]%	[50-60]%	[20-30]%	[30-40]%	[20-30]%
BASF	[20-30]%	[40-50]%	[20-30]%	[30-40]%	[20-30]%	[30-40]%	[30-40]%	[30-40]%
ChemChina-Syngenta	[0-5]%	[0-5]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[5-10]%	[5-10]%
Cibus	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[10-20]%	[20-30]%
Keygene	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[5-10]%	[0-5]%	[0-5]%
Beijing Weiming Kaituo Crop	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%

Table 27 – Patent shares from the Parties' submission on patents (soybean-weed control, including all competitors)

All publication years								
Owner	**cit**	**Citex**	**techrel**	**techrel ex**	**pai**	**pai ex**	**cit bio**	**citex bio**
Bayer (post-divestment)								
Monsanto	[40-50]%	[20-30]%	[20-30]%	[20-30]%	[30-40]%	[20-30]%	[10-20]%	[10-20]%
Combined	[40-50]%	[20-30]%	[20-30]%	[20-30]%	[30-40]%	[20-30]%	[10-20]%	[10-20]%
Bayer divestment	[5-10]%	[0-5]%	[5-10]%	[0-5]%	[5-10]%	[0-5]%	[10-20]%	[5-10]%
Bayer + Monsanto	[40-50]%	[20-30]%	[30-40]%	[20-30]%	[30-40]%	[20-30]%	[20-30]%	[20-30]%
DowDuPont	[40-50]%	[60-70]	[40-50]%	[50-60]%	[40-50]%	[50-60]%	[50-60]%	[50-60]%
ChemChina-Syngenta	[5-10]%	[5-10]%	[10-20]%	[5-10]%	[10-20]%	[10-20]%	[5-10]%	[10-20]%
Ms Technologies	[5-10]%	[5-10]%	[10-20]%	[10-20]%	[5-10]%	[10-20]%	[10-20]%	[10-20]%
Others	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Publication years after 2011 included								
Owner	**cit**	**citex**	**techrel**	**techrel ex**	**pai**	**pai ex**	**cit bio**	**citex bio**
Bayer (post-divestment)								
Monsanto	[40-50]%	[20-30]%	[20-30]%	[20-30]%	[30-40]%	[20-30]%	[10-20]%	[10-20]%
Combined	[40-50]%	[20-30]%	[20-30]%	[20-30]%	[30-40]%	[20-30]%	[10-20]%	[10-20]%
Bayer divestment	[5-10]%	[0-5]%	[5-10]%	[0-5]%	[5-10]%	[0-5]%	[10-20]%	[5-10]%
Bayer + Monsanto	[50-60]%	[20-30]%	[30-40]%	[20-30]%	[30-40]%	[20-30]%	[30-40]%	[20-30]%
DowDuPont	[30-40]%	[50-60]%	[40-50]%	[50-60]%	[30-40]%	[40-50]%	[40-50]%	[30-40]%
BASF	[5-10]%	[5-10]%	[10-20]%	[5-10]%	[10-20]%	[10-20]%	[5-10]%	[10-20]%
ChemChina-Syngenta	[5-10]%	[5-10]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%
Ms Technologies	[5-10]%	[10-20]%	[10-20]%	[10-20]%	[5-10]%	[10-20]%	[10-20]%	[10-20]%
Others	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%

APPENDIX D. PATENT SHARES FROM THE PARTIES' SUBMISSION DATED 9 JANUARY 2018

(204) In their submission dated 9 January 2017, the Parties report patent shares based on eight measures (similar to the patent shares reported in Appendix C):[121]

(a) Cit: number of citations received

(b) Citex: number of external citations received

(c) Techrel: technology relevance

(d) Techrel_ex: external technology relevance

(e) Pai: patent asset Index;

(f) Pai_ex: external patent asset index

(g) Cit_bio: number of citations received and that are biotech-related

(h) Citex_bio: number of external citations received and that are biotech-related

(205) The Commission reports below the patent shares for the innovation areas discussed in Section 4.1.4 (paragraph (161), see also Section 4.3). This data are extracted from the excel file "M.8084 Bayer-Monsanto -Seed&trait patent shares.xlsx" provided by the Parties in their submission.

Table 28 – Patent shares from the Parties' submission on patents (canola-quality trait, including all competitors)

All publication years								
Owner	**cit**	**citex**	**techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer	[20-30]%	[20-30]%	[50-60]%	[50-60]%	[60-70]%	[50-60]%	[30-40]%	[30-40]%
Monsanto	[30-40]%	[40-50]%	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[30-40]%	[40-50]%
Combined	[50-60]%	[70-80]%	[70-80]%	[70-80]%	[70-80]%	[80-90]%	[70-80]%	[70-80]%
DowDuPont	[40-50]%	[20-30]%	[20-30]%	[20-30]%	[20-30]%	[10-20]%	[30-40]%	[20-30]%
Others	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%

Table 29 – Patent shares from the Parties' submission on patents (cotton-enabling technology, including all competitors)

All publication years								
Owner	**cit**	**citex**	**techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer	[70-80]%	[60-70]%	[70-80]%	[50-60]%	[70-80]%	[60-70]%	[90-100]%	[60-70]%
Monsanto	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[10-20]%	[10-20]%	[0-5]%	[0-5]%
Combined	[90-100]%	[90-100]%	[80-90]%	[70-80]%	[80-90]%	[70-80]%	[90-100]%	[60-70]%
Texas Tech University System	[5-10]%	[5-10]%	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[5-10]%	[30-40]%

[121] "Response to the SO's patent analysis", 9 January 2018. ID9955-83.

Table 30 – Patent shares from the Parties' submission on patents (cotton-insect control, including all competitors)

All publication years								
Owner	**cit**	**citex**	**techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer	[90-100]%	[50-60]%	[80-90]%	[30-40]%	[80-90]%	[50-60]%	[70-80]%	[40-50]%
Monsanto	[0-5]%	[30-40]%	[0-5]%	[20-30]%	[0-5]%	[30-40]%	[10-20]%	[40-50]%
Combined	[90-100]%	[80-90]%	[80-90]%	[50-60]%	[90-100]%	[80-90]%	[90-100]%	[80-90]%
DowDuPont	[0-5]%	[5-10]%	[5-10]%	[10-20]%	[5-10]%	[10-20]%	[5-10]%	[10-20]%
Biocentury Transgene China Co.	[0-5]%	[10-20]%	[5-10]%	[20-30]%	[0-5]%	[5-10]%	[5-10]%	[0-5]%

Table 31 – Patent shares from the Parties' submission on patents (cotton-weed control, including all competitors)

All publication years								
Owner	**cit**	**citex**	**Techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer	[60-70]%	[30-40]%	[60-70]%	[30-40]%	[60-70]%	[40-50]%	[40-50]%	[5-10]%
Monsanto	[10-20]%	[10-20]%	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[10-20]%	[20-30]%
Combined	[80-90]%	[50-60]%	[80-90]%	[60-70]%	[80-90]%	[60-70]%	[60-70]%	[30-40]%
DowDuPont	[5-10]%	[10-20]%	[10-20]%	[30-40]%	[10-20]%	[20-30]%	[10-20]%	[10-20]%
University Of Illinois	[5-10]%	[20-30]%	[0-5]%	[5-10]%	[0-5]%	[0-5]%	[20-30]%	[50-60]%
Publication years after 2011 included								
Owner	**cit**	**citex**	**Techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer	[30-40]%	[40-50]%	[40-50]%	[40-50]%	[40-50]%	[40-50]%	[30-40]%	[10-20]%
Monsanto	[40-50]%	[30-40]%	[20-30]%	[20-30]%	[30-40]%	[20-30]%	[30-40]%	[50-60]%
Combined	[80-90]%	[70-80]%	[70-80]%	[60-70]%	[70-80]%	[70-80]%	[70-80]%	[70-80]%
DowDuPont	[10-20]%	[20-30]%	[30-40]%	[30-40]%	[20-30]%	[30-40]%	[20-30]%	[20-30]%

Table 32 – Patent shares from the Parties' submission on patents (not crop specific-insect control, including all competitors)

All publication years								
Owner	**cit**	**citex**	**Techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer	[20-30]%	[10-20]%	[20-30]%	[20-30]%	[10-20]%	[20-30]%	[20-30]%	[20-30]%
Monsanto	[20-30]%	[30-40]%	[20-30]%	[20-30]%	[20-30]%	[30-40]%	[20-30]%	[20-30]%
Combined	[50-60]%	[50-60]%	[40-50]%	[40-50]%	[40-50]%	[50-60]%	[40-50]%	[40-50]%
DowDuPont	[20-30]%	[20-30]%	[40-50]%	[20-30]%	[40-50]%	[20-30]%	[20-30]%	[10-20]%
ChemChina-Syngenta	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[10-20]%	[10-20]%	[10-20]%	[20-30]%
BASF	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[5-10]%	[0-5]%
Other	[0-5]%	[0-5]%	[0-5]%	[5-10]%	[0-5]%	[0-5]%	[0-5]%	[5-10]%
Publication years after 2011 included								
Owner	**cit**	**citex**	**Techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer	[20-30]%	[20-30]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[20-30]%	[20-30]%
Monsanto	[10-20]%	[5-10]%	[10-20]%	[10-20]%	[5-10]%	[10-20]	[10-20]%	[10-20]%
Combined	[30-40]%	[20-30]%	[20-30]%	[30-40]%	[20-30]%	[20-30]%	[30-40]%	[30-40]%
DowDuPont	[50-60]%	[50-60]%	[60-70]%	[40-50]%	[60-70]%	[40-50]%	[40-50]%	[40-50]%
ChemChina-Syngenta	[5-10]%	[10-20]%	[5-10]%	[10-20]%	[5-10]%	[10-20]%	[5-10]%	[10-20]%
Keygene	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Iowa State University	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
University Of Missouri System	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[5-10]%
Other	[0-5]%	[0-5]%	[0-5]%	[5-10]%	[0-5]%	[0-5]%	[0-5]%	[5-10]%

Table 33 – Patent shares from the Parties' submission on patents (not crop specific-weed control, including all competitors)

All publication years								
Owner	**cit**	**Citex**	**techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer	[20-30]%	[5-10]%	[20-30]%	[5-10]%	[30-40]%	[10-20]%	[20-30]%	[10-20]%
Monsanto	[30-40]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[5-10]%
Combined	[50-60]%	[10-20]%	[40-50]%	[20-30]%	[50-60]%	[20-30]%	[30-40]%	[20-30]%
DowDuPont	[20-30]%	[40-50]%	[20-30]%	[30-40]%	[20-30]%	[30-40]%	[30-40]%	[30-40]%
BASF	[0-5]%	[0-5]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[5-10]%	[5-10]%
ChemChina-Syngenta	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[10-20]%	[20-30]%
Cibus	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Keygene	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Others	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Publication years after 2011 included								
Owner	**cit**	**citex**	**techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer	[40-50]%	[10-20]%	[30-40]%	[5-10]%	[40-50]%	[10-20]%	[30-40]%	[10-20]%
Monsanto	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[20-30]%	[5-10]%
Combined	[60-70]%	[20-30]%	[40-50]%	[20-30]%	[50-60]%	[30-40]%	[50-60]%	[10-20]%
DowDuPont	[10-20]%	[20-30]%	[10-20]%	[20-30]%	[10-20]%	[10-20]%	[10-20]%	[20-30]%
BASF	[10-20]%	[10-20]%	[20-30]%	[30-40]%	[20-30]%	[20-30]%	[10-20]%	[10-20]%
ChemChina-Syngenta	[5-10]%	[10-20]%	[5-10]%	[10-20]%	[5-10]%	[10-20]%	[5-10]%	[20-30]%
Cibus	[0-5]%	[5-10]%	[0-5]%	[5-10]%	[0-5]%	[5-10]%	[0-5]%	[5-10]%
Keygene	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[5-10]%	[0-5]%	[0-5]%
Beijing Weiming Kaituo Crop	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%

Table 34 – Patent shares from the Parties' submission on patents (soybean-weed control, including all competitors)

All publication years								
Owner	**cit**	**Citex**	**techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer	[5-10]%	[0-5]%	[5-10]%	[0-5]%	[5-10]%	[0-5]%	[10-20]%	[5-10]%
Monsanto	[40-50]%	[20-30]%	[20-30]%	[20-30]%	[30-40]%	[20-30]%	[10-20]%	[10-20]%
Combined	[40-50]%	[20-30]%	[30-40]%	[20-30]%	[30-40]%	[20-30]%	[20-30]%	[20-30]%
DowDuPont	[40-50]%	[60-70]%	[40-50]%	[50-60]%	[40-50]%	[50-60]%	[50-60]%	[50-60]%
ChemChina-Syngenta	[5-10]%	[5-10]%	[10-20]%	[5-10]%	[10-20]%	[10-20]%	[5-10]%	[10-20]%
MS Technologies	[5-10]%	[5-10]%	[10-20]%	[10-20]%	[5-10]%	[10-20]%	[10-20]%	[10-20]%
Others	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%
Publication years after 2011 included								
Owner	**cit**	**citex**	**techrel**	**techrel_ex**	**pai**	**pai_ex**	**cit_bio**	**citex_bio**
Bayer	[5-10]%	[0-5]%	[5-10]%	[0-5]%	[5-10]%	[0-5]%	[10-20]%	[5-10]%
Monsanto	[40-50]%	[20-30]%	[20-30]%	[20-30]%	[30-40]%	[20-30]%	[10-20]%	[10-20]%
Combined	[50-60]%	[20-30]%	[30-40]%	[20-30]%	[30-40]%	[20-30]%	[30-40]%	[20-30]%
DowDuPont	[30-40]%	[50-60]%	[40-50]%	[50-60]%	[30-40]%	[40-50]%	[40-50]%	[30-40]%
ChemChina-Syngenta	[5-10]%	[5-10]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%	[10-20]%
MS Technologies	[5-10]%	[10-20]%	[10-20]%	[10-20]%	[5-10]%	[10-20]%	[10-20]%	[10-20]%
Others	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%	[0-5]%

CASE M.8084 – Bayer/Monsanto

ANNEX 2 TO THE COMMISSION DECISION

METHODOLOGY FOR MARKET SHARE CALCULATIONS REGARDING BROAD ACRE CROP TRAITS

(1) The trait licensing markets are technology markets where it is difficult to measure market shares and actual market power. With reference to Figure 94, of Section X.1.4.3, licenses and the related royalties are exchanged between trait discovery organizations and trait developers, between trait developers and stack developers, and, finally between breeders and trait or stack developers.

(2) Licensing revenue alone is not a sufficiently good proxy because there is cross-licensing and because many traits are used in-house for the so-called branded seeds. The licensing market does not reflect the true market strength of players such as Monsanto who also use traits "captively" with their own germplasm.

(3) As indicated in paragraph 25 of the Communication from the Commission on Guidelines on the application of Article 101 of the TFEU to technology transfer agreements, "*in the case of technology markets, one way to proceed is to calculate market shares on the basis of each technology's share of total licensing income from royalties […]. However, this may often be a merely theoretical and not a practical way to proceed because of lack of clear information on royalties. Another approach […] is to calculate market shares on the technology market on the basis of sales of products incorporating the licensed technology on downstream product market.*"[1]

(4) Bayer has developed a market share database internally referred to as 'MAST' for estimating market shares at a global level.[2] The market shares in the MAST database are estimated [market share database knowhow].[3]

(5) [Market share database knowhow].

(6) In the absence of precise and complete data on licensing income from royalties, and in view of the considerations in paragraph (2) and (3), the estimates of Bayer provided in the MAST database represent the best available data on trait market shares.

(7) In addition to the market share data described in paragraphs (4) and (5), MAST database also contains market share data by traited seeds acreage, which reflect the share of the land of a certain region covered with a certain traited seed.

(8) In the present Decision, market shares by value are usually preferred to market shares by acreage because they better reflect how trait developers monetise their traits.

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1 Official Journal C89, 28.3.2014, p. 3-50.

2 Notifying Party' response to the Commission's request for information RFI 31, MAST database [Annex 31.6].

3 Notifying Party' response to the Commission's request for information RFI 31 dated 19 July 2017, paragraph 4.

(9) When market shares are calculated for the stack developers, the Commission aggregated the values of all single traits in a stack, and the entire value is attributed to the company commercialising the stack. For example, if a stack is composed of a “trait 1” and a “trait 2”, coming from the “single trait developer 1” and the “single trait developer 2”, respectively, and if the stack is developed and commercialised by a “stack developer”, then the value of the stack is entirely attributed to this “stack developer”.

