

Comments of DuPont/Pioneer Hi-Bred International Regarding Agriculture and Antitrust Enforcement Issues in Our 21st Century Economy

EXECUTIVE SUMMARY

I. Agriculture and Economics

Since the advent of the Agricultural Revolution, the ability of farmers to feed civilization has been based on two core principles – diversity and selection. Diversity offers plant species multiple advantages, allowing them to thrive as external conditions change. Diversity also allows growers to be successful in different geographic locations and environments by using seeds with differentiated characteristics.

Selection comes in the form of breeding – a means of speeding the evolution of plants to the advantage of agriculture. The domesticated plants that the world has come to rely on, from hybrid corn to familiar vegetables like carrots, are the product of hundreds of years of breeding, and today seed companies use a sophisticated toolkit, combining advances in genetics to continuously breed better germplasm¹ for diverse conditions; technological advances in biotechnology to incorporate new plant traits; and advanced processes to build the robustness of crops. Simply put, the food we eat today is a human invention – no doubt the most successful invention in human history.²

These two fundamental principles of agricultural science are also the fundamental principles of agricultural economics: diversity equals competition. The ability of multiple companies to offer differentiated products and services in an open marketplace promotes agricultural productivity, and economic efficiency, as companies strive to compete with each other in pricing, quality and, above all, innovation. Competition spurs companies to do their best – to invest in research and development, to listen carefully to their customers, and to create new forms of value.

And selection equals choice in the marketplace, allowing seed companies, farmers, and consumers to select the product characteristics that work best to achieve that customer's goals. For example, when a farmer determines the kind of seed that would work best for specific kinds of soil, in a particular climate, for an individually designed planting schedule, the ability to choose is essential. Some farmers may select organic

¹ Germplasm is the base genetic material that determines a plant's agronomic characteristics into which traits are inserted.

² Thomas Standage, *An Edible History of Humanity*, Walker & Company (May 12, 2009).

methods, while others may choose to rely on biotechnology solutions, but the ability of any farmer to make that choice is the overriding factor in his or her success.

We are now in the midst of a second Agricultural Revolution, a revolution of necessity. Agricultural production has worked hard to keep pace with population and economic progress in the developing world. The world's population is expected to reach nine billion by 2050, and agricultural output must double, and food production must increase by 70 percent by mid-century, to meet the challenge of feeding this growing population. Increased, sustainable productivity will need to occur as available arable land and resources shift, remain unchanged, or in some areas, decrease. The production of food must accompany environmental and economic progress, as sustainable development integrates social, economic, and environmental needs to develop better solutions to today's problems (including climate change), while also providing good stewardship of the resources needed for the future.

The speed of this ongoing Agricultural Revolution has been accelerated by the introduction of biotechnology traits into high-quality germplasm of America's three main cash crops: corn, soybeans, and cotton. The introduction of these herbicide-tolerant and insect-resistant traits has fundamentally altered the economics of farming.³ The value of these traits to farmers is a direct function of the substantial tillage and pesticide costs the traits can save them. Vigorous competition among trait developers would result in more of the value from these technologies flowing to the benefit of farmers and, ultimately, consumers. Without vigorous competition, however, most of this value will continue to be extracted by the dominant provider of these technologies.

In commencing these joint workshops examining the state of American agriculture, Secretary Vilsack and Attorney General Holder emphasized the importance of "competition issues affecting the agriculture industry in the 21st Century and the appropriate role for antitrust and regulatory enforcement in that industry."⁴ In doing so, they rightly reflected the belief that competition and choice are as fundamental to agricultural economics as diversity and selection are to the science of farming: necessary elements of any solution that will answer the global agricultural challenges of the 21st Century.

³ Input traits are substitutes or complements to traditional farming methods and help farmers by lowering the cost of production, improving crop yields and reducing the chemicals required to control insects, diseases and weeds.

⁴ Press Release, Dept. of Justice, Justice Department and USDA to Hold Public Workshops to Explore Competition Issues in the Agriculture Industry (Aug. 5, 2009), *available at* <http://www.justice.gov/opa/pr/2009/August/09-ag-771.html>.

II. DuPont/Pioneer: Agricultural Innovation at Work for Farmers

DuPont and its business, Pioneer Hi-Bred International (“Pioneer”), bring to the agricultural marketplace unique expertise in farming and innovation. DuPont is a company that for over 200 years has been synonymous with American ingenuity. In 2009, DuPont invested \$700 million in research and development designed to increase the world’s food supply, fully half of its total research and development budget.⁵ DuPont is focused on providing abundant, safe, and nutritious food for the growing global population.

