

**UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF COLUMBIA**

UNITED STATES OF AMERICA  
450 5th Street, NW, Suite 8000  
Washington, DC 20530

*Plaintiff,*

v.

BAYER AG  
Kaiser-Wilhelm-Allee 1  
Leverkusen, Germany 51368

and

MONSANTO COMPANY  
800 North Lindbergh Boulevard  
St. Louis, MO 63167

*Defendants.*

**COMPLAINT**

The United States of America, acting under the direction of the Attorney General of the United States, brings this civil antitrust action to prevent Bayer AG from acquiring Monsanto Company. The United States alleges as follows:

**I. INTRODUCTION**

1. Bayer's proposed \$66 billion acquisition of its rival, Monsanto, would combine two of the largest agricultural companies in the world. Across the globe, Bayer and Monsanto compete to sell seeds and chemicals that farmers use to grow their crops. This competition has bolstered an American farming industry that contributes hundreds of billions of dollars a year to

the economy, provides millions of jobs across the country, and ensures a safe and reliable food supply for consumers in the United States and around the world.

2. If allowed to proceed, the proposed acquisition would transform the agricultural industry and harm competition across a broad range of products. Most prominently, the acquisition would eliminate competition to develop and sell genetically modified seeds in cotton, canola, and soybeans—three of the largest crops grown in the United States—and the herbicides that are paired with these seeds to form the foundation of farmers’ weed-control strategies.

3. These agricultural technologies emerged in the 1990s when Monsanto introduced “Roundup Ready” soybeans, which were genetically engineered to resist Monsanto’s herbicide, Roundup. Monsanto’s invention allowed farmers who planted Roundup Ready soybeans to spray Roundup over the top of their crops, thereby killing the weeds without harming the crops. It was a wildly popular invention; by 2005, almost 90% of U.S. soybean acres were planted with Roundup Ready seeds. In response, in 2009, Bayer launched its own “LibertyLink” genetically modified soybeans, which were engineered to withstand Bayer’s Liberty herbicide. Both companies have introduced similar innovations in cotton and canola, generating competition that has resulted in higher crop yields, lower prices, and greater choice for American farmers. Today, Bayer’s weed-control systems are the only competitive alternatives to Monsanto’s Roundup Ready systems in cotton, canola, and soybeans.

4. Bayer and Monsanto also compete head-to-head to develop the next generation of transformative products, including cotton, canola, and soybean seeds with new genetically modified traits, as well as other innovative products that improve yields for farmers. This competition is central to their businesses. Monsanto’s chief technology officer has said that innovation is “the heart and soul of who we are.” Similarly, Bayer’s core strategy is to become

the “most innovative” agricultural company in the world. Both companies invest significant sums of money into research and development and monitor each other’s efforts, spurring each other to work faster and invest more to improve their offerings and develop new products. For instance, Monsanto recently developed a seed treatment product that protects crops from destructive worms called nematodes, directly challenging Bayer’s historic dominance in that space. The proposed acquisition would eliminate this competition to develop new products that farmers will depend on for decades into the future.

5. The merger would also substantially lessen competition through the vertical integration of the two companies. Specifically, by combining Monsanto’s strong position in seeds with Bayer’s dominant position in certain seed treatments, the merger would give the combined company the incentive and ability to harm its seed rivals by raising the price of those seed treatments—a key input for genetically modified seeds. For example, today, Bayer sells the only seed treatment that effectively controls a destructive pest called corn rootworm. Because Bayer does not sell corn seeds itself, it has a strong incentive to sell that seed treatment to all corn seed companies, including Monsanto’s rivals. But the merger would change the calculus for Bayer because it would now own Monsanto, the largest supplier of corn seeds in the United States. Armed with Monsanto’s strong position in corn seeds, the merged company would likely charge its seed rivals more for the seed treatment, knowing that they rely on the product and would be less able to compete effectively without it.

6. Finally, the merger would eliminate head-to-head competition between Bayer and Monsanto to develop and sell seeds for five types of vegetables: tomatoes, carrots, cucumbers, onions, and watermelons. Although vegetable seeds are not genetically modified like cotton,

canola, and soybeans, Bayer and Monsanto compete aggressively with one another to breed higher-quality and higher-yielding varieties.