Annex 3

16 FEBRUARY 2018

CASE COMP/M.8084 – BAYER / MONSANTO

COMMITMENTS TO THE EUROPEAN COMMISSION

(A) Pursuant to Article 8(2) of Council Regulation (EC) No 139/2004 (the "***Merger Regulation***"), Bayer Aktiengesellschaft, a stock corporation incorporated under the laws of the Federal Republic of Germany, with its registered office at Kaiser-Wilhelm-Allee 1, 51373 Leverkusen, Germany, and registered with the local court (Amtsgericht) Cologne under Handelsregister number 48248 ("***Bayer***") hereby enters into the following Commitments (the "***Commitments***") vis-à-vis the European Commission (the "***Commission***") with a view to rendering Bayer's acquisition of sole control of Monsanto Company, a corporation incorporated under the laws of the State of Delaware, United States of America, with its registered office at 800 North Lindbergh Boulevard, St Louis, Missouri, 63167, United States of America, and registered with the Secretary of State of the State of Delaware under File Number 3174788 ("***Monsanto***") (the "***Concentration***") compatible with the internal market and the functioning of the EEA Agreement.

(B) This text shall be interpreted in light of the Commission's decision pursuant to Article 8(2) of the Merger Regulation to declare the Concentration compatible with the internal market and the functioning of the EEA Agreement (the "***Decision***"), in the general framework of European Union law, in particular in light of the Merger Regulation, and by reference to the Commission Notice on remedies acceptable under Council Regulation (EC) No 139/2004 and under Commission Regulation (EC) No 802/2004 (the "***Remedies Notice***").

Section A Definitions

1. For the purpose of the Commitments, the following terms shall have the following meaning:

Affiliated Undertakings: undertakings controlled by the Parties and/or by the ultimate parents of the Parties, whereby the notion of control shall be interpreted pursuant to Article 3 of the Merger Regulation and in light of the Commission Consolidated Jurisdictional Notice under Council Regulation (EC) No 139/2004 on the control of concentrations between undertakings (the "***Consolidated Jurisdictional Notice***").

Assets: the assets that contribute to the current operation or that are necessary to ensure the viability and competitiveness of the Divestment Businesses, as indicated in Section B and Section C, and described in more detail in the Schedule.

Bar / Pat Patents: patents related to bar / pat genes co-developed and co-owned by Bayer and Biogen Idec MA Inc..

BASF: BASF SE, a stock corporation incorporated under the laws of the Federal Republic of Germany, with its registered office at Carl-Bosch-Strasse 38, Ludwigshafen am Rhein, 67056, and registered with the local court (Amtsgericht) Ludwigshafen am Rhein under Handelsregister (commercial register) number HRB 6000.

BASF Closing: the transfer to BASF of all legal entities, assets, and employees and the entering into licensing and other agreements that are part of the BASF Divestment Package.

BASF Closing Period: the period of three months from the approval of BASF as the purchaser of the BASF Divestment Package and the terms of sale by the Commission.

BASF Divestment Package: the businesses, assets, licences, and employees described in Section B below, and in the Schedule, which Bayer commits to divest and/or licence to BASF.

BVS: Bayer Vegetable Seeds.

Commitments Date: the date of execution of these Commitments.

Confidential Information: any business secrets, know-how, commercial information, or any other information of a proprietary nature that is not in the public domain.

Conflict of Interest: any conflict of interest that impairs the Trustee's or the Independent Adviser's objectivity and independence in discharging its duties under the Commitments.

Digital Agriculture Licence: the packages of intellectual property rights, and certain enablement services, relating to Bayer's digital agriculture platform identified in the Schedule to which Bayer commits to give BASF non-exclusive rights to employ in its own business.

Divestiture Trustee: one or more natural or legal person(s) who is/are approved by the Commission and appointed by Bayer, and who has/have received from Bayer the exclusive Trustee Mandate to sell the Divestment Businesses to one or more Purchasers at no minimum price.

Divestment Businesses: the BASF Divestment Package and the Vegetable Seeds Divestment Business.

Effective Date: the date of adoption of the Decision.

First Divestiture Period: the period of […] from the Effective Date.

Hold Separate Managers: the persons appointed by Bayer for the Divestment Businesses to manage the day-to-day business under the supervision of the Monitoring Trustee.

IA Mandate: the mandate of the Independent Adviser to provide independent advice and assistance to the Commission in connection with its assessment of: i) the adequacy of the Commitments to restore effective competition in the EEA following the completion of the Concentration; ii) the suitability of BASF as the purchaser of the BASF Divestment Package; and iii) the suitability of any Proposed Purchasers as Purchasers of the Vegetable Seeds Divestment Business.

Independent Adviser: one or more natural or legal person(s) approved by the Commission and appointed by Bayer to carry out the IA Mandate.

Key Personnel: all personnel necessary to maintain the viability and competitiveness of the Divestment Businesses, as listed in the Schedule, including the Hold Separate Managers.

Monitoring Trustee: one or more natural or legal person(s) who is/are approved by the Commission and appointed by Bayer, and who has/have the duty to monitor Bayer's compliance with the conditions and obligations attached to the Decision.

NSH: non-selective herbicides.

[NSH line of research 1] Data Transfer and Licence: the package of intellectual property rights relating to [NSH line of research 1] class herbicide chemistry type [mode of action] described in the Schedule to which Bayer commits to give BASF exclusive rights.

[NSH line of research 2] Data Transfer and Licence: the package of intellectual property rights relating to [NSH line of research 2] class herbicide chemistry type [mode of action] described in the Schedule to which Bayer commits to give BASF exclusive rights.

[NSH line of research 3] Data Transfer and Licence: the package of intellectual property rights relating to [NSH line of research 3] class herbicide chemistry type [mode of action] described in the Schedule to which Bayer commits to give BASF exclusive rights.

OSR: oilseed rape / canola.

Parties: Bayer and Monsanto.

Personnel: all staff currently employed in the Divestment Businesses, including staff seconded to the Divestment Business, shared personnel as well as the additional personnel listed in the Schedule.

Proposed Purchasers: entities proposed by Bayer or the Divestment Trustee to the Commission as Proposed Purchasers, prior to their approval by the Commission.

Purchaser Criteria: the criteria laid down in Paragraphs 26 and 27 of these Commitments that Purchasers of the Divestment Businesses must fulfil in order to be approved by the Commission.

Purchasers: the entities approved by the Commission as acquirers of the Divestment Businesses in accordance with the criteria set out in Section E.

Samples: samples of up to 100 milligrams of chemical structures where such samples are still available to Bayer and have not degraded in storage. Bayer will not resynthesize samples of chemical structures if it no longer has sufficient volumes, or quality, of the relevant samples.

Schedule: the schedule to these Commitments describing in more detail the Divestment Businesses.

Trustee(s): the Monitoring Trustee and/or the Divestiture Trustee as the case may be.

Trustee Divestiture Period: the period of […] from the end of the First Divestiture Period.

Vegetable Seeds Closing: the transfer to the Purchaser of all legal entities, assets, and employees comprising the Vegetable Seeds Divestment Business.

Vegetable Seeds Closing Period: the period of three months from the approval of the Purchaser of the Vegetable Seeds Divestment Business and the terms of sale by the Commission.

Vegetable Seeds Divestment Business: Bayer's global vegetable seeds business, described in Section C below, and in the Schedule, which Bayer commits to divest.

Section B The Commitment to Divest the BASF Divestment Package

2. In order to maintain effective competition, Bayer commits to divest to BASF the BASF Divestment Package.

3. The Concentration shall not be implemented before the Commission has approved BASF as the purchaser of the BASF Divestment Package, and the terms of sale in accordance with Paragraph 28 below.

4. Bayer shall be deemed to have complied with this commitment if the BASF Closing takes place within the BASF Closing Period.

5. In order to maintain the structural effect of the Commitments, Bayer shall, for a period of 10 years after the BASF Closing, not acquire, whether directly or indirectly, the possibility of exercising influence (as defined in paragraph 43 of the Remedies Notice, footnote 3) over the whole or part of the BASF Divestment Package, unless, following the submission of a reasoned request from Bayer showing good cause and accompanied by a report from the Monitoring Trustee (as provided in Paragraph 94 of these Commitments), the Commission finds that the structure of the market has changed to such an extent that the absence of influence over all, or parts of, the BASF

Divestment Package is no longer necessary to render the Concentration compatible with the internal market.

I. Structure and definition of the BASF Divestment Package

6. The BASF Divestment Package comprises:

(a) Bayer's global broad acre crop seeds and traits business, with certain limited carve-outs, namely: hybrid rice in Asia; hybrid cotton, juncea (mustard), and millet in India; and cotton in South Africa;[1] as well as R&D programmes directed to sugarcane in Brazil, and sugarbeet in Europe[2] (the "***Broad Acre Divestment Businesses***");

(b) Bayer's global glufosinate ammonium business (the "***GA Divestment Business***");

(c) the assets comprising Bayer's non-agricultural glyphosate business, and its Zarpa-brand family of agricultural glyphosate products. These products comprise all agricultural and non-agricultural glyphosate products sold by Bayer in the EEA (in the EEA, Zarpa is sold only in Spain and Portugal, all Zarpa pipeline projects are mixtures of [active ingredient] and glyphosate) (the "***Glyphosate Assets***");

(d) the assets comprising Monsanto's global NemaStrike nematicides business (the "***NemaStrike Assets***");

(e) the [NSH line of research 1] Data Transfer and Licence;

(f) the [NSH line of research 2] Data Transfer and Licence;

(g) the [NSH line of research 3] Data Transfer and Licence; and

(h) the Digital Agriculture Licence.

7. The Glyphosate Assets and the NemaStrike Assets are identifiable groups of assets, but are not standalone businesses within Bayer or Monsanto (respectively). The Parties submit that there is no viable way to create standalone businesses out of these asset packages. They can most effectively be separated from the existing businesses as a series of assets (trademarks, patents, product registrations, and other intellectual property) and sold to BASF, which has the required management, personnel, and facilities to operate them.

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[1] Bayer's cotton seeds and traits business in South Africa is being divested to a local purchaser pursuant to conditions imposed by the South African Competition Commission.

[2] This relates to a cooperation with KWS where the relevant germplasm is owned exclusively by KWS.

8. Bayer also commits to provide training and information required by BASF, delivered by appropriate specialists, to prepare BASF's sales and marketing teams to begin selling the products included in the Glyphosate Assets and the NemaStrike Assets. Such training will be available for up to 12 months following the BASF Closing. Bayer will provide this support at variable cost, as calculated using Bayer's standard accounting practices, excluding overheads.

9. The [NSH line of research 1] Data Transfer and Licence, the [NSH line of research 2] Data Transfer and Licence, and the [NSH line of research 3] Data Transfer and Licence comprise intellectual property, data, Samples, Key Personnel and licences only (as set out in the Schedule).

10. The Digital Agriculture Licence is a package of intellectual property and licences, and certain enablement services. The Digital Agriculture Licence also includes the transfer of up to six relevant Bayer employees to BASF, as further described in the Schedule.

11. The legal and functional structure of the remainder of the BASF Divestment Package (the Broad Acre Divestment Business and the GA Divestment Business), as operated to date, is described in the Schedule. The remainder of the BASF Divestment Package includes all assets and staff that contribute to the current operation of the Broad Acre Divestment Business, and the GA Divestment Business, or are necessary to ensure the viability and competitiveness of all elements of the BASF Divestment Package, taking into consideration BASF's existing infrastructure and capabilities. In particular, and as specified in more detail in the Schedule, the BASF Divestment Package includes (in relation to broad acre crop seeds and traits, and glufosinate ammonium), but is not limited to:

    (a) all tangible and intangible assets (including intellectual property rights);

    (b) all transferrable licences, permits and authorisations issued by any governmental organisation for the benefit of the elements of the BASF Divestment Package. Bayer will assist BASF with acquiring any non-transferrable licences within a defined period of time, also by providing any required data packages;

    (c) all contracts, leases, commitments and customer orders of the elements of the BASF Divestment Package;

    (d) all customer, credit and other records of the elements of the BASF Divestment Package; and

    (e) the Personnel.

Section C The Commitment to Divest the Vegetable Seeds Divestment Business

I. Commitment to divest

12. In order to maintain effective competition, Bayer commits to divest, or procure the divestiture of, the Vegetable Seeds Divestment Business by the end of the First Divestiture Period as a going concern. The Vegetable Seeds Divestment Business will be sold as a single business and will not be divided.

13. Bayer commits to sell the Vegetable Seeds Divestment Business to one or more Purchasers (but only as a single business) and on terms of sale approved by the Commission in accordance with the procedure described in Paragraph 27 of these Commitments. To carry out the divestiture, Bayer commits to find one or more Purchasers and to enter into final binding sale and purchase agreements for the sale of the Vegetable Seeds Divestment Business within the First Divestiture Period. If Bayer has not entered into such agreements at the end of the First Divestiture Period, Bayer shall grant the Divestiture Trustee an exclusive mandate to sell the Vegetable Seeds Divestment Business in accordance with the procedure described in Paragraph 60 in the Trustee Divestiture Period.

14. Bayer shall be deemed to have complied with this commitment if:

(a) by the end of the Trustee Divestiture Period, Bayer or the Divestiture Trustee has entered into one or more final binding sale and purchase agreements for the Vegetable Seeds Divestment Business and the Commission approves the potential Purchaser(s) and the terms of sale as being consistent with the Commitments in accordance with the procedure described in Paragraph 28; and

(b) the Vegetable Seeds Closing takes place within the Vegetable Seeds Closing Period.

15. In order to maintain the structural effect of the Commitments, Bayer shall, for a period of 10 years after the Vegetable Seeds Closing, not acquire, whether directly or indirectly, the possibility of exercising influence (as defined in paragraph 43 of the Remedies Notice, footnote 3) over the whole or part of the Vegetable Seeds Divestment Business, unless, following the submission of a reasoned request from Bayer showing good cause and accompanied by a report from the Monitoring Trustee (as provided in Paragraph 94 of these Commitments), the Commission finds that the structure of the market has changed to such an extent that the absence of influence over all, or parts of, the Vegetable Seeds Divestment Business is no longer necessary to render the Concentration compatible with the internal market.

II. Structure and definition of the Vegetable Seeds Divestment Business

16. The Vegetable Seeds Divestment Business consists of Bayer's global vegetable seeds business, without carve-outs.

17. The legal and functional structure of the Vegetable Seeds Divestment Business as operated to date is described in the Schedule. The Vegetable Seeds Divestment Business, described in more detail in the Schedule, includes all assets and staff that contribute to the current operation of the Vegetable Seeds Divestment Business or are necessary to ensure the viability and competitiveness of this business. The Vegetable Seeds Divestment Business includes, but is not limited to:

(a) all tangible and intangible assets (including intellectual property rights);

(b) all transferrable licences, permits and authorisations issued by any governmental organisation for the benefit of the Vegetable Seeds Divestment Business;

(c) all contracts, leases, commitments and customer orders of the Vegetable Seeds Divestment Business;

(d) all customer, credit and other records of the Vegetable Seeds Divestment Business; and

(e) the Personnel.

Section D Related Commitments

I. Preservation of viability, marketability and competitiveness

18. From the Commitments Date until the BASF Closing and the Vegetable Seeds Closing (as applicable), Bayer shall preserve or procure the preservation of the economic viability, marketability and competitiveness of the Divestment Businesses, in accordance with good business practice, and shall minimise as far as possible any risk of loss of competitive potential of the Divestment Businesses. In particular, Bayer undertakes:

(a) not to carry out any action that might have a significant adverse impact on the value, management or competitiveness of the Divestment Businesses or that might alter the nature and scope of activity, or the industrial or commercial strategy or the investment policy of the Divestment Businesses;

(b) to make available, or procure to make available, sufficient resources for the development of the Divestment Businesses, on the basis and continuation of the existing business plans; and

(c) to take all reasonable steps, or procure that all reasonable steps are being taken, including appropriate incentive schemes (based on industry practice), to encourage all Key Personnel to remain with the Divestment Businesses, and not to solicit or move any Personnel to Bayer's remaining businesses. Where, nevertheless, individual members of the Key Personnel exceptionally leave the Divestment Businesses, Bayer shall provide a reasoned proposal to replace the person or persons concerned to the Commission and the Monitoring Trustee. Bayer must be able to demonstrate to the Commission that the replacement is well suited to carry out the functions exercised by those individual members of the Key Personnel. The replacement shall take place under the supervision of the Monitoring Trustee, who shall report to the Commission.

