

# Bayer-Monsanto Merger: Big Data, Big Agriculture, Big Problems



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## Acknowledgements

This report was written by Victoria Bassetti, SumOfUs, Jason Davidson, Friends of the Earth U.S., Leah Douglas, Open Markets Institute, and Tiffany Finck-Haynes, Friends of the Earth U.S.

### **About Friends of the Earth:**

Friends of the Earth United States, founded by David Brower in 1969, is the U.S. voice of the world's largest federation of grassroots environmental groups, with a presence in 75 countries. Friends of the Earth works to defend the environment and champion a more healthy and just world. We have provided crucial leadership in campaigns resulting in landmark environmental laws, precedent-setting legal victories and groundbreaking reforms of domestic and international regulatory, corporate and financial institution policies. Visit [www.foe.org](http://www.foe.org) to learn more.

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Organization for Competitive Markets is a national, non-profit public policy research and advocacy organization. Founded in 1998, OCM is the only national think tank focusing strictly on antitrust and trade policy in agriculture, working toward the common purpose of returning our food and agricultural sector to true supply-demand based competition.

### **About SumOfUs:**

SumOfUs is a global consumer watchdog. SumOfUs mobilizes consumers, investors, and workers to hold corporations accountable for their actions and forge a new, sustainable and just path for our economy.

## Introduction: Bayer-Monsanto merger

We are at a critical moment for our food and agriculture system. If Bayer and Monsanto are allowed to complete their proposed \$66 billion merger, the economics of food, farming and the environment will be radically altered. Competition in agriculture will never be the same.

The new company would be the world's largest vegetable seed company, the world's largest cotton seed company, the world's largest manufacturer and seller of herbicides, the world's largest owner of the intellectual property and patents for herbicide tolerant seed traits, and the world's largest researcher into seeds and seed traits.

While much of the focus on the proposed merger has rightly been on seeds, traits, and chemicals, a little-noticed fourth component of the transaction is critical to understanding its impact on the future of food and farming in the United States: data.

## Big Data and Digital Farming

"Big Data" is transforming agriculture.<sup>1</sup>

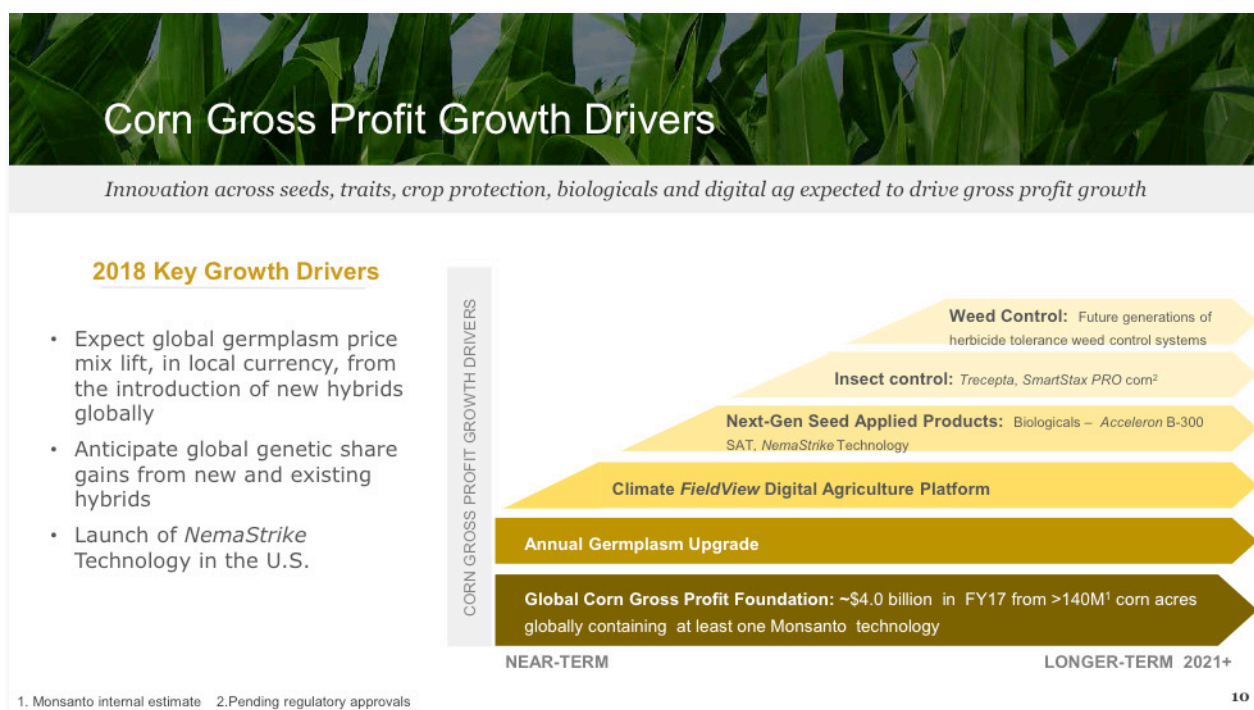
Today, tractors and other farming equipment are often equipped with sensors, mobile connectivity and GPS. Drones equipped with infrared cameras and GPS patrol the air reporting on field conditions. Satellites and phone apps allow farmers to monitor soil and climate conditions down to the square-meter. Data can dictate the how many seeds farmers plant in each micro-area of their land.

