



October 3, 2017

The Honorable Makan Delrahim
Assistant Attorney General
U.S. Department of Justice Antitrust Division
950 Pennsylvania Avenue, NW
Washington, DC 20530

Re: Monsanto-Bayer Merger: Competitive Concerns Surrounding Traits-Seeds-Chemicals Platforms, Digital Farming, and Farm Data

Dear Assistant Attorney General Delrahim:

This letter expands the analysis of competitive issues raised by the proposed merger of agricultural biotechnology (“biotech”) giants Monsanto and Bayer provided by the American Antitrust Institute (AAI), Food & Water Watch (FWW), and National Farmers Union (NFU)¹ in our July 26 letter submitted to the U.S. Department of Justice (DOJ).² In this letter, we discuss the merger’s potential to enhance the ability and incentive for Monsanto and Bayer to integrate traits, seeds, and chemicals (“T-S-C”) into proprietary systems or platforms that are “closed” to competition. The companies’ combined “digital farming” capabilities will likely facilitate such integration. Together with strengthened incentives for the appropriation and strategic competitive use of vast stores of farm data, these merger-related concerns have potentially adverse implications for competition, farmers, and consumers. AAI, FWW, and NFU believe these concerns strengthen the case for blocking the Monsanto-Bayer deal.

The recent reaction of Bayer Crop Science to the European Commission’s concerns about the merger’s effect on digital farming should highlight the importance of competitive issues surrounding digital farming. A Bayer executive stated, “I fail to see what kind of a remedy

¹ The American Antitrust Institute (AAI) is an independent, nonprofit organization devoted to promoting competition that protects consumers, businesses and society. For more information, *see* www.antitrustinstitute.org. Food & Water Watch (FWW) is a national advocacy organization dedicated to ensuring the food, water and fish we consume is safe, accessible and sustainably produced. For more information, *see* www.foodandwaterwatch.org. National Farmers Union (NFU) advocates for the economic and social well-being and quality of life of family farmers, ranchers, fishermen and consumers and their communities through education, cooperation and legislation. NFU advocates for the sustainable production of food, fiber, feed and fuel. For more information, *see* nfu.org.

² See Letter from AAI, FWW, and NFU to Acting Assistant Attorney General Andrew Finch, re: merger of Monsanto and Bayer, July 26, 2017, <http://antitrustinstitute.org/content/american-antitrust-institute-food-water-watch-and-national-farmers-union-say-monsanto-bayer>. The letter analyzed the merger’s likely adverse effects on the markets for crop traits, traited cottonseed, and research and development (R&D). AAI, FWW, and NFU concluded that the merger would likely harm U.S. farmers and consumers through higher prices, less choice, lower quality, less innovation, and a less diversified crop system. Given the near impossibility of crafting remedies that would fully restore competition lost by the merger, we encouraged DOJ to block the deal.

there would be in this space. It's extremely hypothetical in terms of where the overlap actually is ... with the broader industry still years away from a more universal business model."³ Aside from a misplaced focus on horizontal consolidation, these comments fundamentally miss the importance of an antitrust review's focus not only on actual but also potential competition. Indeed, the proposed merger of Monsanto and Bayer stands to redefine competition in the agricultural biotechnology industry in ways that will likely be detrimental to farmers, consumers, and innovators. Vigorous enforcement should recognize the full array of ways in which this could happen.

The analysis provided herein is qualitative in nature. Publicly available information and data that would aid in identifying participants in the market segments that comprise digital farming are scarce. We strongly encourage DOJ, with its ability to obtain confidential information and interview market participants, to probe into the questions surrounding T-S-C integration, digital farming, and farm data as a strategic competitive asset.