II. Hold-separate obligations

19. Bayer commits, from the Effective Date until the BASF Closing and the Vegetable Seeds Closing (as applicable), to keep or to procure the keeping of the Divestment Businesses separate from the businesses it is retaining and to ensure that, unless explicitly permitted under these Commitments: (i) management and staff of the businesses retained by Bayer have no involvement in the Divestment Businesses; and (ii) the Key Personnel and Personnel of the Divestment Businesses have no involvement in any business retained by Bayer and do not report to any individual outside the Divestment Businesses.

20. Until the BASF Closing and the Vegetable Seeds Closing (as applicable), Bayer shall assist the Monitoring Trustee in ensuring that the Divestment Businesses are managed as a distinct and saleable entity separate from the businesses which Bayer is retaining. Immediately after the adoption of the Decision, Bayer shall appoint Hold Separate Managers. The Hold Separate Managers, who shall be part of the Key Personnel, shall manage the Divestment Businesses independently and in the best interest of the businesses with a view to ensuring their continued economic viability, marketability and competitiveness and their independence from the businesses retained by Bayer. The Hold Separate Managers shall closely cooperate with and report to the Monitoring Trustee and, if applicable, the Divestiture Trustee. Any replacement of the Hold Separate Managers shall be subject to the procedure laid down in Paragraph 18(c) of these Commitments. The Commission may, after having heard Bayer, require Bayer to replace the Hold Separate Managers.

III. Ring-fencing

21. Bayer shall implement, or procure to implement, all necessary measures to ensure that it does not, after the Effective Date, obtain any Confidential Information relating to the Divestment Businesses and that any such Confidential Information obtained by Bayer before the Effective Date will be eliminated and not be used by Bayer. This includes measures vis-à-vis Bayer's appointees on the supervisory board and/or board

of directors of the Divestment Businesses. In particular, the participation of the Divestment Businesses in any central information technology network shall be severed to the extent possible, without compromising the viability of the Divestment Businesses. Bayer may obtain or keep information relating to the Divestment Businesses which is reasonably necessary for the divestiture of the Divestment Businesses or the disclosure of which to Bayer is required by law.

IV. Non-solicitation clause

22. The Parties undertake, subject to customary limitations, not to solicit, and to procure that Affiliated Undertakings do not solicit, the Key Personnel transferred with the Divestment Businesses for a period of two years after the BASF Closing and the Vegetable Seeds Closing (as applicable).

V. Due diligence

23. In order to enable potential Purchasers of the Vegetable Seeds Divestment Business to carry out a reasonable due diligence of the Vegetable Seeds Divestment Business, Bayer shall, subject to customary confidentiality assurances and dependent on the stage of the divestiture process:

(a) provide to potential Purchasers sufficient information as regards the Vegetable Seeds Divestment Business; and

(b) provide to potential Purchasers sufficient information relating to the Personnel and allow them reasonable access to the Personnel.

VI. Reporting

24. Bayer shall submit written reports in English on potential Purchasers of the Vegetable Seeds Divestment Business and developments in the negotiations with such potential Purchasers to the Commission and the Monitoring Trustee no later than 10 days after the end of every month following the Effective Date (or otherwise at the Commission's request). Bayer shall submit a list of all potential Purchasers having expressed interest in acquiring the Vegetable Seeds Divestment Business to the Commission at each and every stage of the divestiture process, as well as a copy of all the offers made by potential Purchasers within five days of their receipt.

25. Bayer shall inform the Commission and the Monitoring Trustee on the preparation of the data room documentation and the due diligence procedure and shall submit a copy of any information memorandum to the Commission and the Monitoring Trustee before sending the memorandum out to potential Purchasers.

Section E The Purchasers

26. In order to be approved by the Commission as the Purchaser of the BASF Divestment Package, BASF must fulfil the following criteria:

(a) BASF shall be independent of and unconnected to Bayer and its Affiliated Undertakings (this being assessed having regard to the situation following the divestiture);

(b) BASF shall have the financial resources, proven expertise and incentive to maintain and develop the BASF Divestment Package as a viable and active competitive force in competition with the Parties and other competitors; and

(c) the acquisition of the BASF Divestment Package by BASF must neither be likely to create, in light of the information available to the Commission, *prima facie* competition concerns nor give rise to a risk that the implementation of the Commitments will be delayed. In particular, BASF must reasonably be expected to obtain all necessary approvals from the relevant regulatory authorities for the acquisition of the BASF Divestment Package.

(d) BASF must have all required assets and employees to support the BASF Divestment Package, particularly (but not exclusively) those elements which are not being sold as standalone businesses.

27. In order to be approved by the Commission as the Purchaser of the Vegetable Seeds Divestment Business, the Purchaser must fulfil the following criteria:

(a) the Purchaser shall be independent of and unconnected to Bayer and its Affiliated Undertakings (this being assessed having regard to the situation following the divestiture);

(b) the Purchaser shall have the financial resources, proven expertise and incentive to maintain and develop the Vegetable Seeds Divestment Business as a viable and active competitive force in competition with the Parties and other competitors;

(c) the acquisition of the Vegetable Seeds Divestment Business by the Purchaser must neither be likely to create, in light of the information available to the Commission, *prima facie* competition concerns nor give rise to a risk that the implementation of the Commitments will be delayed. In particular, the Purchaser must reasonably be expected to obtain all necessary approvals from the relevant regulatory authorities for the acquisition of the Vegetable Seeds Divestment Business; and

(d) the Purchaser shall be a new entrant, *i.e.*, does not already control (directly or indirectly) any vegetable seeds business.

28. The final binding sale and purchase agreements (as well as ancillary agreements) relating to the divestment of the Divestment Businesses shall be conditional on the Commission's approval. When Bayer has reached an agreement with each Purchaser, it shall submit a fully documented and reasoned proposal, including a copy of the final agreement(s), within one week to the Commission and the Monitoring Trustee and/or the Independent Adviser. Bayer must be able to demonstrate to the Commission that each Purchaser fulfils the Purchaser Criteria and that the Divestment Businesses are being transferred and/or licensed, in a manner consistent with the Commission's Decision and the Commitments. For the approval, the Commission shall verify that each Purchaser fulfils the Purchaser Criteria and that the Divestment Businesses are being sold and/or licensed in a manner consistent with the Commitments, including their objective to bring about a lasting structural change in the market. The Commission may approve the sale of the Divestment Businesses without one or more Assets or parts of the Personnel, or by substituting one or more Assets or parts of the Personnel with one or more different assets or different personnel, if this does not affect the viability and competitiveness of the Divestment Businesses after the sale, taking account of the Proposed Purchasers.

Section F Independent Adviser

I. Independent Adviser

29. In view of Bayer's desire for the Commission's assessment of the potential Purchaser(s) to be as advanced as possible at the time of the Effective Date, Bayer commits to appoint an Independent Adviser.

30. The Independent Adviser shall:

(a) at the time of appointment, be independent of Bayer, Monsanto, and their respective Affiliated Undertakings;

(b) possess the necessary qualifications and resources to carry out the IA Mandate, for example, have sufficient relevant experience as an investment banker or consultant or auditor, and experience monitoring global divestiture commitments; and

(c) neither have nor become exposed to a Conflict of Interest.

31. The Independent Adviser shall be remunerated by Bayer in a way that does not impede the independent and effective fulfilment of the IA Mandate.

Proposal by Bayer

32. No later than one working day after the Commitments Date, Bayer shall submit the name or names of one or more natural or legal persons whom Bayer proposes to appoint as the Independent Adviser to the Commission for approval. The proposal

shall contain sufficient information for the Commission to verify that the person or persons proposed as Independent Adviser fulfil the requirements set out in Paragraph 30 and shall include:

(a) the full terms of the IA Mandate, which shall include all provisions necessary to enable the Independent Adviser to fulfil its duties under the IA Mandate;

(b) the outline of a work plan which describes how the Independent Adviser intends to carry out its assigned tasks;

(c) an indication whether the Independent Adviser would be willing, and able, to also act as the Monitoring Trustee and/or Divestment Trustee.

Approval or rejection by the Commission

33. The Commission shall have the discretion to approve or reject any of the persons proposed by Bayer as the Independent Adviser and to approve the IA Mandate subject to any modifications it deems necessary for the Independent Adviser to fulfil its obligations. If only one name is approved, Bayer shall appoint or cause to be appointed the person or persons concerned as Independent Adviser, in accordance with the IA Mandate approved by the Commission. If more than one name is approved, Bayer shall be free to choose the Independent Adviser to be appointed from among the names approved. The Independent Adviser shall be appointed within three working days of the Commission's approval, in accordance with the IA Mandate approved by the Commission.

Independent Adviser nominated by the Commission

34. If all proposed Independent Advisers are rejected by the Commission, the Commission shall nominate an Independent Adviser, whom Bayer shall appoint, or cause to be appointed, in accordance with a mandate approved by the Commission.

II. Functions of the Independent Adviser

35. The Independent Adviser's primary function is to provide independent advice and assistance to the Commission in connection with its assessment of:

(a) the adequacy of the Commitments to restore effective competition in the EEA following the completion of the Concentration; and

(b) the suitability of any Proposed Purchasers as Purchasers of the Divestment Businesses.

36. The Commission may, on its own initiative or at the request of the Independent Adviser or Bayer, give any orders or instructions to the Independent Adviser.

Duties and obligations of the Independent Adviser

37. The Independent Adviser shall:

(a) within two working days of its appointment, provide the Commission a detailed work plan describing how it intends to carry out its duties (the "***Work-Plan***");

(b) provide such assistance in connection with the tasks described in Paragraphs 35-36 as the Commission may from time to time request;

(c) provide to the Commission within 15 days after the end of every month, sending Bayer a non-confidential copy at the same time, a written report that shall cover the tasks described in Paragraphs 35-36;

(d) provide to the Commission, prior to the Effective Date and on a date to be agreed with the Commission in the Work-Plan, a written report whose specific content shall be agreed with the Commission;

(e) promptly report in writing to the Commission, sending Bayer a non-confidential copy at the same time, if it concludes on reasonable grounds that Bayer is failing to comply with these Commitments; and

(f) promptly report in writing to the Commission, sending Bayer a non-confidential copy at the same time, if it concludes on reasonable grounds that Monsanto or any potential Purchaser is not providing the Independent Adviser with full cooperation or is otherwise hindering the Independent Adviser in the fulfilment of its assigned tasks.

38. If the Independent Adviser, Monitoring Trustee, and/or Divestiture Trustee are not the same legal or natural persons, the Independent Adviser, Monitoring Trustee, and/or Divestiture Trustee shall cooperate closely with each other.

39. Bayer commits to include the Independent Adviser among its proposed candidates for Monitoring Trustee and/or Divestment Trustee pursuant to Paragraph 53. This is without prejudice to the Commission's ability to determine the Independent Adviser's suitability to act as the Monitoring Trustee and/or the Divestment Trustee. Bayer hereby confirms that if the Commission approves the Independent Adviser to become the Monitoring Trustee and/or Divestment Trustee, Bayer shall appoint the Independent Adviser as such.

Duties and obligations of the Parties

40. Bayer shall provide and shall cause its advisers to provide, and Monsanto provide and cause its advisers to provide, the Independent Adviser with all such co-operation, assistance and information as the Independent Adviser may reasonably require to

perform its tasks described in Paragraphs 35-36. The Independent Adviser shall have full and complete access to any of Bayer's, Monsanto's, and the Divestment Business' books, records, documents, management or other personnel, facilities, sites and technical information necessary for fulfilling its duties under the Commitments, and Bayer, Monsanto, and the Divestment Businesses shall provide the Independent Adviser upon request with copies of any document. Bayer, Monsanto, and the Divestment Businesses shall make available to the Independent Adviser one or more offices on their premises and shall be available for meetings in order to provide the Independent Adviser with all information necessary for the performance of its tasks.

41. Bayer shall provide and shall cause its advisers to provide the Independent Adviser, on request, with the information submitted to Proposed Purchasers, in particular give the Independent Adviser access to the data room documentation and all other information granted to Proposed Purchasers in the due diligence procedure. Bayer shall inform the Independent Adviser on Proposed Purchasers, and submit lists of Proposed Purchasers at each stage of the selection process, including the offers made by Proposed Purchasers at those stages.

42. Bayer shall indemnify the Independent Adviser and its employees and agents (each an "***Indemnified Party***") and hold each Indemnified Party harmless against, and hereby agrees that an Indemnified Party shall have no liability to Bayer for, any liabilities arising out of the performance of the Independent Adviser's duties under the Commitments, except to the extent that such liabilities result from the wilful default, recklessness, gross negligence or bad faith of the Independent Adviser, its employees, agents or advisers.

43. At the expense of Bayer, the Independent Adviser may appoint advisers (in particular for corporate finance or legal advice), subject to Bayer's approval (this approval not to be unreasonably withheld or delayed) if the Independent Adviser considers the appointment of such advisers necessary or appropriate for the performance of its duties and obligations under the Mandate, provided that any fees and other expenses incurred by the Independent Adviser are reasonable. Should Bayer refuse to approve the advisers proposed by the Independent Adviser, the Commission may approve the appointment of such advisers instead, after having heard Bayer. Only the Independent Adviser shall be entitled to issue instructions to the advisers. Paragraph 42 of these Commitments shall apply *mutatis mutandis*.

44. Bayer agrees that the Commission may share Confidential Information proprietary to Bayer with the Independent Adviser. The Independent Adviser shall not disclose such information and the principles contained in Article 17 (1) and (2) of the Merger Regulation apply *mutatis mutandis*.

45. Bayer agrees that the contact details of the Independent Adviser are published on the website of the Commission's Directorate-General for Competition and they shall

inform interested third parties, in particular, any Proposed Purchasers, of the identity and the tasks of the Independent Adviser.

Replacement, discharge and reappointment of the Independent Adviser

46. If the Independent Adviser ceases to perform its functions under the Commitments or for any other good cause, including the exposure of the Independent Adviser to a Conflict of Interest:

(a) the Commission may, after hearing the Independent Adviser and Bayer, require Bayer to replace the Independent Adviser; or

(b) Bayer may, with the prior approval of the Commission, replace the Independent Adviser.

47. If the Independent Adviser is removed according to Paragraph 46 of these Commitments, the Independent Adviser may be required to continue in its function until a new Independent Adviser is in place to whom the Independent Adviser has effected a full handover of all relevant information. The new Independent Adviser shall be appointed in accordance with the procedure referred to in Paragraphs 32-34 of these Commitments.

48. Unless removed according to Paragraph 46 of these Commitments, the Independent Adviser shall cease to act as Independent Adviser only after the Commission has discharged it from its duties after the IA Mandate has been completed, or the Trustee has been appointed.

Section G Trustee

I. Appointment procedure

49. Bayer shall appoint a Monitoring Trustee to carry out the functions specified in these Commitments for a Monitoring Trustee. Bayer commits not to close the Concentration before the appointment of a Monitoring Trustee.

50. If Bayer has not entered into a binding sale and purchase agreement regarding the Divestment Businesses one month before the end of the First Divestiture Period or if the Commission has rejected one or more Purchasers proposed by Bayer at that time or thereafter, Bayer shall appoint a Divestiture Trustee. The appointment of the Divestiture Trustee shall take effect upon the commencement of the Trustee Divestiture Period.

51. The Trustee shall:

(a) at the time of appointment, be independent of Bayer, Monsanto, and their respective Affiliated Undertakings;

(b) possess the necessary qualifications to carry out its mandate, for example have sufficient relevant experience as an investment banker or consultant or auditor, and experience monitoring global divestiture commitments; and

(c) neither have nor become exposed to a Conflict of Interest.

52. The Trustee shall be remunerated by Bayer in a way that does not impede the independent and effective fulfilment of its mandate. In particular, where the remuneration package of a Divestiture Trustee includes a success premium linked to the final sale value of the Divestment Businesses, such success premium may only be earned if the divestiture takes place within the Trustee Divestiture Period.