7. By eliminating competition between Bayer and Monsanto and combining their businesses, the proposed acquisition would result in higher prices, less innovation, fewer choices, and lower-quality products for farmers and consumers throughout the United States and around the world. To prevent those harms, this unlawful acquisition should be enjoined.

## **II. DEFENDANTS AND THE TRANSACTION**

8. Bayer is a life-sciences company based in Leverkusen, Germany. The company employs nearly 100,000 people worldwide and has operations in almost 80 countries. Bayer has three main business lines: pharmaceuticals, which focuses on prescription medicines; consumer health, which focuses on over-the-counter products; and its agricultural business, Bayer Crop Science. Over the past decade, Bayer Crop Science has become one of the largest global agricultural companies. Today, its crop protection business is the second largest in the world, and its seeds and traits business is also among the world's largest. In 2016, Bayer Crop Science had about \$12 billion in annual revenues.

9. Monsanto, based in St. Louis, Missouri, is also a leading producer of agricultural products. Monsanto employs more than 20,000 people in almost 70 countries. As noted, in the 1990s, Monsanto pioneered a revolutionary technology that enables certain crops to resist exposure to glyphosate, the active ingredient in Monsanto's Roundup herbicide. This technology propelled Monsanto's success: today, Monsanto is the leading global producer of seeds and traits and is among the world's largest producers of crop protection products. In 2017, Monsanto had almost \$15 billion in annual revenues.

10. On September 14, 2016, Bayer agreed to acquire Monsanto for approximately \$66 billion.

### III. JURISDICTION AND VENUE

11. The United States brings this action, and the Court has subject-matter jurisdiction, under Section 15 of the Clayton Act, 15 U.S.C. § 25, to prevent and restrain Defendants from violating Section 7 of the Clayton Act, 15 U.S.C. § 18.

12. Defendants are engaged in, and their activities substantially affect, interstate commerce. Bayer and Monsanto sell agricultural products, including seeds and crop protection products, throughout the United States and the world.

13. Defendants have consented to venue and personal jurisdiction in this district. Venue is also proper under Section 12 of the Clayton Act, 15 U.S.C. § 22, and 28 U.S.C. § 1391.

### IV. RELEVANT MARKETS

14. As noted, Bayer and Monsanto compete across a broad range of agricultural products, including genetically modified (GM) seeds and traits for row crops; crop protection products, such as herbicides and seed treatments; and vegetable seeds. The proposed acquisition would substantially lessen competition in the following 17 products:

<b>Bayer–Monsanto: Relevant Products</b>		
<b>GM Seeds and Traits</b>	<b>Crop Protection</b>	<b>Vegetables</b>
Cotton: <ul style="list-style-type: none"> <li>• Herbicide-tolerant traits</li> <li>• Insect-resistant traits</li> <li>• GM cotton seeds</li> </ul> Canola: <ul style="list-style-type: none"> <li>• Herbicide-tolerant traits</li> <li>• GM canola seeds</li> </ul> Soybeans: <ul style="list-style-type: none"> <li>• Herbicide-tolerant traits</li> <li>• GM soybeans</li> </ul> Corn: <ul style="list-style-type: none"> <li>• GM corn seeds</li> </ul>	Foundational herbicides Nematicidal seed treatments: <ul style="list-style-type: none"> <li>• Corn</li> <li>• Soybeans</li> <li>• Cotton</li> </ul>	Carrot seeds Cucumber seeds Onion seeds Tomato seeds Watermelon seeds

15. Each of these products is a relevant product and line of commerce under Section 7 of the Clayton Act, 15 U.S.C. § 18. The industry views these products as separate business lines, and they satisfy the well-accepted hypothetical monopolist test in the U.S. Department of Justice and Federal Trade Commission Horizontal Merger Guidelines, which asks whether a hypothetical monopolist likely would impose at least a small but significant and non-transitory increase in price. Such a price increase for these products would not be defeated by substitution to alternative products.