The industry is growing quickly, and the market for digital-based agricultural services is expected to reach \$4.55 billion by 2020.<sup>2,3</sup>

If the merger is completed, Bayer-Monsanto will be poised to be a major player in agricultural Big Data, leading a pack that also includes other agrochemical giants like Dow-DuPont and Syngenta.

But, more significantly, it will be primed to combine its data businesses with its seeds, traits, and chemicals to create a new platform. Each component will interweave with and support the other. For Bayer-Monsanto, this platform will be a way to leverage the sale of one product into another, even if that other product is lower quality or more expensive than a similar product produced by a rival. It is potentially a means to engage in price discrimination among farmers. It is also a way to integrate all of its businesses and thereby raise barriers to innovation or disruption from competitors.

Bayer and Monsanto are aggressively creating this new and potentially anti-competitive platform. In fact, Monsanto touts its corn and soybean business lines as quite literally a platform comprised of seed, traits, chemicals, and data. It identifies big data as a major profit driver for that integrated business line. In its most recent quarterly earnings report to investors, it showed the platform:<sup>4</sup>



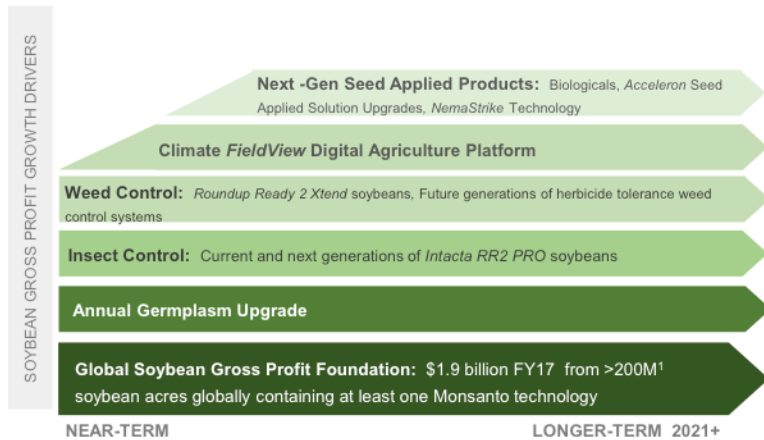


# Soybean Gross Profit Growth Drivers

Innovation across seeds, traits, crop protection, biologicals and digital ag expected to drive gross profit growth

## 2018 Key Growth Drivers

- *Intacta RR2 PRO* soybeans expected to penetrate >60M acres in FY18, from >50M acre base in South America in FY17
- *Roundup Ready 2 Xtend* soybeans expected to reach >40M acres in second year of full system launch, from a base of >20M acres in FY17
- Launch of *NemaStrike* Technology in the U.S.



1. Monsanto internal estimate

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Source: Monsanto Fiscal Year 2017 Results and Outlook<sup>6</sup>

In response to the rise of this and similar new anti-competitive platforms, a coalition of farmers, environmentalists, and antitrust experts recently warned:

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.<sup>7</sup>

When most people think of platforms and competition, they think about Google or Amazon. They do not think about Roundup herbicide and soybean seeds. But the concerns raised by the Google platform are about to come into sharp focus in the agricultural sector.