Proposal by Bayer

53. No later than two weeks after the Effective Date, Bayer shall submit the name or names of one or more natural or legal persons whom Bayer proposes to appoint as the Monitoring Trustee to the Commission for approval. No later than one month before the end of the First Divestiture Period or on request by the Commission, Bayer shall submit a list of one or more persons whom Bayer proposes to appoint as Divestiture Trustee to the Commission for approval. The proposal shall contain sufficient information for the Commission to verify that the person or persons proposed as Trustee fulfil the requirements set out in Paragraph 51 and shall include:

(a) the full terms of the proposed mandate, which shall include all provisions necessary to enable the Trustee to fulfil its duties under these Commitments;

(b) the outline of a work plan which describes how the Trustee intends to carry out its assigned tasks; and

(c) an indication whether the proposed Trustee is to act as both Monitoring Trustee and Divestiture Trustee or whether different trustees are proposed for the two functions.

Approval or rejection by the Commission

54. The Commission shall have the discretion to approve or reject the proposed Trustee(s) and to approve the proposed mandate subject to any modifications it deems necessary for the Trustee to fulfil its obligations. If only one name is approved, Bayer shall appoint or cause to be appointed the person or persons concerned as Trustee, in accordance with the mandate approved by the Commission. If more than one name is approved, Bayer shall be free to choose the Trustee to be appointed from among the names approved. The Trustee shall be appointed within one week of the Commission's approval, in accordance with the mandate approved by the Commission.

New proposal by Bayer

55. If all the proposed Trustees are rejected, Bayer shall submit the names of at least two more natural or legal persons within one week of being informed of the rejection, in accordance with Paragraphs 49 and 54 of these Commitments.

Trustee nominated by the Commission

56. If all further proposed Trustees are rejected by the Commission, the Commission shall nominate a Trustee, whom Bayer shall appoint, or cause to be appointed, in accordance with a trustee mandate approved by the Commission.

II. Functions of the Trustee

57. The Trustee shall assume its specified duties and obligations in order to ensure compliance with the Commitments. The Commission may, on its own initiative or at the request of the Trustee or Bayer, give any orders or instructions to the Trustee in order to ensure compliance with the conditions and obligations attached to the Decision.

Duties and obligations of the Monitoring Trustee

58. The Monitoring Trustee shall:

(a) propose in its first report to the Commission a detailed work plan describing how it intends to monitor compliance with the obligations and conditions attached to the Decision;

(b) oversee, in close co-operation with the Hold Separate Managers, the ongoing management of the Divestment Businesses with a view to ensuring their continued economic viability, marketability and competitiveness, and monitor compliance by Bayer with the conditions and obligations attached to the Decision. To that end, the Monitoring Trustee shall:

(i) monitor the preservation of the economic viability, marketability and competitiveness of the Divestment Businesses, and the keeping separate of the Divestment Businesses from the business retained by the Parties, in accordance with Paragraphs 18 and 19 of these Commitments;

(ii) supervise the management of the Divestment Businesses as a distinct and saleable entity, in accordance with Paragraph 20 of these Commitments;

(iii) with respect to Confidential Information:

- determine all necessary measures to ensure that Bayer does not after the Effective Date obtain any Confidential Information relating to the Divestment Businesses;

- in particular strive for the severing of the Divestment Businesses' participation in a central information technology network to the extent possible, without compromising the viability of the Divestment Businesses;

- make sure that any Confidential Information relating to the Divestment Businesses obtained by Bayer before the Effective Date is eliminated and will not be used by Bayer;

- decide whether such information may be disclosed to or kept by Bayer as the disclosure is reasonably necessary to allow Bayer to carry out the divestiture or as the disclosure is required by law; and

(iv) monitor the splitting of assets and the allocation of Personnel between the Divestment Businesses and Bayer or Affiliated Undertakings;

(c) propose to Bayer such measures as the Monitoring Trustee considers necessary to ensure Bayer's compliance with the conditions and obligations attached to the Decision, in particular, the maintenance of the full economic viability, marketability or competitiveness of the Divestment Businesses, the holding separate of the Divestment Businesses and the non-disclosure of competitively sensitive information;

(d) review and assess potential Purchasers, as well as the progress of the divestiture process, and verify that, dependent on the stage of the divestiture process:

(i) potential Purchasers receive sufficient and correct information relating to the Divestment Businesses and the Personnel in particular, by reviewing, if available, the data room documentation, the information memorandum and the due diligence process; and

(ii) potential Purchasers are granted reasonable access to the Personnel;

(e) act as a contact point for any requests by third parties, in particular, potential Purchasers, in relation to the Commitments;

(f) provide to the Commission, sending Bayer a non-confidential copy at the same time, a written report within 15 days after the end of every month that shall cover the operation and management of the Divestment Businesses, as well as the splitting of assets and the allocation of Personnel so that the Commission can assess whether the business is held in a manner consistent with the Commitments and the progress of the divestiture process, as well as potential Purchasers;

(g) promptly report in writing to the Commission, sending Bayer a non-confidential copy at the same time, if it concludes on reasonable grounds that Bayer is failing to comply with these Commitments;

(h) within one week after receipt of the documented proposal referred to in Paragraph 27 of these Commitments, submit to the Commission, sending Bayer a non-confidential copy at the same time, a reasoned opinion as to the suitability and independence of any potential Purchasers and the viability of the Divestment Businesses after the Sale and as to whether the Divestment Businesses are sold in a manner consistent with the conditions and obligations attached to the Decision, in particular, if relevant, whether the Sale of the Divestment Businesses without one or more Assets or not all of the Personnel affects the viability of the Divestment Businesses after the sale, taking account of the potential Purchasers; and

(i) assume the other functions assigned to the Monitoring Trustee under the conditions and obligations attached to the Decision.

59. If the Monitoring and Divestiture Trustees are not the same legal or natural persons, the Monitoring Trustee and the Divestiture Trustee shall cooperate closely with each other during and for the purpose of the preparation of the Trustee Divestiture Period in order to facilitate each other's tasks.

Duties and obligations of the Divestiture Trustee

60. Within the Trustee Divestiture Period, the Divestiture Trustee shall sell at no minimum price the Divestment Businesses to any number of Purchasers, provided that the Commission has approved both the Purchasers and the final binding sale and purchase agreement(s) (and ancillary agreements) as in line with the Commission's Decision and the Commitments in accordance with Paragraphs 26 and 27 of these Commitments. The Divestiture Trustee shall include in the sale and purchase agreement (as well as in any ancillary agreements) such terms and conditions as it considers appropriate for an expedient sale in the Trustee Divestiture Period. In particular, the Divestiture Trustee may include in the sale and purchase agreement such customary representations and warranties and indemnities as are reasonably required to effect the sale. The Divestiture Trustee shall protect the legitimate

financial interests of Bayer, subject to Bayer's unconditional obligation to divest at no minimum price in the Trustee Divestiture Period.

61. In the Trustee Divestiture Period (or otherwise at the Commission's request), the Divestiture Trustee shall provide the Commission with a comprehensive monthly report written in English on the progress of the divestiture process. Such reports shall be submitted within 15 days after the end of every month with a simultaneous copy to the Monitoring Trustee and a non-confidential copy to Bayer.

III. Duties and obligations of the Parties

62. Bayer shall provide and shall cause its advisers to provide, and Monsanto shall provide and cause its advisers to provide, the Trustee with all such co-operation, assistance and information as the Trustee may reasonably require to perform its tasks. The Trustee shall have full and complete access to any of Bayer's or the Divestment Businesses' books, records, documents, management or other personnel, facilities, sites and technical information necessary for fulfilling its duties under the Commitments and Bayer and the Divestment Businesses shall provide the Trustee, upon request, with copies of any document. Bayer and the Divestment Businesses shall make available to the Trustee one or more offices on their premises and shall be available for meetings in order to provide the Trustee with all information necessary for the performance of its tasks.

63. Bayer shall provide and shall cause its advisers to provide, and Monsanto shall provide and cause its advisers to provide, the Monitoring Trustee with all managerial and administrative support that it may reasonably request on behalf of the management of the Divestment Businesses. This shall include all administrative support functions relating to the Divestment Businesses which are currently carried out at headquarters level. Bayer shall provide and shall cause its advisers to provide the Monitoring Trustee, on request, with the information submitted to potential Purchasers, and, in particular, give the Monitoring Trustee access to the data room documentation and all other information granted to potential Purchasers in the due diligence procedure. Bayer shall inform the Monitoring Trustee of possible Purchasers, submit lists of potential Purchasers at each stage of the selection process, including the offers made by potential Purchasers at those stages, and keep the Monitoring Trustee informed of all developments in the divestiture process.

64. Bayer shall grant or procure its Affiliated Undertakings to grant, and Monsanto shall grant or procure its Affiliated Undertakings to grant, comprehensive powers of attorney, duly executed, to the Divestiture Trustee to effect the sale (including ancillary agreements), the BASF Closing and the Vegetable Seeds Closing (as applicable) and all actions and declarations which the Divestiture Trustee considers necessary or appropriate to achieve the sale and the BASF Closing and the Vegetable Seeds Closing (as applicable), including the appointment of advisers to assist with the sale process. Upon request of the Divestiture Trustee, Bayer shall cause the

documents required for effecting the sale and the BASF Closing and the Vegetable Seeds Closing (as applicable) to be duly executed.

65. Bayer shall indemnify the Trustee and its employees and agents (each an "***Indemnified Party***") and hold each Indemnified Party harmless against, and hereby agrees that an Indemnified Party shall have no liability to Bayer for, any liabilities arising out of the performance of the Trustee's duties under the Commitments, except to the extent that such liabilities result from the wilful default, recklessness, gross negligence or bad faith of the Trustee, its employees, agents or advisers.

66. At the expense of Bayer, the Trustee may appoint advisers (in particular for corporate finance or legal advice), subject to Bayer's approval (this approval not to be unreasonably withheld or delayed) if the Trustee considers the appointment of such advisers necessary or appropriate for the performance of its duties and obligations under the Mandate, provided that any fees and other expenses incurred by the Trustee are reasonable. Should Bayer refuse to approve the advisers proposed by the Trustee, the Commission may approve the appointment of such advisers instead, after having heard Bayer. Only the Trustee shall be entitled to issue instructions to the advisers. Paragraph 65 of these Commitments shall apply *mutatis mutandis*. In the Trustee Divestiture Period, the Divestiture Trustee may use advisers who served Bayer during the Divestiture Period if the Divestiture Trustee considers this in the best interest of an expedient sale.

67. Bayer agrees that the Commission may share Confidential Information proprietary to Bayer with the Trustee. The Trustee shall not disclose such information and the principles contained in Article 17(1) and (2) of the Merger Regulation apply *mutatis mutandis*.

68. Bayer agrees that the contact details of the Monitoring Trustee are published on the website of the Commission's Directorate-General for Competition and they shall inform interested third parties, in particular, any potential Purchasers, of the identity and the tasks of the Monitoring Trustee.

69. For a period of 10 years from the Effective Date the Commission may request all information from the Parties that is reasonably necessary to monitor the effective implementation of these Commitments.

IV. Replacement, discharge and reappointment of the Trustee

70. If the Trustee ceases to perform its functions under the Commitments or for any other good cause, including the exposure of the Trustee to a Conflict of Interest:

(a) the Commission may, after hearing the Trustee and Bayer, require Bayer to replace the Trustee; or

(b) Bayer may, with the prior approval of the Commission, replace the Trustee.

71. If the Trustee is removed according to Paragraph 70 of these Commitments, the Trustee may be required to continue in its function until a new Trustee is in place to whom the Trustee has effected a full handover of all relevant information. The new Trustee shall be appointed in accordance with the procedure referred to in Paragraphs 49-56 of these Commitments.

72. Unless removed according to Paragraph 70 of these Commitments, the Trustee shall cease to act as Trustee only after the Commission has discharged it from its duties after all the Commitments with which the Trustee has been entrusted have been implemented. However, the Commission may at any time require the reappointment of the Monitoring Trustee if it subsequently appears that the relevant remedies might not have been fully and properly implemented.

Section H Fast Track Dispute Resolution Procedure

73. In the event that any of the Purchasers claims that Bayer is failing to comply with its obligations arising from these Commitments, that Purchaser may invoke the dispute settlement procedure described in this Section.

74. The Purchaser shall notify Bayer and the Monitoring Trustee of its request in writing and specify the reasons why it believes that Bayer is failing to comply with the Commitments. Bayer shall use its best efforts to resolve all differences of opinion and to settle all disputes of which it has been notified through co-operation and consultation within a reasonable period of time, not to exceed fifteen working days after receipt of the request.

75. The Monitoring Trustee shall present its own proposal for resolving the dispute within eight working days, specifying in writing the action, if any, to be taken by Bayer to ensure compliance with the Commitments vis-à-vis the Purchaser, and be prepared, if requested, to facilitate the settlement of the dispute.

76. Should Bayer and the Purchaser fail to resolve their differences of opinion through cooperation and consultation, the Purchaser may initiate the arbitration process described below. The arbitration process shall be used only to resolve disputes regarding compliance with the Commitments.

77. To initiate the arbitration process, the Purchaser shall give written notice to Bayer nominating an arbitrator and stating the specific nature of the claim, the factual basis of its position and the relief requested. Bayer shall appoint another arbitrator within 14 calendar days after receipt of the written notice. The arbitrators so appointed shall appoint a third arbitrator to be president of the arbitral tribunal within seven calendar days after both arbitrators have been nominated. Should Bayer fail to nominate an arbitrator, or if the two arbitrators fail to agree on the president, the default appointment(s) shall be made by the International Chamber of Commerce ("***ICC***"). The three-person arbitral tribunal shall herein be referred to as the "Arbitral Tribunal."

78. The dispute shall be finally resolved by arbitration under the ICC Rules of Arbitration, with such modifications or adaptations as foreseen herein (the "***Rules***"). The arbitration shall be conducted in Frankfurt, in the German language.

79. The procedure shall be a fast-track procedure. For this purpose, the Arbitral Tribunal shall shorten all applicable procedural time-limits under the Rules as far as appropriate in the circumstances.

80. The Arbitral Tribunal shall, as soon as practical after the confirmation of the Arbitral Tribunal, hold an organisational conference to discuss any procedural issues with the parties to the arbitration. Terms of reference shall be drawn up and signed by the parties to the arbitration and the Arbitral Tribunal at the organisational meeting or thereafter and a procedural time-table shall be established by the Arbitral Tribunal. An oral hearing shall, as a rule, be established within two months of the confirmation of the Arbitral Tribunal.

81. In order to enable the Arbitral Tribunal to reach a decision, it shall be entitled to request any relevant information from Bayer and/or its Affiliated Undertakings or the Purchaser, to appoint experts and to examine them at the hearing, and to establish the facts by all appropriate means. The Arbitral Tribunal is also entitled to ask for assistance by the Monitoring Trustee in all stages of the procedure if the parties to the arbitration agree.

82. The arbitrators shall agree in writing to keep any confidential information and business secrets disclosed to them in confidence. The Arbitral Tribunal may take the measures necessary for protecting confidential information in particular by restricting access to confidential information to the Arbitral Tribunal, the Monitoring Trustee and outside counsel and experts of the opposing party.

83. The burden of proof in any dispute governed under the Rules shall be as follows:

(a) the Purchaser must produce evidence of a prima facie case;

(b) if the Purchaser does so, the Arbitral Tribunal must find in favour of the Purchaser unless Bayer can produce evidence to the contrary.

84. The Commission shall be allowed and enabled to participate in all stages of the procedure by:

(a) receiving all written submissions (including documents and reports, etc.) made by the parties to the arbitration;

(b) receiving all orders, interim and final awards and other documents exchanged by the Arbitral Tribunal with the parties to the arbitration (including terms of reference and procedural time-table);

(c) filing any Commission amicus curiae briefs; and

(d) being present at the hearing(s) and being allowed to ask questions to parties, witnesses and experts.

85. The Arbitral Tribunal shall forward, or shall order the parties to the arbitration to forward, the documents mentioned to the Commission without delay.

86. In the event of disagreement between the parties to the arbitration regarding the interpretation of the Commitments, the Arbitral Tribunal shall inform the Commission, and may seek the Commission's interpretation of the Commitments before finding in favour of any party to the arbitration and shall be bound by the Commission's interpretation.