16. The relevant geographic markets in this case vary by product. For seeds and traits generally, the markets are regional because seeds are tailored to regional growing conditions (such as weather and soil type) and suppliers can charge different prices for seeds and traits to customers in different regions. With the exception of soybeans, however, virtually all of the regions affected by the merger have a similar market structure, so in this case it is appropriate to aggregate them to a national level for convenience. For soybeans, the market structure differs across regions; thus, the relevant geographic market is the southern United States, where Bayer has focused its soybean breeding program and been particularly successful.

17. For the relevant crop protection products (foundational herbicides and nematocidal seed treatments), the geographic markets are national. Bayer and Monsanto sell these products throughout the United States. In addition, these products require U.S. regulatory approval, which is expensive and time-consuming, so competition is limited to products that have obtained the necessary approvals. Similar products sold in other countries but not approved for use in the United States are not reasonable substitutes for American farmers.

18. For these reasons, in each of the relevant geographic markets for seeds and crop protection products, a hypothetical monopolist likely would impose at least a small but significant and non-transitory increase in price.

19. Most of the relevant markets are already highly concentrated, and in each market the merger would significantly increase concentration. The more concentrated a market and the more a transaction increases concentration in that market, the more likely it is that the transaction will reduce competition. Concentration is typically measured by market shares and by the widely-used Herfindahl–Hirschman Index (HHI). If the post-transaction HHI would be more than 2,500 and the change in HHI more than 200, the transaction is presumed to enhance market power and substantially lessen competition. *See, e.g., United States v. Anthem, Inc.*, 855 F.3d 345, 349 (D.C. Cir. 2017). Given the high concentration levels and increases in concentration in the relevant markets in this case, the proposed acquisition presumptively violates Section 7 of the Clayton Act.

**A. Genetically Modified Seeds and Traits**

20. Several markets in this case involve genetically modified seeds and traits. A genetic trait is simply an attribute of a plant, such as being tall, short, or leafy. Most traits derive from a plant’s natural DNA. Over the last 30 years, however, a small set of highly sophisticated biotechnology firms—including Bayer and Monsanto—have successfully inserted DNA from other organisms into the DNA of certain crops, giving the crops a desirable trait associated with that non-native DNA. For example, scientists have developed traits that make crops resistant to certain pests, allowing farmers to reduce their use of chemical insecticides. And scientists have developed herbicide-tolerant traits that make crops resistant to herbicides like Roundup, allowing a farmer to spray the herbicide over an entire field and kill the weeds without harming the crops. A genetically modified seed is simply a seed that contains DNA—and hence the desirable trait—

of a different organism. Farmers have embraced this technology: today, more than 90% of the corn, soybeans, cotton, and canola seeds grown in the United States are genetically modified. These seeds provide farmers with considerable savings in labor and expense, increased yields, and reduced soil erosion by eliminating the need for tilling fields. Thus, a vast majority of farmers do not view conventional seeds as a reasonable substitute.

21. With the rise of genetically modified crops, it has also become harder for smaller companies, which lack the massive resources necessary to devote to research and development, to compete in these high-tech markets. It typically takes hundreds of millions of dollars and more than a decade to bring a genetically modified seed variety or a new pesticide to market. A company must also have access to an extensive library of high-quality seeds that are necessary for research and plant breeding. Today, such resources are increasingly controlled by four vertically integrated companies: Monsanto, Bayer, DowDuPont, and Syngenta, also known as the “Big Four.” Although smaller independent seed companies also sell genetically modified seeds to farmers, most of those companies license traits and seed varieties from Monsanto, limiting their ability to compete.

22. As described below, Bayer and Monsanto are close competitors in three important row crops: cotton, canola, and soybeans.

**(1) Genetically modified cotton**

23. Cotton is a major crop grown across the southern United States, particularly in states like Texas and Georgia. Cotton seeds are widely used in vegetable oil, packaged foods, and animal feed, and cotton fibers are widely used in clothing. In 2017, U.S. farmers planted about 12 million acres of cotton and sales of cotton seeds totaled over \$800 million. For cotton, the proposed acquisition would harm competition in the markets for (1) genetically modified cotton seeds, (2) herbicide-tolerant traits for cotton, and (3) insect-resistant traits for cotton.