I. "Integrated Solutions" are a Major Motivation for the Monsanto-Bayer Merger

Past mergers in agricultural biotech have increased vertical integration among traits, seeds and chemicals. Recent merger proposals by the large agricultural biotechs are strongly motivated by the drive to develop integrated T-S-C platforms. This goal was clearly behind Monsanto's failed bid for Syngenta. A Monsanto letter noted, for example, that the merger "would enable the combined company to deliver integrated and sustainable solutions across all the major technology-driven platforms of breeding, biotechnology, crop protection, microbials and precision agriculture."⁴ Monsanto-Bayer's investor presentation highlights "integrated solutions" as one of the four major strategic benefits of their proposed merger.

Integrated solutions encompass two related elements. One is the "[s]mart combination and usage of [traits, seeds, and crop protection chemicals] products based on agronomic science" (i.e., "technologies optimally designed to work together").⁵ The companies highlight areas where the merger would combine complementary assets across traits, seeds, and chemicals for corn and soybeans. Cotton, an area in which a Monsanto-Bayer merger would combine significant assets, is excluded from this analysis.

A second element is digital farming. Monsanto and Bayer describe digital farming as the use of "[e]xtensive data collection and computation" and "[p]redictive analytics"...to provide data-based insights to optimize field-specific decision-making."⁶ Digital farming encompasses data collection through satellite UAV monitoring, on the ground sensors, historical crop yield data, weather data, and soil databases.⁷ Another component of digital

³ Carl Surran, *Bayer exec rejects EU antitrust concerns about digital farming*, SEEKING ALPHA (Sept. 21, 2017) (quoting Liam Codon, the head of Bayer's Crop Science division) (internal quotation marks omitted), <https://seekingalpha.com/news/3296877-bayer-exec-rejects-eu-antitrust-concerns-digital-farming>.

⁴ Letter from Hugh Grant, CEO, Monsanto, to Board of Directors, Syngenta AG, 3 (June 6, 2015), <https://www4.syngenta.com/~media/Files/S/Syngenta/media-releases/monsanto-letters-2015.pdf>.

⁵ Creating a Global Leader in Agriculture, Investor Conference Call ("Investor Handout"), 10 (Sept. 14, 2016), <http://www.investor.bayer.de/en/handouts/investor-handout/>.

⁶ *Id.*, at 11.

⁷ *Id.*, at 15.

farming is “data capture and analysis,” which facilitates decision making on what varieties to plant, appropriate nutrients, plant protection, and when and how to optimize the harvest.⁸

Bayer has described agriculture, in light of digital farming developments, as “in the grip of a revolution.”⁹ The companies highlight that their merger will combine capabilities that will build out and strengthen the company’s digital farming platform. Indeed, they emphasize that the merging companies aim to “[c]reate[] a leading platform in digital farming.”¹⁰ This includes Bayer’s pest, weed, and disease modeling analytics and hyper-localized decision support tools for Monsanto’s seed and planting scripts creator, Nitrogen advisors, and field-level weather information and notification.¹¹

II. Background on Integrated Traits, Seeds, and Chemicals Platforms and Digital Farming

A. The Shift Toward Integration

The strategic competitive importance of integrated T-S-C platforms was evident as early as first-generation transgenic soybean technology. Monsanto’s glyphosate herbicide Roundup and Roundup Ready 1 (RR1) soybeans are a case in point. So lucrative was this platform that long before RR1 soybeans went off patent in 2014, and in advance of any opening of a window for generic competition, Monsanto attempted to switch farmers to Roundup Ready 2 (RR2) soybeans. This strategy paid off – only one generic soybean using the RR1 trait was introduced just prior to 2015.¹²

Monsanto’s plan to extend the RR2 soybean platform to encompass more complex traits and herbicides has come to fruition with its Roundup Ready 2 Xtend dicamba-tolerant integrated cropping system. Likewise, Dow-DuPont’s Enlist 2,4-D tolerant integrated system became available in 2017.¹³ Given these trends, and the traits, seeds, and chemicals assets that will be combined post-merger, a Monsanto-Bayer combination will likely create a more tightly integrated platform.