Pioneer, a DuPont business, was founded by Henry Wallace in the 1920s; brought hybrid seed to farmers in the 1930s and 1940s; and, right now, is embarking on an ambitious agenda to help fulfill the world’s food requirements. This agenda includes continually improving a broad germplasm base; developing new and unique input traits, like its Optimum[®]GAT[®] technology, that boost yield and productivity, and output traits, such as its Plenish[™] branded improved oil soybeans that can be used to produce healthier foods.⁶

Pioneer is also improving the productivity of farmers around the world by delivering better yields, improved resistance to pests, and improved performance in diverse environmental conditions.⁷ For example, in Africa and Asia, Pioneer works with local farmers to help provide them with the tools to lift themselves out of poverty. In Indonesia, Pioneer partners with villages to produce seed for local farmers; in Ethiopia, local farmers have, with access to Pioneer seed, been able to grow surplus grain for market. These efforts exemplify Pioneer’s vision for the next “Green Revolution” – one that requires quality inputs and aggressive farmer education, coupled with a regulatory environment that enables farmers to access innovative agricultural technologies. Here in the U.S., growers have seen Pioneer develop the highest-performing proprietary corn and soybean germplasm, as well as foster innovation through its work with other trait developers, including Dow AgroSciences LLC and Monsanto Company (“Monsanto”),

⁵ DuPont, Delivering Solutions. Delivering Growth, DuPont Investor Meeting Presentation (Nov. 3, 2009), available at <http://phx.corporate-ir.net/External.File?item=UGFyZW50SUQ9MjQzMzI2N3x0aGlsZIEPTM1NzM4NnxUeXBIPtI=&t=1>.

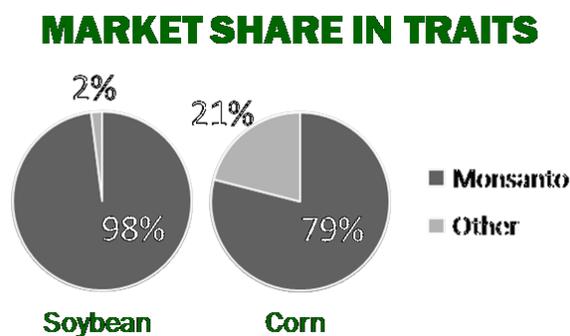
⁶ Output traits change the characteristics of the grain for a particular use and improve the quality of food and fibers.

⁷ Press Release, DuPont, DuPont Business Pioneer Hi-Bred Corn Yield Data Supports Continued Market Share Gains in North America (Dec. 7, 2009), available at <http://onlinepressroom.net/DuPont/NewsReleases/>.

to introduce popular biotech input traits, such as Roundup Ready® soybeans, YieldGard® Corn Borer protection, and Herculex® insect protection traits in corn.

DuPont/Pioneer compete against several companies in U.S. seed markets; one of those competitors, Monsanto, will be the subject of many of our comments. These comments are designed to focus on the implications of the inescapable fact that Monsanto has an overwhelming monopoly in the soybean and corn trait markets, with approximately 98 percent and 79 percent share, respectively,⁸ as well as some 60 percent of the corn and soy germplasm licensed in the U.S. The monopoly power reflected in these shares, combined with the anticompetitive practices designed to protect and extend that power described below, require vigorous and timely antitrust enforcement action to ensure the continued advances in productivity and efficiency that can only be achieved in open, competitive markets.

III. Challenges to Competition and Choice



These hearings are an appropriate forum for the Departments of Justice and Agriculture to learn how anticompetitive actions in agricultural biotechnology (“ag biotech”) impact farmers and consumers.

Accordingly, these hearings will provide both departments with an important opportunity to understand one of the critical distinctions of 21st Century innovation: the

line between legitimate protection of intellectual property rights, on the one hand, and improper protection of dominant market positions through anticompetitive conduct, on the other.⁹ As we will demonstrate in these comments, the ag biotech trait market is firmly in the grip of a single supplier, acting as a bottleneck to competition and choice. The adverse impact of that bottleneck is not limited to today’s prices, choices, or competitive opportunities; it also threatens the global goals for agriculture in the 21st

⁸ Monsanto, Supplemental Toolkit for Investors (June 2009), available at http://www.monsanto.com/pdf/investors/supplemental_toolkit.pdf.

⁹ DuPont and Pioneer believe that the Monsanto patents at issue for Roundup Ready®, a glyphosate-tolerant trait dominant in soybeans and corn are illegitimate *ab initio*. See Defendants’ Answer and Counterclaim, *Monsanto Co. vs. E.I. DuPont de Nemours & Co.*, No. 4:09-cv-00686 (E.D. Mo. June 16, 2009). This submission, however, focuses on the improper abuse of competition that has occurred even if one assumes that the patents are legitimate.