24. ***GM cotton seeds.*** Bayer and Monsanto have long been the two leading suppliers of genetically modified cotton seeds throughout the United States. In addition to owning critical traits (discussed below), they own extensive libraries of elite seed varieties, which are essential for developing and commercializing competitive cotton seeds. If the transaction is allowed to proceed, Bayer and Monsanto would have a combined 59% share of genetically modified cotton seeds in the United States. The post-transaction HHI would be approximately 4,100, with an increase of approximately 1,500 resulting from the transaction.

25. ***Herbicide-tolerant traits.*** Given the widespread adoption of genetically modified cotton seeds, herbicide-tolerant traits are now used on approximately 98% of the cotton acres in the United States. In 2017, Bayer and Monsanto accounted for virtually all of those acres, with about 19% of acres containing Bayer's traits and about 80% containing Monsanto's traits. The merger would thus give Bayer a monopoly in these markets: the post-transaction HHI would be approximately 9,600, with an increase of approximately 3,000. Bayer and Monsanto are also competing aggressively to develop the next generation of herbicide-tolerant cotton traits. Farmers need these innovations to combat the growing number of weeds, like pigweed, that have become increasingly resistant to glyphosate in recent years. Without the merger, these new traits would likely compete in the future.

26. ***Insect-resistant traits.*** Bayer and Monsanto also compete for sales of insect-resistant traits that protect cotton from destructive pests such as moth and bollworm larvae. In 2017, insect-resistant traits were used on approximately 88% of the cotton acres in the United States. Bayer and Monsanto accounted for approximately 85% of those acres, with about 10% of acres containing Bayer's traits and about 75% containing Monsanto's traits. The post-transaction HHI would be approximately 7,400, with an increase of approximately 1,400.

**(2) Genetically modified canola**

27. Canola is an important crop used in vegetable oil, packaged foods, biodiesel fuels, and animal feed. In the United States, canola is grown on approximately 1.7 million acres, mainly in North Dakota, but also in several other states. The proposed merger would harm competition in the markets for (1) genetically modified canola seeds and (2) herbicide-tolerant traits for canola.

28. *GM canola seeds.* In 2016, genetically modified canola seeds accounted for \$83 million in sales in the United States, and virtually all canola seeds contain genetically modified traits. Bayer's canola innovations in recent years have allowed it to surpass Monsanto. In 2016, Bayer's share of genetically modified canola seeds in the United States was 60% and Monsanto's share was 14%. The post-transaction HHI would be approximately 5,600, with an increase of approximately 1,700.

29. *Herbicide-tolerant traits.* Bayer and Monsanto are even more dominant in herbicide-tolerant traits for canola, where they have a combined share of 95%. Virtually all canola seeds planted in the United States contain either Bayer's LibertyLink trait or Monsanto's Roundup Ready trait. For these traits, the post-transaction HHI would be approximately 9,200, with an increase of over 4,100.

**(3) Genetically modified soybeans**

30. After corn, soybeans are the largest crop grown in the United States. Soybeans are widely used in vegetable oil, packaged foods, and animal feed. In 2017, U.S. farmers planted almost 90 million acres of soybeans, accounting for \$4.6 billion in seed purchases, and 94% of those acres contained herbicide-tolerant traits. The proposed acquisition would harm competition in the markets for (1) genetically modified soybeans and (2) herbicide-tolerant traits for soybeans.

31. ***GM soybeans.*** Since launching genetically modified soybeans in the 1990s, Monsanto has been the market leader. For years, Monsanto's only competitors were companies that relied on Monsanto for licenses to the Roundup Ready traits. Since 2009, however, Bayer has emerged as a serious threat: it has invested over \$250 million to develop an independent source of soybean varieties and in 2014 launched its own soybean business, CredeNZ, which sells varieties that perform well in the southern United States. In 2017, Bayer had a 6% share of soybeans in that region and Monsanto had a 39% share. The post-transaction HHI in the southern United States would be approximately 2,800, with an increase of approximately 500.