87. The Arbitral Tribunal shall decide the dispute on the basis of the Commitments and the Decision. The Commitments shall be construed in accordance with the Merger Regulation, EU law and general principles of law common to the legal orders of the Member States without a requirement to apply a particular national system. The Arbitral Tribunal shall take all decisions by majority vote.

88. Upon request of the Purchaser, the Arbitral Tribunal may make a preliminary ruling on the dispute. The preliminary ruling shall be rendered within one month after the confirmation of the Arbitral Tribunal, shall be applicable immediately and, as a rule, remain in force until a final decision is rendered.

89. The Arbitral Tribunal shall, in the preliminary ruling as well as in the final award, specify the action, if any, to be taken by Bayer to comply with the Commitments vis-à-vis the Purchaser (*e.g.*, modify a supply contract pricing formula). The final award shall be final and binding on the parties to the arbitration and shall resolve the dispute and determine any and all claims, motions or requests submitted to the Arbitral Tribunal. The arbitral award shall also determine the reimbursement of the costs of the successful party and the allocation of the arbitration costs. In case of granting a preliminary ruling or if otherwise appropriate, the Arbitral Tribunal shall specify that terms and conditions determined in the final award apply retroactively.

90. The final award shall, as a rule, be rendered within three months after the confirmation of the Arbitral Tribunal. The time-frame shall, in any case, be extended by the time the Commission takes to submit an interpretation of the Commitments if asked by the Arbitral Tribunal.

91. The parties to the arbitration shall prepare a non-confidential version of the final award, without business secrets. The Commission may publish the non-confidential version of the award.

92. Nothing in the above-described arbitration procedure shall affect the powers of the Commission to take decisions in relation to the Commitments in accordance with its powers under the Merger Regulation and the Treaty on the Functioning of the European Union.

Section I The Review Clause

93. The Commission may extend the time periods foreseen in the Commitments in response to a request from Bayer or, in appropriate cases, on its own initiative. Where Bayer requests an extension of a time period, it shall submit a reasoned request to the Commission no later than one month before the expiry of that period, showing good cause. This request shall be accompanied by a report from the Monitoring Trustee, who shall at the same time send a non-confidential copy of the report to Bayer. Only in exceptional circumstances shall Bayer be entitled to an extension within the last month of any period.

94. The Commission may further, in response to a reasoned request from Bayer showing good cause, waive, modify or substitute, in exceptional circumstances, one or more of the undertakings in these Commitments. This request shall be accompanied by a report from the Monitoring Trustee, who shall at the same time send a non-confidential copy of the report to Bayer. The request shall not have the effect of suspending the application of the undertaking and, in particular, of suspending the expiry of any time period in which the undertaking has to be complied with.

Section J Entry Into Force

95. The Commitments shall take effect on the Effective Date, with the exception of Section F and Paragraph 18, which shall take effect on the Commitments Date.

SCHEDULE

I. The BASF Divestment Package

1. The BASF Divestment Package comprises:

   (a) Bayer's global broad acre crop seeds and traits business, with certain limited carve-outs, namely: hybrid rice in Asia; hybrid cotton, juncea (mustard), and millet in India; and cotton in South Africa;[3] as well as R&D programmes directed to sugarcane in Brazil, and sugarbeet in Europe[4] (the "***Broad Acre Divestment Businesses***");

   (b) Bayer's global glufosinate ammonium business (the "***GA Divestment Business***");

   (c) the assets comprising Bayer's non-agricultural glyphosate business, and its Zarpa-brand family of agricultural glyphosate products. These products comprise all agricultural and non-agricultural glyphosate products sold by Bayer in the EEA (in the EEA, Zarpa is sold only in Spain and Portugal, all Zarpa pipeline projects are mixtures of [active ingredient] and glyphosate) (the "***Glyphosate Assets***");

   (d) the assets comprising Monsanto's global NemaStrike nematicides business (the "***NemaStrike Assets***");

   (e) the [NSH line of research 1] Data Transfer and Licence;

   (f) the [NSH line of research 2] Data Transfer and Licence;

   (g) the [NSH line of research 3] Data Transfer and Licence; and

   (h) the Digital Agriculture Licence.

The Broad Acre Divestment Business

2. Bayer commits to divesting its entire global broad acre crop seeds and traits business, with only limited carve-outs, namely: hybrid rice in Asia; hybrid cotton, juncea (mustard), and millet in India; cotton in South Africa;[5] as well as R&D programmes

[3] Bayer's cotton seeds and traits business in South Africa is being divested to a local purchaser pursuant to conditions imposed by the South African Competition Commission.

[4] This relates to a cooperation with KWS where the relevant germplasm is owned exclusively by KWS.

[5] Bayer's cotton seeds and traits business in South Africa is being divested to a local purchaser pursuant to conditions imposed by the South African Competition Commission.

directed to sugarcane in Brazil, and sugarbeet in Europe[6] (the "***Broad Acre Commitments***").

3. The Broad Acre Divestment Businesses include, but are not limited to:

   (a) Bayer's global LibertyLink (glufosinate ammonium tolerance) traits business except in rice;[7]

   (b) Bayer's trait research activities (including both GM and non-GM traits) in cotton, corn, OSR, soybean, its global R&D activities directed to wheat, and its canola-quality juncea research programme worldwide; its GM trait research facilities in Morrisville, North Carolina, USA, its US headquarters and all greenhouse facilities in Research Triangle Park in Raleigh, North Carolina USA, and its trait research facility in Ghent, Belgium;

   (c) Bayer's global cotton seeds and traits business in all countries except:

      (i) India (where Bayer has a standalone cotton breeding programme); and

      (ii) South Africa (where Bayer's cotton seeds and traits business is being divested to a local purchaser pursuant to conditions imposed by the South African Competition Commission);

   (d) Bayer's global OSR seed and traits business worldwide;

   (e) Bayer's global soybean seeds and traits business; and

   (f) Bayer's global corn traits business.

4. For each of the Broad Acre Divestment Businesses, Bayer will transfer to BASF, in particular:

   (a) all tangible and intangible assets (including intellectual property rights);

   (b) all transferrable licences (*i.e.*, licences that are legally capable of being transferred to a new owner), permits, and authorisations issued by any governmental organisation for the benefit of the elements of the Broad Acre Divestment Businesses;

   (c) Bayer will assist BASF with acquiring any non-transferrable licences within 12 months of the BASF Closing (subject to complications outside the control

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6 This relates to a cooperation with KWS where the relevant germplasm is owned exclusively by KWS.

7 Transgenic events for rice are not transferring – BASF requested the exclusion of rice as BASF had established that there is no commercial viability for LibertyLink rice.

of Bayer) and until such time provide BASF with the ability to benefit from the licence to independently operate the Broad Acre Divestment Business. Bayer will agree a detailed schedule of timing with the Independent Adviser and/or Monitoring Trustee for assisting BASF with securing non-transferrable licences;

(d) all contracts, leases, commitments and customer orders of the elements of the Broad Acre Divestment Businesses;

(e) all customer, credit and other records of the elements of the Broad Acre Divestment Businesses;

(f) Bayer will arrange for transitional IT systems to be provided by a third-party service provider; and

(g) as a general principle, all of the Personnel currently working on the Broad Acre Divestment Businesses will be transferred to BASF (subject to agreement with the German employee representatives).

5. The Broad Acre Divestment Business will not require any long-term supply agreements between Bayer and BASF. Any required transitional service and supply agreements, reverse transitional service agreements, lease-back agreements, or licensing agreements are provided in **Section III** below.

6. The preliminary list of Key Personnel to be transferred, subject to complying with all applicable employment laws, for the Broad Acre Divestment Business is set out in the following table:

Key Personnel	**Role**
[…]	Head of Transition Team & Head of Seeds
[…]	Head of R&D
[…]	Head of Stewardship
[…]	Vice President and global counsel for corn and soybean
[…]	Head of Soybean
[…]	Head of Cotton
[…]	Head of Oilseeds
[…]	Head of Finance
[…]	Head of HR
[…]	Head of Communications
[…]	Head of S&T Marketing
[…]	Head of Product Supply
[…]	Head of Wheat

Key Personnel	Role
[…]	Seeds UK
[…]	Weed Control
[…]	Trait Validation
[…]	Trait Discovery
[…]	Canola Wheat Seeds US
[…]	Pest Control
[…]	Regional B&TD, EMEA & Breeding Ops
[…]	Soybean Breeding Management
[…]	Trait Discovery
[…]	Cotton Breeding
[…]	Molecular Breeding & Trait Development
[…]	Wheat Breeding N Dakota
[…]	Crop Analytics
[…]	Seeds Supply Latam
[…]	Seeds Breeding & Trait Development
[…]	Disease Control & Quality Traits
[…]	NA B&TD Operations
[…]	Global B&TD Technology Platform
[…]	Trait Development Cotton Corn & Soybean
[…]	Omics Discovery Platform
[…]	Seeds DACH
[…]	Seeds NBS
[…]	Trait Validation
[…]	Regional Supply EMEA
[…]	Regional Breeding & NA Gbl Cotton Rice
[…]	US Agronomics
[…]	US Soybean Operations
[…]	Vectoring
[…]	Plant Analysis
[…]	PC & TC
[…]	TR Research Operations
[…]	Crop Efficiency

GA Divestment Business

7. The GA Divestment Business comprises Bayer's entire global glufosinate ammonium business, without carve-outs. The GA Divestment Business includes, but is not limited to:

(a) Bayer's entire glufosinate ammonium-based herbicide product portfolio, as well as all current glufosinate ammonium-related development products, comprising more than […] patent families related to specific glufosinate ammonium formulations, mixtures and methods, and all data and support necessary for registrations and all relevant local registrations;

(b) four of Bayer's state-of-the-art facilities in Germany (Frankfurt and Knapsack) and the United States (Mobile and Muskegon), which account for the production of all of Bayer's glufosinate ammonium worldwide;

(c) formulation and packaging capabilities as part of the Muskegon facilities mentioned above and the Regina site, and (for as long as requested by BASF) provided by Bayer through its global formulation and filling network by way of arm's-length tolling agreements;

(d) all of Bayer's dedicated intellectual property. Shared intellectual property will be allocated to the main user (Bayer or the Divestment Businesses) with licences, or covenants not to assert, put in place to ensure access by the other party;

(e) all of Bayer's dedicated supplier contracts. Shared contracts will be split if feasible. Otherwise, Bayer will use its best efforts to assist BASF with the creation of new contracts to be in place immediately post-closing;

(f) all of Bayer's dedicated customer contracts. With respect to shared contracts, Bayer will use its best efforts to assist BASF with the creation of new contracts to be in place immediately post-closing;

(g) all transferrable licences (*i.e.*, licences that are legally capable of being transferred to a new owner), permits, and authorisations issued by any governmental organisation for the benefit of the elements of the GA Divestment Businesses;

(h) Bayer will use its best efforts to assist BASF with acquiring any non-transferrable licences within 36 months of the BASF Closing (subject to complications outside the control of Bayer) and until such time provide BASF with the ability to benefit from the licence to independently operate the GA Divestment Business. Bayer will agree a detailed schedule of timing with the Independent Adviser and/or Monitoring Trustee for assisting BASF with

securing non-transferrable licences. If the non-transferrable licences are not acquired within this period, appropriate measures will be agreed with the Monitoring Trustee;

(i) Bayer will arrange for transitional IT systems to be provided by a third-party service provider; and

(j) as a general principle, all of the Personnel currently working on the GA Divestment Business will be transferred to BASF (subject to agreement with the German employee representatives).

8. The GA Divestment Business will require a supply agreement for indaziflam for as long as this active ingredient is patent protected and cannot be sourced from anyone other than Bayer. The initial term of this agreement is [5-10 supply years], and shall automatically renew for a [1-3 year] renewal term, unless BASF terminates at least […] prior to the end of the initial term. Bayer will supply BASF with the active ingredient at variable cost, in priority over other purchasers, and in the quantities demanded by BASF until the earlier of the expiry of this agreement or until there are at least three generic suppliers of indaziflam able to supply BASF whose source of indaziflam is not Bayer. Any required transitional service and supply agreements, reverse transitional service agreements, lease-back agreements, or licensing agreements are provided in **Section III** below.

9. Transitional supplies or services will be provided by Bayer at variable cost for an initial period of [1-3 years] after the BASF Closing. BASF will have the option to renew the term for a further period of [1-3 years], for a total of up to [3-9 additional years] after the BASF Closing, on each occasion subject to the Commission's approval following consultation with the Monitoring Trustee. Any subsequent supplies or services will be based on commercial terms agreed between Bayer and BASF.

10. The Key Personnel to be transferred, subject to complying with all applicable employment laws, for the GA Divestment Business are set out in the following table:

Key Personnel	**Role**
[…]	Head of Transition Team & Head of Seeds
[…]	Head of Development & Regulatory
[…]	Head of Marketing & Business Development
[…]	Head of Sales & Distribution
[…]	Head of Finance & Controlling
[…]	Head of Product Supply
[…]	Head of Frankfurt Site

Key Personnel	Role
[…]	Head of Knapsack Site
[…]	Head of Muskegon Site
[…]	Head of Regina Site
[…]	Head of Marketing Crop Manager Arable
[…]	Head of Agronomic Development
[…]	Head of Formulation Technology
[…]	Head of Human Safety
[…]	Head of Regulatory Affairs

The Glyphosate Assets

11. The objective of the commitments relating to the Glyphosate Assets is to remove any overlap between Bayer and Monsanto in the sale of glyphosate-based products in the EEA (agricultural and non-agricultural).

12. The Glyphosate Assets comprises Bayer's non-agricultural glyphosate-based products in the EEA,[8] and the Zarpa-brand family of agricultural glyphosate products in the EEA (in the EEA, Zarpa is sold in only Spain and Portugal, all Zarpa pipeline projects are mixtures of [active ingredient] and glyphosate). Because glyphosate-based herbicides are such a small business for Bayer, Bayer proposes to structure the divestment as an asset sale including, but not limited to:

(a) Bayer's non-agricultural glyphosate-based herbicide product portfolio, comprising all trademarks, formulations, mixtures and methods, all data and support necessary for registrations, and all relevant local registrations. This includes a further six registered brand names;[9]

(b) Bayer's Zarpa-brand family of agricultural glyphosate products, including all trademarks, formulations, mixtures and methods, all data and support necessary for registrations, and all relevant local registrations (in the EEA, Zarpa is sold only in Spain and Portugal, all Zarpa pipeline projects are mixtures of [active ingredient] and glyphosate);

(c) all pipeline projects and the associated IP relating to Bayer's non-agricultural glyphosate-based products in the EEA,[10] and, for Spain and Portugal, to the

8 There are no assets or employees to be transferred in Germany as there are only application services there which services are retained.

9 The trademarks Mustang, Arent, Tersol Trio, Destrol, and Suztol will transfer, but are not currently in use or are being phased out by Bayer.

10 There are no assets or employees to be transferred in Germany as there are only application services there which services are retained.

Zarpa-brand family of agricultural glyphosate products in the EEA (in the EEA, Zarpa is sold only in Spain and Portugal, all Zarpa pipeline projects are mixtures of [active ingredient] and glyphosate);

(d) all dedicated supplier contracts. Shared contracts will be split if feasible. Otherwise, Bayer will use its best efforts to assist BASF with the creation of new contracts to be in place immediately post-closing;

(e) all dedicated customer contracts. Shared contracts will be split if feasible. Otherwise, Bayer will use its best efforts to assist BASF with the creation of new contracts to be in place immediately post-closing;

(f) all dedicated distribution agreements. Shared contracts will be split if feasible. Otherwise, Bayer will use its best efforts to assist BASF with the creation of new contracts to be in place immediately post-closing; and

(g) all the Personnel of the Glyphosate Assets, subject to the work council process in France (for French employees only).

13. Bayer and BASF have not yet begun negotiating the approach to transitional services but Bayer commits to act as a supplier of glyphosate AI and the required mixture partners, and a toll formulator (mixing and packaging formulated products), or as a supplier of formulated products (*i.e.*, finished products) on a transitional basis to BASF. Transitional supplies or services will be provided by Bayer at variable cost for an initial period of [1-3 years] after the BASF Closing. BASF will have the option to renew the term for a further period of [1-3 years], for a total of up to [3-9 additional years] after the BASF Closing, on each occasion subject to the Commission's approval following consultation with the Monitoring Trustee. Any subsequent supplies or services will be based on commercial terms agreed between Bayer and BASF.