Century – doubling the world’s food supply by 2050,¹⁰ while promoting health and protecting the environment. Thus, timely governmental enforcement action is imperative to restore competition and choice to ag biotech so that farmers and consumers have access to the best available products at reasonable prices.

We believe that any innovator is entitled to realize the rewards of its legitimately obtained intellectual property. However, Monsanto has engaged in numerous practices that improperly seek to expand the scope of intellectual property rights at the expense of competition, innovation, and choice. The law is clear that intellectual property rights, any more than any other property right, cannot be used to protect or extend monopoly power through exclusionary conduct. For example, Monsanto’s license agreements prevent seed companies from combining different characteristics in a single seed (often referred to as “stacking”), including both Monsanto and non-Monsanto technology. These restrictions deny farmers the choice of the best seeds to suit their needs and force Monsanto customers to rely solely on Monsanto technology. Soybeans are a good example – Monsanto takes the position that its monopoly Roundup Ready® biotech trait cannot be stacked in a seed that also contains Pioneer’s cutting-edge Optimum®GAT® trait, even though the performance of a seed containing both traits is demonstrably better than that of a soybean seed containing only Roundup Ready®.¹¹ The Department of Justice (“DOJ”) recognized the adverse competitive impact of Monsanto’s stacking restrictions when, in 2007, it required Monsanto to eliminate them in its cotton trait licenses as a condition of its approval of Monsanto’s acquisition of Delta and Pine Land Company.¹²

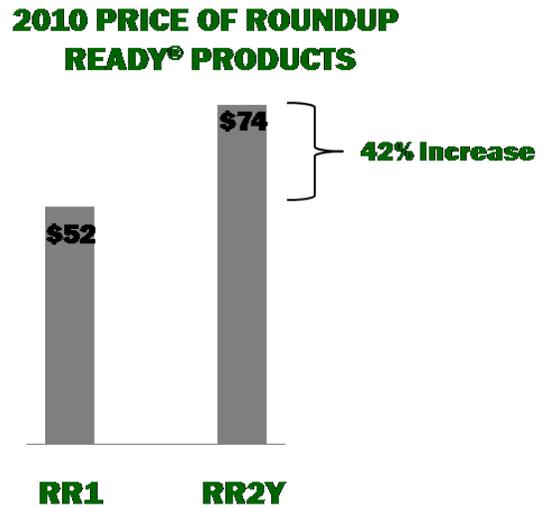
Since 2008, Monsanto also has been engaged in a campaign to force independent seed companies (“Independents”) and farmers to switch prematurely from its first generation trait Roundup Ready®, present in over 90 percent of the soybean seed sold in the U.S., to Roundup Ready 2 Yield®, a new but unproven alternative that offers little, if any, documented additional value to customers. The effect of this campaign would be to eliminate any prospect for the emergence of generic competition in glyphosate tolerance and to extend Monsanto’s monopoly for the foreseeable future.

¹⁰ Press Release, DuPont, DuPont CEO Opens World Food Prize Bourlag Symposium (Oct. 16, 2009), available at http://www2.dupont.com/Media_Center/en_US/daily_news/october/article20091016.html.

¹¹ As we explain in greater detail below, Pioneer soybeans with the Optimum®GAT® trait, combined with Pioneer’s elite Y-series germplasm and the Roundup Ready® gene, actually produce a six percent, or 3+ bushel/acre yield advantage on average, against Pioneer’s current products with the Roundup Ready® gene alone.

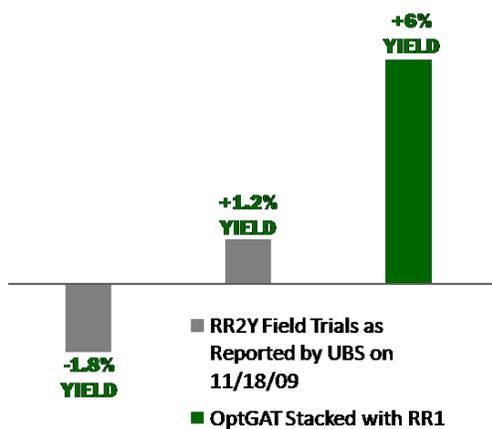
¹² Final Judgment, *United States v. Monsanto Co.*, No. 07-cv-992, at § VI (D.D.C. Nov. 6, 2008).