32. ***Herbicide-tolerant traits.*** Bayer and Monsanto also have the leading herbicide-tolerant traits for soybeans. Monsanto's Roundup Ready trait has historically dominated sales, but in recent years Bayer's LibertyLink trait has made inroads. In 2017, Monsanto had a 67% share of U.S. sales and Bayer's share had risen to 14%. (The remaining market participants use a post-patent version of the original Roundup Ready trait.) For herbicide-tolerant traits, the post-transaction HHI would be approximately 6,900 on a national basis, with an increase of approximately 1,900. Without the merger, competition between the two companies would likely increase: Bayer and Monsanto each have new traits in their research pipelines that would confer tolerance to additional herbicides and compete in the future.

## **B. Foundational Herbicides**

33. In addition to competing to sell herbicide-tolerant seeds, Bayer and Monsanto also compete to sell the foundational herbicides—glyphosate and glufosinate—that are paired with these seeds.

34. Foundational herbicides are herbicides used on row crops that have two defining characteristics. First, they are “non-selective,” meaning that they kill all types of weeds, thus providing farmers with the broadest possible protection for their crops. In contrast, other types of

herbicides are “selective,” meaning that they kill only certain types of weeds. Selective herbicides are often used to supplement non-selective herbicides but are not generally used in lieu of them. Second, foundational herbicides can be paired with seeds that are engineered to tolerate the herbicide. Other non-selective herbicides are not a substitute for farmers because no seeds are engineered to withstand them, so spraying those herbicides over a crop would damage it. For these reasons, farmers have no good substitutes for foundational herbicides. Today, glyphosate and glufosinate are the only two foundational herbicides, but, as discussed further below, new foundational herbicides are in development.

35. Bayer and Monsanto are the world’s leading producers of foundational herbicides. As noted above, glyphosate was developed by Monsanto and is the active ingredient in Roundup; glufosinate was developed by Bayer and is the active ingredient in Liberty. Since the launch of genetically modified crops in the 1990s, Monsanto’s Roundup has dominated the market. As some weeds have developed resistance to glyphosate, however, farmers are increasingly turning to Liberty. And while glufosinate and glyphosate are now off patent, competition from generic suppliers has not prevented Bayer and Monsanto from maintaining branded price premiums. In 2017, Bayer had a 7% share of the market for foundational herbicides in the United States, and Monsanto had a 53% share. Thus, this market is already highly concentrated and the merger would result in a post-transaction HHI of approximately 3,700, with an increase of over 650.

36. Going forward, competition between Bayer and Monsanto to develop next-generation weed-management systems is likely to increase. According to a Bayer strategy document, the company’s number one “Must Win Battle” is to “[e]stablish LibertyLink as a foundation trait for broadacre [row] crops and position Liberty herbicide as the superior weed management tool.” Bayer is also developing new non-selective herbicides for soybeans and corn

called N,O-Chelators (NOCs), along with traits conferring tolerance to NOCs. If successful, NOCs would form the basis of a new foundational herbicide system that would rival Monsanto's Roundup Ready-based systems.

37. Likewise, Monsanto is actively pursuing innovations in foundational herbicides. For example, Monsanto is developing an improved formulation of Roundup that is expected for release in 2019. Bayer's and Monsanto's incentives to independently pursue these future products in close competition with each other would disappear post-merger.

### **C. Seed Treatments**

38. In addition to relying on genetically modified seeds and herbicides, farmers also protect their crops using seed treatments, which are coatings applied to seeds before they are planted. Seed treatments are a critical tool for modern farmers, and today at least one seed treatment is applied to the vast majority of genetically modified seeds grown in the United States. Multiple seed treatments can be applied to a seed to protect it from various threats; seed treatments designed for one purpose (such as killing insects) are rarely an effective substitute for seed treatments designed for a different purpose (such as controlling fungal diseases).

39. The merger would likely result in three forms of competitive harm related to seed treatments: (1) the loss of head-to-head competition between Bayer's and Monsanto's nematicidal seed treatments; (2) foreclosure effects resulting from the combination of Monsanto's strong position in corn seeds with Bayer's dominant position in insecticidal seed treatments for corn rootworm; and (3) foreclosure effects resulting from the combination of Monsanto's strong position in soybeans with Bayer's dominant position in fungicidal seed treatment for sudden death syndrome.