Critics have warned that there should be greater oversight and regulation of the use of data collected by technology platforms like Google, Amazon, Facebook, and others. The more powerful those platforms become, the more the data they collect can be used to shape what news we consume, what products we are offered, and what prices we see.

As Monsanto and other agrochemical giants become powerful platforms and data collectors, the more farmers will be exposed to those same risks — and, as consolidation leaves them with fewer choices, their ability to farm successfully will be threatened.



## Bayer and Monsanto's Digital Farming Investments: "First Mover Advantage"

While agribusiness mega-mergers over the last decade have attracted media coverage and attention, a string of smaller acquisition by Bayer and Monsanto have set the stage for the two companies to expand and consolidate their power through big data.

In 2012, Monsanto spent \$210 million to buy Precision Planting, one of only two high-speed, precision planting equipment manufacturers in the U.S.<sup>8</sup> Precision Planting's equipment includes sensors and data transmission capabilities.

In 2013, Monsanto spent \$1 billion to buy the Climate Corporation. Climate Corporation is the world's leading global, digital agriculture platform with paid-for use on 35 million acres in the United States.<sup>9</sup> According to some reports, it is now used on as much as one-third of all U.S. farmland.<sup>10</sup> According to Monsanto's most recent investor presentation, Climate Corporation has "First Mover Advantage."<sup>11</sup>

- In 2014, Monsanto/Climate Corporation bought a soil analysis division of Solum.<sup>12</sup>
- In 2014, Monsanto/Climate Corporation bought 640 Labs, a mobile technologies and cloud computing firm that specializes in the use of "GPS, wireless and mobile technologies to give farmers detailed data on their crops and equipment."<sup>13,14</sup>
- In 2016, Monsanto/Climate Corporation bought VitalFields, a European farm management software company.<sup>15</sup>
- In 2017, Monsanto/Climate Corporation bought Hydrobio, an irrigation-focused data analytics firm.<sup>16</sup>

Meanwhile, Monsanto's San Francisco-based venture capital fund, Monsanto Growth Ventures, has made "big bets in order to get ahead of competitors. It is not waiting on the sidelines to see what happens," according to Boston Consulting Group.<sup>17</sup> Its investments include in AgSolver, a software and analytic company for land management, and in Blue River Technology, a technology developer for precision weeding and the application of herbicides.<sup>18</sup>

Bayer, on the other hand, first entered this market with partnerships, rather than acquisitions.

In 2016, Bayer announced a partnership with Planetary Resources, an aerospace company that specializes in satellite imagery.<sup>19</sup> This partnership provides the basis for Bayer's own platform, which will center on "prescriptions" for pesticide applications — individualized instructions for which products to use, including where to apply and how much to use — based on the satellite data and other monitoring techniques.<sup>20</sup>

"The next step is to combine current and historical weather data with satellite-based biomass and chlorophyll measurements as well as yield data. When added to special breed characteristics, the result can be an optimally customized crop management plan," according Clemens Delatree, in a blog post for Bayer CropScience.<sup>21</sup>

As a result, acquiring Monsanto's Climate Corporation was a major factor driving Bayer's bid for the company. When the two companies announced their merger last year, they heralded the deal's "Significant Strategic Benefits" including "Creating a leading platform in Digital Farming," in pursuit of "Integrated Solutions."<sup>22</sup> Bayer company executives have said that Monsanto's ownership of The Climate Corporation is a significant reason for its merger bid.<sup>23</sup>

This combined company vision for digital farming is so important to Bayer that the company simply rejected EU regulator's concerns about the big data-competition issues raised by the merger. Bayer "said it was unable to propose the sale of any digital farming assets to allay EU concerns."<sup>24</sup>





## What are the potential impacts of the Bayer-Monsanto Data-Seed-Trait-Chemicals Platform?

Monsanto has perfected the practice of creating platforms that lock farmers into using specific products. As Lina Khan, Director of Legal Policy at the Open Markets Institute, wrote in 2013, “Monsanto...has proven highly adept at leveraging its wide suite of products to support one another. How Monsanto used its dominance in one business (genetic traits) to benefit others (seeds, fertilizer) was the focus of a three-year antitrust investigation by the Justice Department.”<sup>25</sup> Now, “some farmers and smaller manufacturers” are concerned that the use of data analytics will give Monsanto and Bayer even more power to promote their products.<sup>26</sup>