B. Development of Digital Farming

Leading analysts of information technology, big data, and agriculture have written extensively about the development of digital farming. It is arguably one of the most innovative areas at the intersection of agriculture and big data. The field of companies that specialize in agricultural data analytics and intelligence has expanded over the last decade in the digital farming space, largely through organic growth.

⁸ *Id.*

⁹ *The Networked Farm*, BAYER RESEARCH 30 at 1 (November 2016), <https://www.research.bayer.com/en/30-digital-farming.pdf>.

¹⁰ Investor Handout, *supra* note 5, at 10.

¹¹ *Id.*, at 16.

¹² See Brian Wallheimer, *University Breeders Work to Ensure Choice*, SEED WORLD (June 2015) (The University of Arkansas released UA 5414RR in December 2014) (June 2015), http://www.seedworld.com/flipbook_june2015//files/inc/c409c86a78.pdf.

¹³ See e.g., *Enlist Corn*, ENLIST (last visited Sept. 30, 2017), <http://www.enlist.com/en/about-enlist/enlist-traits>.

But this growth, and the benefits it may bring to farmers and consumers, may be interrupted as the large agricultural biotechs acquire firms that specialize in digital farming. One industry commentator noted, for example, “[f]ollowing the recent purchase of Climate Corp. [in 2013], Monsanto is currently the most prominent biotech agribusiness to buy into big data.”¹⁴ Given the focus on integrated systems and digital farming, Monsanto’s ownership of Climate Corp. arguably sweetened the deal for Bayer.¹⁵

Other large biotechs have joined the acquisition spree. In October of 2015, Syngenta made AgConnections, which provides software to farmers to manage their operations through cloud-based data storage and analysis, a wholly owned subsidiary.¹⁶ In April 2017, BASF made a bid to acquire U.S. based ZedX, a leader in digital agriculture intelligence.¹⁷ And in August of 2017, DuPont agreed to acquire U.S.-based Granular, a “leading provider of software and analytics tools that help farms improve efficiency, profitability and sustainability.”¹⁸

III. The Merger Will Strengthen Incentives to “Close” Traits, Seeds, and Chemicals Platforms to Competition

Monsanto-Bayer claim that their “integrated solutions” strategy will generate numerous benefits. These include: convenience, improved sourcing, improved yields, optimized inputs, and sustainable farming.¹⁹ These benefits, if at all merger-related or cognizable, would do little to assuage the significant competitive concerns surrounding integrated solutions. In reality, integrated solutions are a response to slowing rates of innovation and the creation of more complex and expensive products to combat flagging yields and resistance problems. More important, the integration of traits, seeds, and chemicals, together with the digital farming capabilities that facilitate it, represents a massive shift in the competition “paradigm” in farming in the U.S. and abroad. With less and less competition, the agricultural biotech companies have an enhanced ability and incentive to create proprietary platforms that are closed to competition.

At the most basic level, economic evidence from soybeans and cotton indicates that seed prices under vertical integration tend to be higher than under licensing arrangements across firms. This suggests that vertical integration by biotechs may increase the exercise of market

¹⁴ Isabelle M. Carbonell, *The Ethics of Big Data in Big Agriculture* 5 Internet Policy Review 1 (Mar. 31, 2016), <https://policyreview.info/articles/analysis/ethics-big-data-big-agriculture>.

¹⁵ Matthew J. Grassi, *Opinion: Climate Corp. is the Jewel in Bayer’s Monsanto Deal Crown*, PRECISIOAG (Sept. 15, 2016), <http://www.precisionag.com/systems-management/data/opinion-climate-corp-is-the-jewel-in-bayers-monsanto-deal-crown/>.

¹⁶ Matthew J. Grassi, *Syngenta Makes Data Play, Acquires Ag Connections*, PRECISIOAG (Oct. 15, 2017), <http://www.precisionag.com/systems-management/data/syngenta-makes-data-play-acquires-ag-connections/>.