14. The Glyphosate Assets will not require any long-term supply agreements between Bayer and BASF beyond those mentioned in Paragraph 13. Monsanto currently supplies Bayer with the glyphosate AI used in Bayer's glyphosate products. BASF could obtain glyphosate from other sources, but Bayer commits to supply BASF with glyphosate AI on fair, reasonable, and non-discriminatory terms. Bayer and BASF have not yet begun to negotiate transitional or longer-term supply agreements, but a list of contemplated agreements are provided in **Section III** below. Bayer commits to enter into any such transitional agreements deemed necessary by the Independent Adviser or Monitoring Trustee.

15. Bayer will retain all physical assets relating to its glyphosate business, its agricultural and non-agricultural glyphosate-products outside of the EEA, its glyphosate application services worldwide, its entire glyphosate-free business:

(a) all real estate related to the Glyphosate Assets, including, but not limited to, Bayer's Monheim field formulation laboratory, Monheim field testing biology laboratory, Monheim greenhouses, and all of the sales and marketing offices used in the Glyphosate Assets;

(b) all application services;[11]

(c) all research and development projects and the associated IP which concern glyphosate-free solutions. Bayer's existing glyphosate AI and product portfolio have been commercialised for some time. Consequently, it is no longer an R&D-intensive business. Bayer's non-agricultural glyphosate R&D activities and intellectual property are now focused on glyphosate-free products;

(d) industrial sales of active ingredients including glyphosate (*i.e.*, re-sale of bulk glyphosate obtained from any source); and

(e) sales of any glyphosate-free products (*i.e.*, products not containing glyphosate).

16. The Key Personnel to be transferred, subject to complying with all applicable employment laws, for the Glyphosate Assets are set out in the following table:

Key Personnel	**Role**
[…]	Benelux, Key Account Manager Environmental Science
[…]	Nordics, Business Manager
[…]	France
[…]	UK & Ireland, T&O/IVM/Forest Portfolio Manger
[…]	Iberia, Business Manager Environmental Science Iberia
[…]	Head of Development & Regulatory (formerly Head of Global Regulatory Affairs in Environmental Science)

[11] There is no overlap between the Parties in this area as Monsanto has no application services.

The NemaStrike Assets

17. The objective of the commitments relating to the NemaStrike Assets is to enable BASF to replicate the competitive position held by Monsanto absent the Concentration.

18. The NemaStrike Assets include, but are not limited to:

(a) all intellectual property related to NemaStrike and tioxazafen (the active ingredient in NemaStrike), including but not limited to worldwide patents, trademarks, and copyrights;

(i) where such IP currently is exclusive to NemaStrike, it will be transferred, or (if a transfer is not possible) exclusively licensed, to BASF;

(ii) where such IP currently is used by other parts of the Monsanto business, it will be allocated to the primary user (the NemaStrike business to be transferred to BASF or Monsanto/Bayer) with licences, or covenants not to assert put in place to ensure access by the other party, provided that the field of use available to Monsanto/Bayer will exclude the field of nematicidal seed treatments;

(iii) for the avoidance of doubt, the transfer/licence relates to Monsanto's entire patent estate for tioxazafen (the active ingredient in NemaStrike), not limited to seed treatment applications and including method patents and patent applications and patents and patent applications disclosing mixtures of tioxazafen and additional chemistry (all pesticides), seeds and traits;

(b) all know-how specific to NemaStrike and NemaStrike application;

(c) all product registrations and pending regulatory submissions related to NemaStrike;

(d) all current commercial formulations and those in development;

(e) all data from NemaStrike field trials, including ongoing trials and studies;

(f) all tolling and other relevant third-party agreements relevant to NemaStrike. Shared contracts will be split if feasible. Otherwise, Monsanto will use its best efforts to assist BASF with the creation of new contracts to be in place immediately post-closing; and

(g) all sales and marketing assets, including, *inter alia*, customer lists, distribution plans, all market research conducted to date regarding NemaStrike, the NemaStrike website URL and NemaStrike social media sites.

19. Bayer also commits to providing training and information required by BASF, delivered by appropriate specialists, to prepare BASF's sales and marketing teams to begin selling the products comprising the Glyphosate Assets and the NemaStrike Assets. Such training will be available for up to [1-3 years] following the BASF Closing. Bayer will provide this support at variable cost, as calculated using Bayer's standard accounting practices, excluding overheads.

20. The NemaStrike Divestment Assets will not require any long-term supply agreements between Bayer and BASF. While not yet final, a list of contemplated transitional service and supply agreements, reverse transitional service agreements, lease-back agreements, or licensing agreements are provided in Section III below. Bayer commits to enter into any such transitional agreements deemed necessary by the Independent Adviser or Monitoring Trustee.

21. Transitional supplies or services will be provided by Bayer at variable cost for an initial period of [1-3 years] after the BASF Closing. BASF will have the option to renew the term for a further period of [1-3 years], for a total of up to [3-9 additional years] after the BASF Closing, on each occasion subject to the Commission's approval following consultation with the Monitoring Trustee. Any subsequent supplies or services will be based on commercial terms agreed between Bayer and BASF.

22. The Key Personnel to be transferred, subject to complying with all applicable employment laws, for the NemaStrike Assets are set out in the table below. If any additional personnel are necessary for BASF to replicate Monsanto's competitive position with regard to the NemaStrike Assets, those personnel, or an adequate substitute will be offered to the Purchaser, subject to the Commission's approval in consultation with the Monitoring Trustee:

Key Personnel	**NemaStrike Lead Role**	**Monsanto Company Title**
[…]	Key Account Management	Global Ag Productivity Solutions & Seed Treatment Lead
[…]	Commercial Marketing and Product Management	NA Seed Applied Solutions Rev & Product Optimization Lead
[…]	Supply Chain and Demand Planning	External Operations Manager
[…]	Seed Treatment Process Enablement	Global Seed Technology Research Lead
[…]	R&D Product Development	Global Seed Treatment Product Advancement Lead
[…]	Commercial Technology Development	TDM - Seed Treatment

Key Personnel	NemaStrike Lead Role	Monsanto Company Title
[…]	Regulatory Affairs	Regulatory Affairs Manager
[…]	Toxicology - CARC, Skin Irritation	Senior Lead Scientist - Toxicology
[…]	Technology/Global Ag Products	Research Scientist Nematode Testing
[…]	Technology/Regulatory	Senior Research Scientist
[…]	Technology/Global Ag Products	Regulatory Affairs Manager
[…]	Technology/Regulatory	Senior Research Scientist
[…]	Technology/Regulatory	Chemistry Exposure Study Manager

23. The Commission may further, in response to a reasoned request from Bayer showing good cause, waive, modify or substitute one or more of the undertakings part of the NemaStrike Assets, provided that any alternative commitment is at least as effective as the above commitment in remedying the Commission's concerns in the relevant areas. This request shall be accompanied by a report from the Monitoring Trustee, who shall at the same time send a non-confidential copy of the report to Bayer. The request shall not have the effect of suspending the application of the undertaking and, in particular, of suspending the expiry of any time period in which the undertaking has to be complied with.

[NSH line of research 1] Data Transfer and Licence

24. The objective of the [NSH line of research 1] Data Transfer and Licence is to come as close as possible to a divestment of Bayer's [NSH line of research 1] class herbicide chemistry ("**[*NSH line of research 1*] *Chemistries***") line of research for non-selective uses without disrupting Bayer's ability to research, develop, and market [mode of action] for selective uses or […].

25. By way of the [NSH line of research 1] Data Transfer and Licence Bayer commits to:

(a) transfer to BASF all data and know-how gathered by Bayer up to the Effective Date from field trials conducted on [NSH line of research 1] Chemistries as relating to all non-selective uses as well as information on the structure, and Samples, of the relevant molecules;

(b) grant to BASF a perpetual, exclusive, worldwide licence[12] of all Bayer IP rights and know-how relating to Bayer's [NSH line of research 1] Chemistries

[12] For the avoidance of doubt, by granting BASF an exclusive licence to the non-selective uses, Bayer will no longer have the right to use the IP rights and know-how covered by the [NSH line of research 1] Data Transfer and Licence for these non-selective uses while BASF will not have the rights to use the IP rights and know-how covered by the [NSH line of research 1] Data Transfer and Licence for selective uses.

existing at the Effective Date for all non-commercial and commercial applications in the field of non-selective uses, including:

(i) for the control of unwanted vegetation for example in permanent crops and plantation crops (such as trees, nuts and vines), on roadsides, squares, industrial sites, airports or railway tracks; or

(ii) for the burn-down application, for example in farm crops; and

(iii) for the application on herbicide tolerant field crops (HT crops) in which the tolerance is conferred by man-made mutation or transgenic modification.

26. For the avoidance of doubt, the [NSH line of research 1] Data Transfer and Licence does not include any data or intellectual property regarding Bayer's selective [mode of action] for selective uses or […], in each case independent of their development status (early research, development, marketed, *etc*.).

27. Explicitly excluded from this licence is any selective use in any plant which is tolerant by nature.

28. The [NSH line of research 1] Data Transfer and Licence will require an exclusive licence or licences for the relevant data and know-how. There are no other transitional or long-term agreements required between Bayer and BASF.

29. The Key Personnel to be transferred, subject to complying with all applicable employment laws, for the [NSH line of research 1] Data Transfer and Licence are set out in the following table:

Key Personnel	**Role**
[…]	Laboratory Leader, Discovery Chemist
[…]	Laboratory Leader, Discovery Chemist

30. Bayer will also provide to BASF, after BASF's consultation with the Key Personnel identified in the paragraph above, the option to offer employment to up to three full time employees in total working across any of the three lines of research ([NSH line of research 2] Chemistries, [NSH line of research 3] Chemistries and [NSH line of research 1] Chemistries) to ensure a smooth transition (if required by BASF), subject to the Commission's approval following consultation with the Monitoring Trustee. These additional employees, once identified by BASF and approved by the Commission, are Key Personnel for the purposes of these Commitments. Bayer will provide to BASF a list of all employees working on these lines of research, subject to complying with all applicable employment laws. Any transfer of such Key Personnel to BASF is also subject to all applicable employment laws.

[NSH line of research 2] Data Transfer and Licence

31. The objective of the [NSH line of research 2] Data Transfer and Licence is to come as close as possible to a divestment of Bayer's [NSH line of research 2] class herbicide chemistry type [mode of action] ("**[*NSH line of research 2*] *Chemistries***") line of research for non-selective uses without disrupting Bayer's ability to research, develop, and market [NSH line of research 2] Chemistries for selective uses.

32. By way of the [NSH line of research 2] Data Transfer and Licence, Bayer commits to:

    (a) transfer to BASF all data and know-how gathered by Bayer up to the Effective Date from in vitro assays […] and all field trials conducted on [NSH line of research 2] Chemistries as relating to all non-selective uses as well as information on the structure, and Samples, of the relevant molecules;

    (b) grant to BASF a perpetual, exclusive, worldwide licence[13] of all Bayer IP rights and know-how relating to Bayer's [NSH line of research 2] Chemistries existing at the Effective Date for all non-commercial and commercial applications in the field of non-selective uses, including:

        (i) for the control of unwanted vegetation for example in permanent crops and plantation crops (such as trees, nuts and vines), on roadsides, squares, industrial sites, airports or railway tracks, or

        (ii) for the burn-down application, for example in farm crops, and

        (iii) for the application on herbicide tolerant field crops (HT crops) in which the tolerance is conferred by man-made mutation or transgenic modification.

33. Explicitly excluded from this licence is any selective use in any plant which is tolerant by nature.

34. The [NSH line of research 2] Data Transfer and Licence will require an exclusive licence or licences for the relevant data and know-how. There are no other transitional or long-term agreements required between Bayer and BASF.

[13] For the avoidance of doubt, by granting BASF an exclusive licence to the non-selective uses, Bayer will no longer have the right to use the IP rights and know-how covered by the [NSH line of research 2] Data Transfer and Licence for these non-selective uses while BASF will not have the rights to use the IP rights and know-how covered by the [NSH line of research 2] Data Transfer and Licence for selective uses.

35. The Key Personnel to be transferred, subject to complying with all applicable employment laws, for the [NSH line of research 2] Data Transfer and Licence are set out in the following table:

Key Personnel	**Role**
[…]	Laboratory Leader, Discovery Chemist

36. Bayer will also provide to BASF, after BASF's consultation with the Key Personnel identified in the paragraph above, the option to offer employment to up to three full time employees in total working across any of the three lines of research ([NSH line of research 2] Chemistries, [NSH line of research 3] Chemistries and [NSH line of research 1] Chemistries) to ensure a smooth transition (if required by BASF), subject to the Commission's approval following consultation with the Monitoring Trustee. These additional employees, once identified by BASF and approved by the Commission, are Key Personnel for the purposes of these Commitments. Bayer will provide to BASF a list of all employees working on these lines of research, subject to complying with all applicable employment laws. Any transfer of such Key Personnel to BASF is also subject to all applicable employment laws.

[NSH line of research 3] Data Transfer and Licence

37. The objective of the [NSH line of research 3] Data Transfer and Licence is to come as close as possible to a divestment of Bayer's [NSH line of research 3] class herbicide chemistry type [mode of action] *(*"**[*NSH line of research 3*] *Chemistries***") line of research for non-selective uses without disrupting Bayer's ability to research, develop, and market [NSH line of research 3] Chemistries for selective uses.

38. By way of the [NSH line of research 3] Data Transfer and Licence Bayer commits to:

(a) transfer to BASF all data and know-how gathered by Bayer up to the Effective Date from all field trials conducted on [NSH line of research 3] Chemistries as relating to all non-selective uses as well as information on the structure, and Samples, of the relevant molecules;

(b) grant to BASF a perpetual, exclusive, worldwide licence[14] of all Bayer IP rights and know-how relating to Bayer's [NSH line of research 3] Chemistries

[14] For the avoidance of doubt, by granting BASF an exclusive licence to the non-selective uses, Bayer will no longer have the right to use the IP rights and know-how covered by the [NSH line of research 3] Data Transfer and Licence for these non-selective uses while BASF will not have the rights to use the IP rights and know-how covered by the [NSH line of research 3] Data Transfer and Licence for selective uses.

existing at the Effective Date for all non-commercial and commercial applications in the field of non-selective uses, including:[15]

(i) for the control of unwanted vegetation for example in permanent crops and plantation crops (such as trees, nuts and vines), on roadsides, squares, industrial sites, airports or railway tracks; or

(ii) for the burn-down application, for example in farm crops; and

(iii) for the application on herbicide tolerant field crops (HT crops) in which the tolerance is conferred by man-made mutation or transgenic modification.

39. Explicitly excluded from this licence is any selective use in any plant which is tolerant by nature.

40. The [NSH line of research 3] Data Transfer and Licence will require an exclusive licence or licences for the relevant data and know-how. There are no other transitional or long-term agreements required between Bayer and BASF.

41. The Key Personnel to be transferred, subject to complying with all applicable employment laws, for the [NSH line of research 3] Data Transfer and Licence are set out in the following table:

Key Personnel	**Role**
[…]	Laboratory Leader, Discovery Chemist
[…]	Laboratory Leader, Discovery Chemist

42. Bayer will also provide to BASF, after BASF's consultation with the Key Personnel identified in the paragraph above, the option to offer employment to up to three full time employees in total working across any of the three lines of research ([NSH line of research 2] Chemistries, [NSH line of research 3] Chemistries and [NSH line of research 1] Chemistries) to ensure a smooth transition (if required by BASF), subject to the Commission's approval following consultation with the Monitoring Trustee. These additional employees, once identified by BASF and approved by the Commission, are Key Personnel for the purposes of these Commitments. Bayer will provide to BASF a list of all employees working on these lines of research, subject to complying with all applicable employment laws. Any transfer of such Key Personnel to BASF is also subject to all applicable employment laws.

[15] […].

The Digital Agriculture Licence

43. The objective of the Digital Agriculture Licence is to enable BASF to replicate the competitive position held by Bayer absent the Concentration.

44. The Digital Agriculture Licence is a package of intellectual property and licences designed to assist BASF to accelerate the development of its existing programmes.

45. The Digital Agriculture Licence will comprise a binding, perpetual, irrevocable, and sole licence for the use on a worldwide basis of the code, data and algorithms for the entirety of Bayer Digital Farming's global portfolio, including those listed in the Annex to this Schedule.