**(1) Nematicidal seed treatments for corn, cotton, and soybeans**

40. The merger would eliminate head-to-head competition for nematicidal seed treatments used on corn, cotton, and soybeans. Nematicidal seed treatments protect crops from parasitic roundworms known as nematodes. For corn, cotton, and soybean farmers, there are no cost-effective alternatives to nematicidal seed treatments. And, in part because seed treatments must be registered on a crop-by-crop basis, the treatments for each crop constitute a separate market.

41. All three nematicidal seed treatment markets are highly concentrated. For years, Bayer has had a monopoly in the market for nematicidal seed treatments for corn, with over a 95% share in 2017. Bayer dominates the market for nematicidal seed treatments for soybeans, with a share over 85%. And, in the market for nematicidal seed treatments for cotton, Bayer and Syngenta currently share a duopoly.

42. Although Monsanto does not currently sell in this market, it is poised to launch its first nematicidal seed treatment, NemaStrike. NemaStrike is expected to challenge Bayer's market position in nematicidal seed treatments in all three crops—corn, cotton, and soybeans. Both Bayer and Monsanto project that NemaStrike will capture significant market share from Bayer. By acquiring Monsanto, Bayer would thus eliminate the most significant competitive threat to its dominant position in these markets, to the detriment of farmers who rely on these important products to protect their crops.

**(2) Vertical foreclosure—insecticidal seed treatments for corn rootworm and genetically modified corn seeds**

43. The merger would also likely harm competition in the market for genetically modified corn by combining Monsanto's strong position in genetically modified corn seeds with Bayer's dominant position in insecticidal seed treatments for corn rootworm.

44. Corn is the largest crop grown in the United States, accounting for over \$8 billion in seed sales annually. The vast majority (92%) of U.S. corn seeds are genetically modified. Monsanto is the leading supplier of those seeds, effectively controlling 50% of the market between sales of its own branded seeds and sales through its licensees. Monsanto's only significant rival for corn seed is DowDuPont (with a 34% share); a few smaller companies also have a small share.

45. Although Bayer does not sell corn seeds, it does sell a critical seed treatment called Poncho. When Poncho is applied at a high rate (with a greater amount of the seed treatment coating per seed), it protects corn seeds from corn rootworm—a pest nicknamed “the billion dollar bug” for the amount of loss it costs farmers each year. Poncho is the only significant seed treatment that effectively combats corn rootworm. Thus, most of Monsanto's corn seed rivals depend on Poncho and are expected to become more dependent as the corn rootworm problem grows.

46. By placing Bayer's Poncho and Monsanto's leading GM corn seed under the control of one company, the transaction would give the merged company the incentive and ability to foreclose its corn seed rivals who lack their own seed treatment product and rely on an independent Bayer for their seed treatment supply. Specifically, the merged company would likely hinder its corn seed rivals by forcing them to pay more for Poncho or by denying them access to it entirely. This loss of competition would ultimately hit the pocketbooks of American farmers. By making it harder for Monsanto's corn rivals to compete, farmers would pay higher prices and have fewer effective choices for genetically modified corn seeds throughout the country.

**(3) Vertical foreclosure—fungicidal seed treatments for sudden death syndrome and genetically modified soybeans**

47. Similarly, the merger would harm competition by combining Monsanto's leading position in genetically modified soybeans with Bayer's dominant position in fungicidal seed treatments.

48. As discussed above, Monsanto leads the market for genetically modified soybeans. It is followed by DowDuPont, with Bayer emerging as a threat and investing heavily to gain share. Smaller players, such as Beck's, also serve the market.

49. Bayer also sells ILeVO, the only seed treatment that effectively protects soybeans from a fungal disease called sudden death syndrome (SDS). According to Bayer, SDS costs farmers an average of over 44 million bushels in lost yield per year, and losses from SDS damage are expected to increase, making Bayer's seed treatment a critical tool for farmers in areas where SDS is a particular risk. Bayer sells ILeVO to Monsanto's soybean rivals, including DowDuPont and Beck's. Since the launch of ILeVO in 2015, Bayer's sales of ILeVO have doubled annually and are expected to continue to grow steadily over the next decade.