Unlike agriculture equipment manufacturers who collect and aggregate *raw* farming data, manufacturers of crop-protection products and seeds like Bayer-Monsanto “are the leaders in analyzing data and recommending actions,” according to the Boston Consulting Group’s report *Lessons from the Frontlines of the Agtech Revolution*.<sup>27</sup>

The Big Data model pursued by Monsanto is not merely descriptive. It is prescriptive. So the control of agricultural Big Data creates a unique opportunity to exclude competitors and/or to bias the market.

Farmers fear the implications. Blake Hurst of the Missouri Farm Bureau posed the hypothetical of “a smart phone ad arriving within seconds of a farmer encountering weed or insect damage while he’s harvesting his crop.”<sup>28</sup> The Bayer-Monsanto mega-corporation would manufacture nearly all major seed and chemical inputs and it is likely that these “ads” may exclusively direct farmers to purchase products made by the company.

The platform also threatens to cut into traditional sales channels. Currently, farmers’ main points of purchase for seed and chemical products are retail agronomists that distribute products from multiple companies. Matt Bell, a principal at agtech venture capital firm Cultivian Sandbox and a former agronomist echoes these concerns, “I think, and it’s just my opinion, that companies like Monsanto and DuPont...could use it to communicate more directly with growers and to capture more margin from within the overall supply chain.”<sup>29</sup>

Additionally, research indicates that farmers are already wary of on-farm data collection. A survey conducted by the American Farm Bureau Federation in 2016 found that 77 percent of farmers had concerns about who could access their farm data, and 60 percent didn’t know whether their farm data was being used by farm input companies to market products to them.<sup>30</sup>

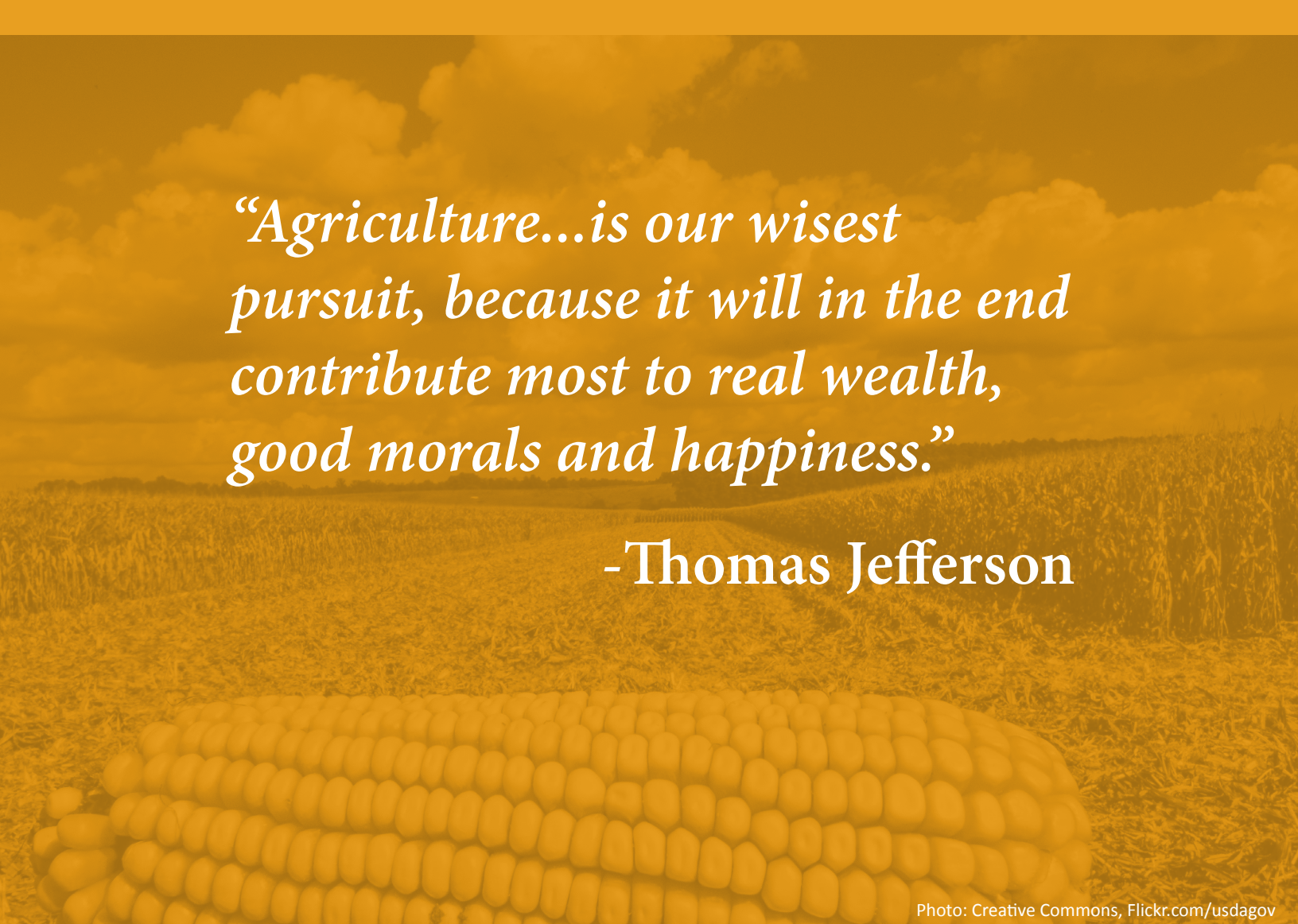
Bayer and Monsanto’s ownership of large amounts of American farm data may have other harmful impacts. Monsanto currently changes the prices of its products between different regions of the United States based on certain conditions. The granular data that Bayer and Monsanto collect could lead to differences in prices even amongst neighbors.<sup>31</sup> This system may be complicated further when each farm receives a different pricing scheme (rather than simply buying farm inputs from a distributor).