46. In addition, Bayer will provide to BASF a copy of the entirety of its global digital agriculture pipeline for projects which qualify as alpha projects (see below) or are more advanced on the Effective Date. The Digital Agriculture Licence will include a copy of all relevant literature, documentation, milestone reports, algorithms, data, architecture and source code pertaining to the pipeline projects.

47. The pipeline projects consist of all of Bayer's pipeline projects in Bayer's digital agriculture innovation cycle globally from the initial "alpha" development phase through the full development pipeline to commercialisation. The alpha phase is the first development phase where a pipeline project ceases to be a mere concept and where something tangible is developed and recorded (for example, research or technical know-how, data gathering, initial coding sequences, and so on). The Digital Agriculture Licence will therefore include the entirety of Bayer's global pipeline projects from the first development stage through to completed projects ready for commercial launch.

48. The items identified in Paragraphs 45-47 are the "***Licensed Materials***."

49. BASF will likely require support from third-party suppliers in four key areas:

    (a) data services (including satellite data, weather data, and maps);

    (b) cloud data storage/processing providers;

    (c) software licences and IT service providers; and

    (d) business service providers.

50. Given BASF's existing digital agriculture capability, Bayer expects that it is likely to have relationships with providers of each of these services. Each of these four data sources or data handling contracts are open to any party. BASF will be able to contract with these providers easily, and in some cases will have options for procuring the relevant services from other providers if it desires. Bayer will provide support to BASF to allow BASF to fully understand these data and service providers, to provide contacts of potential suppliers, to help with technical implementation if necessary, and

to use its best efforts to assist BASF with securing contracts or identifying alternative suppliers, or, insofar as this is not possible, Bayer shall cooperate with BASF in any reasonable arrangement designed to provide for BASF the benefits of the contracts Bayer has, subject to compliance with applicable laws and the terms of the relevant contracts.

51. There are five parties that provide Bayer with more tailored inputs for its digital agriculture platforms. Bayer sees no reason why these companies would not also be willing to contract with BASF, but given that their offerings are less generic, Bayer has identified them specifically. Bayer has also identified potential alternative suppliers whose products are at least as advanced as those used by Bayer (including a supplier already owned by BASF, and a supplier with whom BASF has an existing long-term partnership). These suppliers are described in the table below. Bayer commits to use its best efforts to assist BASF with securing contracts or identifying alternative suppliers, or, insofar as this is not possible, Bayer shall cooperate with BASF in any reasonable arrangement designed to provide for BASF the benefits of the contracts Bayer has, subject to compliance with applicable laws and the terms of the respective contracts.

Supplier	**Product/Service**	**Alternative Suppliers**
[…]	Pest & disease risks	ISIP (leading pest & disease modelling company in close collaboration with federal states in Germany)
[…]	Satellite data	ESA (actively approaching market with value added satellite imagery including atmospheric correction), Airbus Industries, DigitalGlobe, many others.
[…]	Weed camera	John Deere has, by dimensions, the largest pool of agricultural telematics data (myJohnDeere.com) and has acquired Blue River Technology. BASF has an existing long term partnership with John Deere, see, for example, Agritechnica Gold Medals.
[…]	Nitrogen optimisation	ZedX (crop modelling company acquired by BASF in 2017).
[…]	Image recognition for diseases identification	The Plantix API is a non-exclusive service from PEAT, which is available to BASF. Alternatives include Agrio, ISIP, Planticare, Leaf Doctor, and Pestoz.

52. The Licensed Materials will also include copies of all master datasets relevant for each product for which Bayer has the legal right to grant a licence to BASF, as at the Effective Date. Bayer will provide to BASF, without undue delay any updates to these master datasets that become available to Bayer within an initial period of [1-3 years] of the BASF Closing, renewable at BASF's option by one period of a further [1-3 years].

53. Bayer will provide to BASF details of all other datasets used by the products comprising the Licensed Materials (including details of where the datasets can be obtained). Such datasets are either publicly available, supplied by the user of the product, available for purchase from an independent party, or would already be available to a company engaged in crop protection activities such as BASF. In any event, Bayer commits to use its best efforts to assist BASF with securing these datasets or identifying alternative suppliers, or, insofar as this is not possible, Bayer shall cooperate with BASF in any reasonable arrangement designed to provide for BASF the benefits of the contracts Bayer has, subject to compliance with applicable laws and the terms of the respective contracts.

54. All of the Licensed Materials will be provided on a "white label" basis and will not include any right to use the Bayer, xarvio, Field Manager or Weedscout brands, or any other brand or product name. BASF will use its own brands or develop new brands for the Licensed Materials.

55. The Licensed Materials will be available in the current condition of each product as at the Effective Date. The Digital Agriculture Licence will put BASF in the exact same position as Bayer technologically at the time of licencing.

56. In addition, Bayer will provide BASF, at its option, with up to three man-years of support from professionals trained on the Licensed Materials (including pipeline products), to be provided within the first [1-3 years] of the commencement of the Digital Agriculture Licence. Bayer may provide this support through its own employees, or through personnel trained by Bayer from external providers. However if Bayer elects to provide the service, it will be provided at variable cost, as calculated using Bayer's standard accounting practices, excluding overheads.

57. Bayer will also provide to BASF the option to offer employment to up to six Key Personnel of the Bayer Digital Farming organisation to ensure a smooth transition (if required by BASF). Bayer will provide to BASF a list of all employees working on Bayer's digital agriculture products globally, including regions in which Bayer Digital Farming's products are currently, or could be, commercialised, subject to complying with all applicable employment laws. BASF will be able to negotiate directly with, and make offers directly to, six such Bayer employees at a time, until up to six employees have accepted BASF's offer. These six Key Personnel must be at least top or senior management with proven and extensive experience regarding the products included in the Digital Agriculture Licence, and in at least one or several of the following functions: (i) data management/science, (ii) commercial, (iii) software development specific to the tools, (iv) system architects, (v) agronomic algorithms, (vi) sales/marketing, (vii) strategy, (viii) partnership coordinators, and (ix) modelling/on-farm research personnel.

58. The first six Key Personnel to which Bayer will provide to BASF the option to offer employment are set out in the following table:

Employee	**Primary function**
[…]	Data management/science
[…]	Commercial
[…]	Software development specific to the tools
[…]	Agronomic algorithms
[…]	Strategy
[…]	Partnership coordinator

59. Bayer will also provide to BASF the option to receive up to four workshops, each being one day in length, with leadership personnel from Bayer Digital Farming within the first six months of the commencement of the Digital Agriculture Licence.

60. If there is any asset or personnel which is not covered by this Schedule but which are both used (exclusively or not) in a part of BASF Divestment Package and are necessary for the continued viability and competitiveness of part of the BASF Divestment Package, that asset, personnel, or an adequate substitute will be offered to BASF.

II. The Vegetable Seeds Divestment Business

61. The Vegetable Seeds Divestment Business comprises Bayer's entire global vegetable seeds business without carve-outs, including, but not limited to:

(a) all legal entities held by BVS;

(b) for shared legal entities through which BVS operates, Bayer will either establish a new legal entity and transfer the relevant employees and assets, or transfer the relevant employees and assets to an entity specified by the Purchaser;

(c) all sites and locations (either owned or leased) held by BVS;

(d) sites and locations shared with other parts of Bayer where BVS is the main user;

(e) for shared sites where BVS is not the main user, Bayer will work with the Purchaser to ensure continuity of existing facilities post-closing until the Purchaser can make its own arrangements;

(f) all fixed assets, intangible assets, and goodwill held by BVS;

(g) all employees and all platform employees working on BVS projects will be transferred to the Purchaser;

(h) all BVS products across different life cycles;

(i) Nunhems and HILD brands, including all sub-brands and registered trademarks;

(j) all agreements dedicated to BVS. Shared contracts will be split if feasible. Otherwise, Bayer will use its best efforts to assist the Purchaser with the creation of new contracts to be in place immediately post-closing;

(k) BVS expertise and know-how;

(l) all IP held by BVS legal entities (*e.g.* germplasm, markers, cell biology information, traits, patent rights, trademarks, licencing agreements, plant variety protection rights, know-how), and all IP currently held by Bayer legal entities other than BVS which are necessary for the operation of the Vegetable Seeds Divestment Business. In the event of any such IP being shared with or required by Bayer for any other purposes, Bayer commits, where feasible, to either license the IP to the Purchaser by non-exclusive licence, or by a complete transfer subject to a licence back from the Purchaser to Bayer, in both cases provided that the field of use available to Bayer will exclude the field of vegetable seeds;

(m) Bayer's position in an existing joint venture in China;

(n) customer lists and customer records; and

(o) all Key Personnel listed in the table below.

62. Bayer has not yet determined what transitional service agreements will be required to support the Vegetable Seeds Divestment Business. Bayer commits to enter into any transitional agreements deemed necessary by the Independent Adviser or Monitoring Trustee. In any event, Bayer commits to provide the Purchaser of the Vegetable Seeds Divestment Business, at its option, with IT support services and any other services necessary to ensure a smooth transition of the Vegetable Seeds Divestment Business to the Purchaser.

63. The Key Personnel to be transferred, subject to complying with all applicable employment laws, for the Vegetable Seeds Divestment Business are set out in the following table:

Key Personnel	**Role**
[…]	Head of Vegetable Seeds
[…]	Head of Finance
[…]	Managing Director R&D
[…]	Head of Sales
[…]	Managing Director Marketing & Sales
[…]	Managing Director Operations
[…]	Strategy
[…]	Head of LP&C Vegetable Seeds
[…]	Global Head Crop Development
[…]	Global Head of Research
[…]	Global Head R&D Services
[…]	Global R&D TL TOX
[…]	Global R&D TL PPX
[…]	Global R&D TL MEM/WMW
[…]	Global R&D CAC/ONX/LEL
[…]	Global R&D LTL/CUX/SPS
[…]	Project Manager
[…]	Breeder APAC Tropical
[…]	Breeder EMEA I
[…]	Breeder EMEA II
[…]	Breeder North America
[…]	Breeder LATAM
[…]	Trait Develoment
[…]	Technology Development
[…]	Application & Process
[…]	Farm Head Americas
[…]	Farm Head APAC
[…]	Farm Head EMEA
[…]	Molecular Services
[…]	Cell Biology Services
[…]	Genetic Enhancement Unit

64. If there is any asset or personnel which is not covered by this Schedule but which are both used (exclusively or not) in a part of Vegetable Seeds Divestment Business and are necessary for the continued viability and competitiveness of part of the Vegetable Seeds Divestment Business, that asset, personnel, or an adequate substitute will be offered to Proposed Purchasers.

III. Transitional Service Agreements, Reverse Transitional Service Agreements, Lease-back Agreements, and Licensing Agreements Potentially Required to Support the Commitments

A. Broad Acre Divestment Business

65. Bayer and BASF have already agreed the agreements required to support the Broad Acre Divestment Business, and any reverse transitional service agreements or lease-back agreements. Transitional supplies or services will be provided by Bayer at variable cost for an initial period of [1-3 years] after the BASF Closing. BASF will have the option to renew the term for a further period of [1-3 years], for a total of up to [3-9 additional years] after the BASF Closing, on each occasion subject to the Commission's approval following consultation with the Monitoring Trustee. Any subsequent supplies or services will be based on commercial terms agreed between Bayer and BASF.

66. The following contracts between Bayer and BASF will, or could, last for 12 months or longer, and have been created to ensure business continuity:

(a) a trademark transitional services agreement ([1-3 year] duration);

(b) a software transitional licence agreement ([1-3 year] duration);

(c) a trade secret agreement (long-term);

(d) a supply agreement for Prosper Evergol seed treatment (to BASF from Bayer) used on InVigor OSR seed (renewable);

(e) a seed treatment supply agreement for divested cotton and soy varieties (renewable);

(f) a stewardship agreement ([3-7 year] duration);

(g) a Pat/Bar patent licence agreement (long-term);

(h) CNA Agreement (long-term);

(i) a cotton variety licence for South Africa (long-term);

(j) a germplasm agreement for India (long-term);

(k) an Isoxaflutole supply agreement for the United States, Mexico (HPPD tolerant cotton and soy) and Brazil for a term of [3-7 years] after the first supply of the product. This agreement will automatically renew for [1-3 years] unless either BASF or Bayer terminates this agreement [<12 months] prior to the end of the initial term or, as applicable, of a renewal term. Bayer will supply BASF with the active ingredient at variable cost, in priority over other purchasers, and in the quantities demanded by BASF for an initial period of [1-3 years] after the BASF Closing. BASF will have the option to renew the term for a further period of [1-3 years], for a total of up to [3-9 additional years] after the BASF Closing, on each occasion subject to the Commission's approval following consultation with the Monitoring Trustee. This agreement includes access for BASF to Bayer's registration data in order to make required regulatory filings.[16] Bayer will globally maintain all product registrations for Isoxaflutole. Isoxaflutole does not have patent protection, and to Bayer's best knowledge a few other manufacturers could supply BASF. This agreement will be put in place in order to allow BASF immediate access to Isoxaflutole from Bayer so that BASF will be able to create formulations of Isoxaflutole on HPPD tolerant cotton and soybean.

B. GA Divestment Business

67. Bayer and BASF have already agreed the agreements required to support the GA Divestment Business, and any reverse transitional service agreements or lease-back agreements. Transitional supplies or services will be provided by Bayer at variable cost for an initial period of [1-3 years] after the BASF Closing. BASF will have the option to renew the term for a further period of [1-3 years], for a total of up to [3-9 additional years] after the BASF Closing, on each occasion subject to the Commission's approval following consultation with the Monitoring Trustee. Any subsequent supplies or services will be based on commercial terms agreed between Bayer and BASF.

68. The following contracts between Bayer and BASF will, or could, last for 12 months or longer, and have been created to ensure business continuity:

(a) a transition services agreement, with various transition services included. The following services have the potential to last 12 months or longer:

i) Production services. These include knowledge transfer, training, advice and assistance by Bayer experts regarding Process Hazard Analysis. There is also engineering support on plant and design know-how by Bayer

[16] The relevant trademarks for the Balance GT system (GM traits and herbicide) are licensed exclusively to BASF under a separate agreement.

experts with respect to capacity expansion projects in Muskegon, Frankfurt, Mobile and Knapsack.

ii) Regulatory services. These include global regulatory services, including an attempt to transfer management of on-going regulatory studies conducted by external service providers to BASF, a transfer of know-how in a training session, information and guidance to BASF regarding addressing new data requirements or questions by regulatory authorities. They also include local regulatory services, which will allow for the inclusion of complaints received in Bayer's complaint handling system.

iii) Product development services. These include global product development services, which will include a know-how transfer, a finalisation of on-going development studies at Bayer's sites. There will also be primary territories product development services, which will transfer management of on-going development studies which are conducted by external service providers to BASF; if not possible the studies will be continued by Bayer until finalisation.

(b) an Infraserv GmbH ("***Infraserv***") assignment and assumption agreement for Knapsack. This agreement will position BASF as a customer of Infraserv entirely independently from Bayer. The terms of the agreements are not assessable, as they relate to services performed by Infraserv for the transfer of service agreements, or, as applicable, the split or transfer with modification of service agreements.

(c) an Infraserv assignment and assumption agreement for Frankfurt. This agreement will position BASF as a customer of Infraserv entirely independently from Bayer with respect to the main services performed by Infraserv. The terms of the agreements are not assessable, as they relate to services performed by Infraserv for the transfer of service agreements, or, as applicable, the split or transfer with modification of service agreements.

(d) an Infraserv assignment and assumption agreement for Frankfurt. This agreement will position BASF as a customer of Infraserv entirely independently from Bayer with respect to the other services performed by Infraserv. The terms of the agreements are not assessable, as they relate to services performed by Infraserv for the transfer of service agreements, or, as applicable, the split or transfer with modification of service agreements.

(e) an Infraserv assignment and assumption agreement for Frankfurt. This agreement will position BASF as a customer of Infraserv entirely independently from Bayer with respect to logistics services performed by Infraserv's logistics affiliate at the Frankfurt site. The terms of the agreements are not assessable, as they relate to services performed by Infraserv for the

transfer of service agreements, or, as applicable, the split or transfer with modification of service agreements.

(f) a German real property transfer agreement. This agreement will govern the transfer of leasehold rights to BASF from Bayer in the Frankfurt and Knapsack sites. This will position BASF as a customer of Infraserv entirely independently from Bayer.