¹⁷ Matthew J. Grassi, *BASF Fortifies Digital Farming Offer with ZedX Acquisition*, PRECISIONAG (Apr. 27, 2017), <http://www.precisionag.com/systems-management/basf-fortifies-digital-farming-offer-with-zedx-acquisition/>.

¹⁸ *DuPont Acquires Ag Software Company Granular to Accelerate Digital Ag Strategy and Help Farmers Operate More Profitable Businesses*, DUPONT (Aug. 8, 2017), <http://www.dupont.com/corporate-functions/media-center/press-releases/dupont-acquires-ag-software-company-granular-to-accelerate-digital-ag-strategy.html>.

¹⁹ Investor Handout, *supra* note 5, at 10-12.

power and firms' ability to extract economic benefits from seed dealers and farmers.²⁰ But the proposed merger would go a giant step further, by enhancing both the ability and incentive to bundle proprietary products in a closed system.²¹ There are a number of factors that support this concern that, if it is not addressed in an antitrust review, would work to the detriment of competition, farmers, and consumers.

A. Increased Ability and Incentive to Engineer Closed Systems and Bundle Traits, Seeds, and Chemicals Products

The merger would enhance the ability and incentive for Monsanto and Bayer to engineer a proprietary bundle of traits, seeds, and chemicals that do not interoperate with rival technologies. Products that are designed to work together are unlikely to interoperate with rival technologies relative to those in a more open and competitive system. Also, the merged companies would have powerful incentives to offer distributors incentives to accept bundled products, foreclosing non-integrated rivals from the distribution necessary to compete effectively.

The foregoing effects would affect competition in two fundamental ways. First, it would likely lock out smaller, unintegrated rivals competing at one level (e.g., seeds or chemicals) and create significant entry barriers. The inability to enter at multiple levels in the post-merger world would stifle competition, to the detriment of farmers and consumers.²² Second, as explained in our July 26 letter, post-merger T-S-C platforms that are closed to competition could slow or stifle pro-competitive collaborations to cross-license technologies with other innovators.

In a market where rapid consolidation has reduced the field of rivals from the Big 6 to the Big 4 in less than two years, there is insufficient competition *between* T-S-C platforms to replace the competition that is likely to be lost in a closed, post-merger Monsanto-Bayer system.

B. Enhanced Incentives and Ability to Appropriate Competitively Valuable Farm Data

Incentives to integrate traits, seeds, and chemicals through merger are inextricably linked to enhanced digital farming capabilities. The combination of Monsanto's and Bayer's standalone digital farming assets will likely fuel this effect. Digital farming leverages critical information that will improve the merged company's ability and incentive to bundle traits, seeds, and chemicals into exclusive, proprietary packages. This dynamic, in turn, will likely

²⁰ Kyle W. Stiegert, Guanming Shi & Jean Paul Chavas, *Innovation, Integration and the Biotechnology Revolution in U.S. Seed Markets*, CHOICES MAGAZINE (2nd Q. 2010), <http://farmdoc.illinois.edu/policy/choices/20102/2010202/2010202.pdf>.

²¹ See Letter from AAI, FWW, and NFU to Principal Deputy Assistant Attorney General Renata Hesse (May 21, 2016), <http://antitrustinstitute.org/content/aai-fww-and-nfu-urge-us-department-justice-challenge-dow-dupont-merger>.