Additionally, digital farming changes the ways in which farmers approach the management of large-scale farms. These technologies “will allow managers to cover more acres more accurately and will likely lead to increasing size and consolidation of farms.”<sup>32</sup>

In addition to driving further concentration in the farming sector, the Big Data agricultural model envisioned by Bayer-Monsanto will likely have a dramatic impact on sustainability practices. Big Data supports and pushes industrialized farming.

Most agroecological small farmers have little use for precision farming or smart farming in their current incarnations, as these technologies are mostly tailored to monoculture industrial farms. For example, many of the micro-data feeds Climate Corp. relies on for its predictive data analytics are from sensors installed on heavy tractors. This machinery is not appropriate for smaller intercropped fields, which require more manual labor and less mechanized processes. Big data could be potentially very useful for non-industrial farming practices, but at present big data and data analytic tools are designed by big agribusinesses for industrial agriculture.<sup>33</sup>





*“Agriculture...is our wisest  
pursuit, because it will in the end  
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good morals and happiness.”*

**-Thomas Jefferson**

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## **Conclusion**

It is essential that we consider the many unknown and unintended consequences of a merged Bayer-Monsanto, including the mega-corporation’s unprecedented ability to accumulate, control, and monetize large quantities of farming data. Big data provides large agrochemical companies the information they need to become even more powerful and profitable. In the end, we must question if this shift of data ownership really benefits farmers, or if it will simply allow companies to act as gatekeepers to important information that is ultimately used to improve their profit margins and to exclude competitors.

Without careful examination by regulators, the merger may give Bayer-Monsanto the ability effectively to micromanage vast swathes of farmland and limit farmer choice and competition— all at the price the company sets, free from competition.

Thomas Jefferson once noted that “Agriculture ... is our wisest pursuit, because it will in the end contribute most to real wealth, good morals and happiness.”<sup>34</sup> The Bayer-Monsanto merger is neither a wise pursuit nor really about agriculture. It is about consolidation, profit, and control. It is antithetical to our antitrust laws and to the virtues espoused in our nation.





## Endnotes

- 1 “Big Data” refers to a large amount of highly variable data, both structured and unstructured, that individuals can collect at very high speeds. (*Statistical Analysis System. “What is Big Data?” SAS Institute Inc. 2017. [https://www.sas.com/en\\_us/insights/big-data/what-is-big-data.html#](https://www.sas.com/en_us/insights/big-data/what-is-big-data.html#)*)
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