(g) a German lease transfer agreement in Knapsack. This agreement will transfer and split the lease agreements with Infraserve Knapsack. This will position BASF as a customer of Infraserv entirely independently from Bayer.

(h) a German lease transfer agreement in Frankfurt. This agreement will transfer and split the lease agreements with Infraserve Frankfurt. This will position BASF as a customer of Infraserv entirely independently from Bayer.

(i) a cooperation agreement in Knapsack. This agreement will be a necessity to ensure the cooperation of BASF and Bayer while they are both present at the Knapsack site. This agreement will be in place until 2037, with no option to renew. There is the option of early termination.

(j) a supply agreement for energy and media in Knapsack. The agreement will be in place until 2022, with an option to extend for another [1-3 years]. The necessity of the supply results from a need to supply chilled water and brine to the glufosinate ammonium production plant.

(k) a supply agreement for raw materials in Knapsack. This agreement will ensure that Bayer will supply HCI to BASF. The proximity allows Bayer to supply to BASF without transportation of truck or railcar. HCI is a commonly used raw material in the industry and BASF can terminate this agreement if it wishes to change its supplier. This supply agreement will be in place until the end of the [1st-3rd year] after Closing. There is the option to renew each [1-3 years], unless the agreement is terminated with [1-3 years]' notice.

(l) a service agreement for takeover of waste gas in Knapsack, with an initial term of [5-10 years]. This agreement will give BASF time to implement their own waste gas treatment facility, as Bayer will retain its waste gas treatment facility. This agreement has an indefinite term with a termination right after the first [5-10 years], and a [1-3 year] notice period.

(m) a lease agreement for Knapsack, for an initial term of [5-10 year]. It will address the one transferred glufosinate ammonium production line surrounded by facilities that Bayer will be retaining. The building cannot be separated from the leasehold agreement with Bayer, therefore the building will be leased

by BASF and all of the production lines and the equipment will be owned by BASF. There is a maximum of four [5-10 year] periods of renewal if requested by BASF [1-3 years] before expiry.

(n) a safekeeping agreement for Knapsack. This agreement will be put in place to ensure that BASF has short term business continuation. The glufosinate ammonium business uses <10% of the warehouses, with the remaining >90% used by the retained Bayer business. This agreement is for the term of [1-3 years] after closing, and allows BASF sufficient time to secure new warehousing facilities. There is no option to renew.

(o) a safekeeping and management agreement for spare parts. This agreement will allow Bayer to store spare parts for an interim period in a warehousing space that will transfer to BASF while Bayer looks for a new facility. This agreement is for [1-3 years] after closing, with no option to renew. This agreement offers a solution to the divestment practicalities.

(p) a service agreement for takeover of condensate. This agreement will be put in place because Bayer has a condensate agreement with the site owner Infraserve. Due to the structure of the piping, the condensate disposal agreement cannot be split. This was identified as the most efficient solution, as otherwise BASF will have to make a significant investment to set up their own connection to Infraserve's pipelines.

(q) an Indaziflam supply agreement. This agreement will be put in place to enable BASF to develop mixtures of glufosinate ammonium and Indaziflam to enhance the value of the glufosinate ammonium business in a post-patent scenario. A certain dependency of BASF on Bayer cannot be avoided due to the fact that Indaziflam has patent protection until February 2024. The initial term of this agreement is [5-10 supply years], and shall automatically renew for a [1-3 year] renewal term, unless BASF terminates at least [<12 months] prior to the end of the initial term. There is an option for BASF and Bayer to discuss whether they want to extend this further than the renewal term, but in any event the agreement will expire on December 31, 2027. Bayer will supply BASF with the active ingredient at variable cost, in priority over other purchasers, and in the quantities demanded by BASF until the earlier of the expiry of this agreement or until there are at least three generic suppliers of indaziflam able to supply BASF.

(r) an Indaziflam regulatory services agreement. This agreement will be put in place to ensure that Bayer will provide BASF access to Indaziflam registrations and will support BASF in order for BASF to register all the Indaziflam mixtures. Bayer will globally maintain all global product

registrations for indaziflam. This dependency is typical for every arrangement between two manufacturers where one develops mixtures with an active ingredient from a different manufacturer. This agreement will continue for the term of the master supply agreement. If/when the master supply agreement is terminated or is not renewed, this agreement will terminate as well.

(s) a formulated products tolling agreement, for a maximum period of [3-7 years]. In most cases product registrations are based on specific production/formulation sites and the related product specifications. Therefore in order to ensure business continuity Bayer will formulate the finished products at the registered sites until BASF has registered its own formulation site. BASF will be offered the formulation at variable cost, and so will ensure that BASF will be in the same position Bayer is currently in. This agreement gives BASF flexibility to build up its formulation capacities. There are three additional renewal terms of [1-3 years] available.

(t) a reverse formulated product tolling agreement for Regina. In most cases product registrations are based on specific production/formulation sites and the related product specifications. Therefore in order to ensure business continuity BASF will formulate the finished product (this is 30 products for up to seven countries) at the registered site, until Bayer has registered its own formulation site and product registrations. This agreement will ensure that Bayer will be offered the formulation at variable cost. The initial term expires [3-7 years]. There are three additional renewal terms of [1-3 years]. In this agreement BASF is the service provider, so there is no risk of BASF becoming dependent on Bayer.

(u) a form of a supply, formulation and distribution agreement. This agreement will ensure that Bayer will distribute end-use formulated products in the distribution territory (the smaller glufosinate countries, *i.e,* the total distribution territory amounts to less than 15% of the entire GA Divestment Business) until BASF or an appointed agent (in countries where BASF is not represented with an own organisation) will take over the business directly. This will allow BASF to concentrate on the immediate transfer of business after Closing (as defined in the agreement described in Paragraph (u)) on the top glufosinate ammonium countries. This agreement has an initial term of [3-7 years], but BASF has a termination right with [<12 months'] notice period at any time.

(v) a term sheet for formulated product distribution agreement for Mexico which will follow the agreement described in Paragraph (u) as a basis for this agreement. This term sheet outlines the terms and conditions for an agreement regarding the exclusive distribution of glufosinate ammonium for agricultural

uses in Mexico. This will be for a term of [3-7 years], with BASF able to terminate the agreement with a [<12 months'] notice period. This agreement will have unlimited number of renewal periods of [1-3 years], unless either Bayer or BASF terminates the agreement by giving [<12 months'] notice.

(w) an active ingredient production agreement for the manufacturing facility in Frankfurt. As a result of the change in ownership, BASF will be unable to export or sell any of the active ingredient or formulations in Special Registration Countries (Brazil, Canada, Korea, Taiwan, and certain Distribution Territories) until the change in ownership of the AI production sites from Bayer to BASF is registered, which will take several months. Therefore this agreement will allow Bayer to legitimately claim to be the manufacturer in this interim period in order to ensure regulatory compliance and business continuity. This agreement will terminate at the earlier point in time of either: (i) [1-3 years] (with option for BASF to extend for another [1-3 years] for every Special Registration Country where the change of manufacturer in the registration has not yet been completed); or (ii) completion of change of manufacturer to BASF in all Special Registration Countries.

(x) a binding term sheet of formulated product supply agreements for Special Registration Countries (Brazil, Canada, Korea, and Taiwan).

(y) a patent, software and trade secrets agreement. This is an addendum to the agreement described in Paragraph 68, and regulates the transfer of IP and the grant/grant back of licences. The IP rights licensed under this agreement have a broader scope than the GA Divestment Business. As a result, Bayer will retain ownership and give BASF the right to use them as required. The dependency between BASF and Bayer therefore is that of a transferor/transferee, and licensor/licensee. The agreement expires when the last patent/licence/trade secret has expired or become public knowledge.

(z) an addendum to the agreement described in Paragraph 68 regulating all of the transfer of Trademarks and grants of transitional trademark licences for the GA Divestment Business. The term of the transitional trademark licence is [1-3 years], or the last to expire of the non-transferrable trademarks. The dependency between BASF and Bayer therefore is that of a transferor/transferee, and licensor/licensee.

(aa) a registration data licence agreement. This agreement is a necessity for BASF, as it grants BASF access to Bayer registration data for multiple active ingredients, or active ingredients belonging to a task force. The agreement is in place until 2027, or longer if a study still has data protection in a country.

(bb) a form of cooperation agreement in Frankfurt. This agreement will be put in place to ensure cooperation between BASF and Bayer's operations at the Frankfurt site. This agreement will be in place until 2037, with early termination possible.

(cc) a term sheet for a formulated product supply agreement for Korea. It sets forth the material terms of an agreement for which Bayer's subsidiary in the Republic of Korea will exclusively manufacture the glufosinate ammonium products when BASF supplies the glufosinate ammonium. The term sheet sets out that the initial term would be for a period of [1-3 years], unless earlier terminated upon the transfer of the applicable registrations. There will be three renewal periods of [1-3 years] if the registrations have not been transferred.

(dd) a term sheet for a formulated product supply agreement in Taiwan. It sets forth the material terms of an agreement for which Bayer's subsidiary in Australia will exclusively manufacture the Transferred Manufactured Products to BASF in Taiwan. The term sheet sets out that the initial term would be for a period of [1-3 years], unless the registrations have been transferred to BASF and they elect to terminate the agreement on [<12 months'] written notice prior to the end of the [1st-3rd year]. There will be two renewal periods of [1-3 years], subject to BASF's right to terminate upon the transfer of the registrations.

(ee) a Butyl mixture supply agreement, for a period of [3-7 years] after closing, with the option to renew. BASF will be provided with an incineration outlet for Buytl mixture in Muskegon. This agreement is mutually beneficial, as BASF will avoid the cost of disposal of the by-product by transferring it to Bayer, which Bayer will use in its manufacturing in Bayer's Kansas City site. The material is provided for free, and so will relieve BASF of the disposal cost of the by-product, while additionally Bayer will save costs as Bayer will not have to purchase the by-product from a different supplier.

(ff) a glufosinate ammonium supply agreement. This agreement will be put in place to ensure BASF will be able to secure the income from glufosinate ammonium sales to Bayer, should Bayer want to re-enter the market. This is for a period of [3-7 year], with the agreement beginning [1-3 years] after closing.

(gg) a glufosinate ammonium agreement for regulatory services, provided in support of the agreement described in Paragraph (ff) above. This agreement will be put in place because it is necessary for BASF to provide access to glufosinate ammonium registrations and support Bayer in order for Bayer to register all solo products and mixtures relating to glufosinate ammonium. This

dependency is typical for every arrangement between two manufacturers where one develops mixtures with an active ingredient from a different manufacturer. This agreement is for a period of [3-7 years], with the agreement beginning [1-3 years] after closing.

C. Glyphosate Assets

69. Bayer and BASF are still negotiating the agreements required to support the Glyphosate Assets. Transitional supplies or services will be provided by Bayer at variable cost for an initial period of [1-3 years] after the BASF Closing. BASF will have the option to renew the term for a further period of [1-3 years], for a total of up to [3-9 additional years] after the BASF Closing, on each occasion subject to the Commission's approval following consultation with the Monitoring Trustee. Any subsequent supplies or services will be based on commercial terms agreed between Bayer and BASF. At present, it is contemplated that the agreements set out below will, or may, be required. Bayer commits to enter into any such transitional agreements deemed necessary by the Independent Adviser or Monitoring Trustee.

(a) Transition Services Agreement;

(b) Active Ingredient Supply Agreements for glyphosate and the respective mixing partners;

(c) Formulated Product Tolling Agreement or Supply Agreement (depending on the agreed transitional structure);

(d) Trademark and Trade Secret Agreement;

(e) Registration Data Licence Agreement; and

(f) An [active ingredient] supply agreement to enable BASF to sell mixtures of glyphosate and [active ingredient] for use as agricultural herbicides in Portugal and Spain.

70. There are currently no details available on the substance of these agreements.

D. Vegetable Seeds Divestment Business

71. In any event, Bayer commits to provide the Purchaser of the Vegetable Seeds Divestment Business, at its option, with IT support services and any other services necessary to ensure a smooth transition of the Vegetable Seeds Divestment Business to the Purchaser.

E. NemaStrike Assets

72. Bayer and BASF are still negotiating the agreements required to support the NemaStrike Assets. Transitional supplies or services will be provided by Bayer at

variable cost for an initial period of [1-3 years] after the BASF Closing. BASF will have the option to renew the term for a further period of [1-3 years], for a total of up to [3-9 additional years] after the BASF Closing, on each occasion subject to the Commission's approval following consultation with the Monitoring Trustee. Any subsequent supplies or services will be based on commercial terms agreed between Bayer and BASF. At present, it is contemplated that the agreements set out below will, or may, be required. Bayer commits to enter into any such transitional agreements deemed necessary by the Independent Adviser or Monitoring Trustee.

Transitional services

73. The Parties currently contemplate the following post-sale transitional services with the ultimate purchaser, though this is subject to further negotiation:

Regulatory Registrations

74. Bayer/Monsanto will assist BASF in applying for BASF's US and Canadian product registrations to complete the transfer of such registrations, as well as assist BASF in transferring the product registration in […] (if Monsanto's registration is submitted prior to close of the divestiture). Bayer/Monsanto will also transfer its Maximum Residue Limit (MRL) dossier and any other pending dossiers that are submitted to regulators by close. Finally, Bayer/Monsanto will assist BASF in responding to inquiries or follow-up questions from the Environmental Protection Agency or the Pest Management Regulatory Agency regarding Monsanto's updated toxicology studies. This support is expected to continue for up to [1-3 years].

Product Testing/Ongoing Regulatory Studies

75. In addition to transferring data and records to BASF, Bayer/Monsanto will support BASF with a combination of completing advanced ongoing studies, completing trials planned for the current growing season, and/or transferring the lab analysis portion of recently initiated studies to BASF for both product testing purposes and regulatory purposes. The extent of support will depend on the level of progress in the respective studies and BASF's capabilities. Bayer/Monsanto will also assist BASF in applying for Experimental Use Permits (EUPs) in required jurisdictions. Bayer/Monsanto will provide support in transferring its Material Transfer Agreements (MTAs) with third-parties and accompanying research data. Finally, in completing applicable ongoing studies, Bayer/Monsanto will also provide consulting support to BASF to supplement its understanding of NemaStrike formulations in development for row crops, fruit, and vegetables, as well as its understanding of formulation compatibility, application, dust-off, stability, plantability, and seed safety. This support is expected to continue for up to [1-3 years].

Production/Application/Supply Chain Processes

76. Bayer/Monsanto will provide consulting support to BASF in developing BASF's plans to upgrade its seed processing facilities for upstream NemaStrike application (should BASF opt to become an upstream player) and will also provide advice on manufacturing site readiness, maintenance of quality controls, and development of treatment application protocols. Bayer/Monsanto will also support BASF in developing its understanding of NemaStrike application methodology and chemistry and will provide technical and troubleshooting support while BASF is selling to downstream customers and retailers In addition, Bayer/Monsanto will, at the request of BASF, for [1-3 years], supply toll application services of NemaStrike to BASF at variable cost. The aforementioned support is expected to continue for [1-3 years]. In addition, Bayer/Monsanto will assist BASF in replicating tolling, distribution, procurement, purchasing, transportation, warehousing, and invoicing processes. It will also assist BASF in forecasting raw materials requirements for NemaStrike production and understanding technical reports, production data, and related NemaStrike production processes. This support is expected to continue for [1-3 years]. BASF will have the option to renew these terms of supply for a further period of [1-3 years], for a total of up to [3-9 additional years] after the BASF Closing, on each occasion subject to the Commission's approval following consultation with the Monitoring Trustee.

Marketing

77. Bayer/Monsanto will complete any ongoing "Ground Breakers"[17] season cycles for the 2018 season and provide copies of applicable data to BASF. Bayer/Monsanto will also provide all transfer approvals and complete any online procedures set forth by the registrar of domain name registrations. It is anticipated that such support will continue for up to [<12 months].

Intellectual Property

78. Bayer/Monsanto will provide documents necessary to assign patents/patent applications and trademarks/trademark applications to BASF and will support BASF in responding to inquiries/prosecution of NemaStrike-related patents and trademarks. It will also support the transition of any pending invention disclosures. It is anticipated that such support will continue for earlier of [<12 months] or until assignments are complete.

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ANNEX […]

[17] […].