50. If allowed to proceed, the merger would combine Monsanto's leading genetically modified soybeans with a key input used on those seeds (ILeVO). As a result, the merged company would likely hinder its soybean rivals by forcing them to pay more for ILeVO or by denying them access to it entirely. This loss of competition would likewise make it harder for Monsanto's rivals to compete, and it would result in higher prices and fewer choices for genetically modified soybeans.

**D. Vegetable Seeds**

51. Finally, the proposed acquisition would eliminate vital competition between Bayer and Monsanto for the sale of vegetable seeds. In the past 25 years, global vegetable

production has doubled as breeders have developed new varieties of vegetables with better disease resistance and higher yields. Unlike with row crops, however, these improvements are due entirely to traditional plant breeding rather than genetic modification. Bayer and Monsanto are leaders in these efforts. Today, Monsanto is the largest vegetable seed company in the world and Bayer is fourth largest. If the merger is allowed to proceed, the combined company would dominate the industry, with global sales rivaling the combined sales of the second- and third-largest vegetable producers (Syngenta and Limagrain, respectively). In the United States, the merger would harm competition for five distinct vegetable species: carrots, cucumbers, onions, tomatoes, and watermelons.

**(1) Carrot seeds**

52. In the United States, Bayer and Monsanto are the dominant producers of carrot seeds with a combined market share of approximately 94%. The post-transaction HHI would be approximately 8,800, with an increase of approximately 4,000 resulting from the transaction.

53. While competition would be harmed in the market for carrot seeds as a whole, the effects of the acquisition would be particularly acute in the “cut-and-peel” carrot segment, which consists of certain carrot varieties that are processed and sold as ready-to-eat baby carrots. Bayer and Monsanto are particularly close competitors in this segment, which constitutes approximately 80% of all carrots consumed in the United States.

**(2) Cucumber seeds**

54. The market for cucumber seeds is also highly concentrated, with Bayer and Monsanto dominating the market with 34% and 56% market shares, respectively. The post-acquisition HHI would be approximately 7,900, with an increase of approximately 3,700.

55. The effects of the acquisition would be particularly significant in the pickling cucumber seed segment, which makes up a large majority of cucumber acres in the United

States. Bayer and Monsanto are two of only three suppliers of pickling cucumber seeds in the United States, with Monsanto as the dominant competitor, followed by Bayer and a company called Rijk Zwaan, based in the Netherlands. As in other markets, Bayer has competed against Monsanto in this segment through innovation, developing seedless varieties of pickling cucumbers to compete with Monsanto's seeded varieties.

**(3) Onion seeds**

56. Bayer and Monsanto are the two largest onion seed producers in the United States and globally, with substantial sales across a wide variety of onion segments. The U.S. market for onion seeds is already highly concentrated—besides Bayer and Monsanto, the only other producers are Bejo Zaden B.V., based in the Netherlands, and American Takii, Inc., based in California. The merger would give the combined company a share of approximately 71%. The post-transaction HHI would be approximately 5,000, with an increase of approximately 2,500.

**(4) Tomato seeds**

57. Bayer and Monsanto are two of the largest producers of tomato seeds in the United States, with market shares of 21% and 34%, respectively. The market for tomato seeds is moderately concentrated, and the merger would result in a highly concentrated market. The post-transaction HHI would be approximately 3,000, with an increase of approximately 1,400.

**(5) Watermelon seeds**

58. Lastly, the watermelon seed market is already highly concentrated, with Bayer and Syngenta, followed by Monsanto, as the largest suppliers in the United States. Bayer has a 37% market share in watermelon seeds, and Monsanto has a 6% share. As a result, the post-acquisition HHI would be approximately 3,300, with an increase of approximately 400. Monsanto's market share in watermelon seeds understates its competitive significance; its recent

introduction of competitive seedless watermelon varieties, which are in high demand and already offered by Monsanto's competitors, would significantly improve its position going forward.