²² This is similar to the requirement of two-level entry described in the DOJ and FTC non-horizontal merger guidelines. See U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, HORIZONTAL MERGER GUIDELINES, §4.2.1.1 (2010), <https://www.justice.gov/atr/non-horizontal-merger-guidelines>.

enhance the merged company's incentives to amass and appropriate valuable farm data for potential use as a strategic competitive asset.²³

“Big” farm data is quickly becoming a major, critical input necessary for firms to compete in agricultural biotechnology markets. As one scholar wrote: “By amassing huge quantities of previously proprietary, private, or untapped farming data, companies are gaining a privileged position with unique insights into what farmers are doing around the clock, on a field-by-field, crop-by-crop basis[,] into what is currently a third or more of the U.S. farmland.”²⁴ Indeed, in the hands of a powerful, merged Monsanto-Bayer, farmer data would be a valuable competitive “asset.” As such, the merger would strengthen incentives to appropriate it from farmers through terms and conditions of licensing and technology agreements. Wireless data collection is already regulated via Monsanto's Technology Use Agreement, which the farmer is required to sign.²⁵

These issues are well onto the competition radar screen. For example, the AgData Transparent project, a consortium of farm industry groups, commodity organizations and ag technology providers, has developed “privacy and security principles” for farm data. These principles govern data ownership, collection, access, control, transparency, choice, and portability, among other things. Importantly, the principles prohibit the use of data by Agricultural Technology Providers for unlawful or anticompetitive activities.²⁶ AAI, FWW, and NFU encourage the DOJ to consider the implications of the merger for strengthening incentives to appropriate farm data and leverage it (as a competitive asset) to create closed T-S-C platforms.

IV. The Proposed Merger Puts Farmers and Consumers at Risk for Higher Prices, Less Choice, and Less Diversity in the Food System

A post-merger movement to closed T-S-C systems poses significant risks for farmers. Post-merger, farmers could be locked into a single proprietary cropping system, limiting their flexibility and choice, and raising input prices on bundled packages of traits, seeds, and chemicals. One farmer we interviewed highlighted the constraints of being locked into a single T-S-C platform: “[I] can't mix chemicals with other companies' products to remedy Roundup resistance.” Moreover, farm data is arguably one of the major tools that farmers have to preserve their ability to choose what to plant and from which companies to buy their seeds and chemicals. The potential loss of this data raises traditional consumer protection concerns. More important, it poses a stark example of how data, if it is not preserved in an open-source environment, could be used to stymie competition.

For consumers, the effect of the merger could be to raise prices of crop and vegetable-based food products, lower quality, and reduce choice in the availability of products from alternative food systems. Effects surrounding T-S-C integration, enhanced digital farming

²³ See, e.g., McKinsey Global Institute, *Big Data: The Next Frontier for Innovation, Competition, and Productivity*, 6 (May 2011), http://www.mckinsey.com/insights/business_technology/big_data_the_next_frontier_for_innovation.

²⁴ Carbonell, *supra* note 14, at 2.

²⁵ *Id.*

²⁶ *The Privacy and Security Principles for Farm Data*, AG DATA TRANSPARENT (last accessed Sept. 30, 2017), <http://www.agdatatransparent.com/the-privacy-and-security-principles-for-farm-data/>.

capabilities, and capture of farmer data also stand to reduce diversity in the crop system. This could magnify shocks, weather, disease, or even acts of bio-terrorism.

Such outcomes for farmers and consumers will promote what some European scholars have aptly described as “closed, proprietary systems in which the farmer is part of a highly integrated food supply chain.”²⁷ Such systems stand in stark contrast to “open collaborative systems in which the farmer and every other stakeholder in the chain network is flexible in choosing business partners as well for the technology as for the food production side.”²⁸

V. Conclusion

The foregoing effects, and their potentially adverse implications for competition, farmers, and consumers, should feature prominently in the DOJ’s investigation of the Monsanto-Bayer merger. They reinforce the case made in our July 26 letter for blocking the Monsanto-Bayer merger. We appreciate the opportunity to share our views on the proposed merger and would be happy to discuss our analysis or answer any questions that you and your staff might have.

Sincerely,

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²⁷ Sjaak Wolfert, Lan Ge, Cor Verdouw, & Marc-Jeroen Bogaard, *Big Data in Smart Farming*, 153 AGRICULTURAL SYSTEMS 69 (2017).

²⁸ *Id.*