## V. ANTICOMPETITIVE EFFECTS

59. The proposed acquisition would substantially lessen competition and harm consumers in each of the relevant markets, either by eliminating head-to-head competition between Bayer and Monsanto or, in the case of certain seed treatments, raising the price of a key input. In each of these markets, the merger would likely result in higher prices, lower quality, and reduced choice. The price effects in these markets would likely result in hundreds of millions of dollars per year in harm, raising costs to farmers and consumers throughout the United States.

60. But the harm does not stop there. The merger would also have a significant impact on innovation. Today, four companies dominate the industry's research and development efforts for seeds and traits. Bayer and Monsanto are the industry leaders, with Bayer emerging as a threat to Monsanto's dominance. In 2016, for example, Bayer spent more on seeds-related research and development as a percentage of sales than any of the other Big Four. As leading innovators, Bayer and Monsanto push each other to improve their current products and technologies, monitor each other's research efforts, and compete to develop new blockbuster products.

61. Without the merger, this competition would intensify as both companies pursue what the industry refers to as integrated solutions—combinations of seeds, traits, and crop protection products, supported by digital-farming technologies and other services. Although integrated solutions are still evolving, it is widely believed that only the Big Four companies—each with its own unique strengths—will be able to offer fully integrated solutions to farmers. With this merger, that competition would be lost.

## **VI. ABSENCE OF COUNTERVAILING FACTORS**

62. Entry would not prevent the merger's likely anticompetitive effects. It takes many years and hundreds of millions of dollars to discover new crop protection chemicals and to develop and commercialize new traits. Once a new trait has been discovered, companies cannot successfully incorporate that trait and sell seeds without access to the extensive libraries of elite seed varieties that are already owned by Bayer, Monsanto, and a small number of other companies. As Bayer's and Monsanto's executives have recognized, barriers to entry in the relevant markets are extraordinarily high.

63. In addition to the difficulty of entry, the proposed acquisition is unlikely to generate verifiable, merger-specific efficiencies that would offset the proposed acquisition's likely anticompetitive effects in the relevant markets.

## **VII. VIOLATIONS ALLEGED**

64. Bayer's proposed acquisition of Monsanto is likely to substantially lessen competition in the relevant markets in violation of Section 7 of the Clayton Act, 15 U.S.C. § 18.

65. Unless enjoined, the proposed acquisition would likely have the following anticompetitive effects in the relevant markets:

- (a) eliminate present and future competition between Bayer and Monsanto;
- (b) lessen innovation;
- (c) raise prices for farmers and other purchasers; and
- (d) reduce quality, service, and choice for farmers and other purchasers.

**VIII. REQUEST FOR RELIEF**

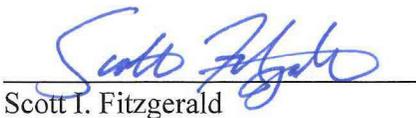
66. The United States requests that this Court do the following:
- (a) adjudge Bayer's proposed acquisition of Monsanto to violate Section 7 of the Clayton Act, 15 U.S.C. § 18;
  - (b) permanently enjoin Bayer and Monsanto from consummating their proposed acquisition or from entering into or carrying out any other agreement, understanding, or plan by which control of the assets or businesses of Bayer and Monsanto would be combined;
  - (c) award the United States its costs of this action; and
  - (d) award the United States other relief that the Court deems just and proper.

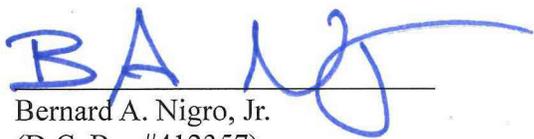
Dated: 5/29/18

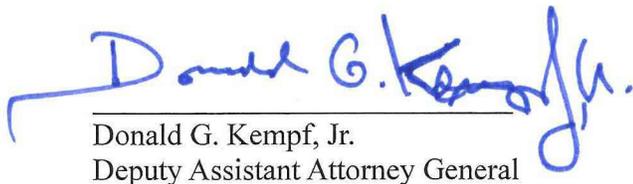
Respectfully submitted,

**FOR PLAINTIFF UNITED STATES OF AMERICA:**

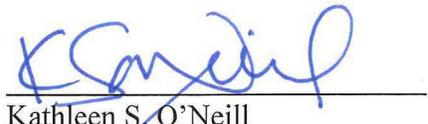
  
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