Although Monsanto recently asserted that it has reformed these practices, its promises – even if carried out – would not remedy the harm to competition already inflicted by these tactics. Many seed companies have switched, or are in the process of switching, to Roundup Ready 2 Yield® based on Monsanto’s coercive tactics. Despite its claims to the contrary, Monsanto’s promises will not assure generic competition with Roundup Ready 2 Yield® after 2014. To our knowledge, Monsanto has not offered these seed companies, which switched to Roundup Ready 2 Yield® before Monsanto’s supposed change in position, the opportunity to revert to Roundup Ready® licenses. In addition,



Monsanto’s promises do not address other forms of Monsanto’s exclusionary conduct, such as restrictions imposed on seed companies’ ability to combine diverse ingredients into a single seed and Monsanto’s control of the regulatory data packages that are necessary for import approvals for Roundup Ready® in all major export markets. Nor

YIELD ADVANTAGE IN 2009



do any of Monsanto’s promises represent an enforceable commitment. As a result, there is an immediate need for a DOJ antitrust enforcement remedy, as well as broader regulatory and legislative solutions going forward.

The public policy questions raised by Monsanto’s course of conduct are both obvious and critically important. As in the field of pharmaceuticals, the public has an overriding interest in the promotion of generic alternatives. Blocking generic competition keeps prices artificially high, curbs choices in the marketplace, and blocks other

innovators from employing technologies that should have entered the public domain.¹³ While Congress has established specific, albeit imperfect, mechanisms to promote generic entry and assist competition in other fields,¹⁴ no such policy is in place to

¹³ Federal Trade Commission, *Authorized Generics: An Interim Report* (June 2009), available at <http://www.ftc.gov/os/2009/06/P062105authorizedgenericsreport.pdf>.

¹⁴ *E.g.*, Drug Price Competition and Patent Term Restoration Act of 1984 (the “Hatch-Waxman Act”), Pub. L. No. 98-417, 98 Stat. 1585 (1984) (codified as amended 21 U.S.C. §355 (2006)); Federal Insecticide, Fungicide and Rodenticide Act (“FIFRA”), 7 U.S.C. §§ 136 – 136y.

protect agricultural innovation, even as the first biotech seed traits face the expiration of patent protections.

The combined impact of these practices is clear: to establish one dominant company as the gatekeeper, and indeed toll collector, for agricultural innovation in the 21st Century, with the market power to determine the pace and forms of innovation that can come to market. Consumers pay more when a single company controls access to innovation. A recent study by the American Antitrust Institute demonstrated that price increases in this decade for Monsanto's traits have exceeded the additional benefits they convey.¹⁵ Recently, Monsanto announced that it would impose a 42 percent increase in the price of Roundup Ready 2 Yield[®] compared to Roundup Ready[®], even though independent studies from the Universities of Illinois and Iowa, among others, have shown the top five Roundup Ready 2 Yield[®] varieties yielded little more (1.2 percent), and in some instances less (-1.8 percent), than Roundup Ready[®] varieties.¹⁶ By contrast, when Optimum[®]GAT[®] soybeans were combined with Pioneer's elite Y-series germplasm, and the Roundup Ready[®] gene, the yield advantage was six percent on average. Consequently, the harm to farmers and Independents, as we show below, is real and long lasting.

¹⁵ Diana L. Moss, *Transgenic Seed Platforms: Competition Between a Rock and a Hard Place?*, Am. Antitrust Institute, at 10 (Oct. 23, 2009), available at http://www.antitrustinstitute.org/archives/files/AAI_Platforms%20and%20Transgenic%20Seed_102320091053.pdf.

¹⁶ UBS Investor Report (Nov. 18, 2009).

COMMENTS

I. History and Structure of the Seed Industry

A. Structure of the Seed Industry

The production of modern seed begins with a base of “elite germplasm,” plant genetic material that has been improved through decades of traditional breeding to produce the highest yields, the greatest resistance to pests, durability in particular conditions, and consistency of performance year after year. Trait discovery and development is a more recent and different process. Researchers work to identify genes that provide the desired functionality, such as herbicide tolerance or insect resistance. Genes can be found in plants and species other than corn and soy, and through modern genetic technology, transferred into the corn or soy germplasm. Once a gene of interest has been identified, it must be transformed into a “biotech trait,” and then through an extended, multi-year process of breeding, incorporated into elite germplasm to create a marketable seed product. Traits are not commercially valuable unless they are combined with the highest-performing germplasm, suited to the individual needs of the farmers who will ultimately plant the seeds and harvest the grain.

Historically, most germplasm developers were independent of trait developers. Over time, however, trait developers have gained access to germplasm by acquiring seed companies with breeding programs. Access to germplasm is important for trait developers and seed companies, because it speeds the development of inbreds and foundation seed lines with the most sought-after characteristics.

Many trait developers also have their own finished seed brands. Further, there are over 200 Independents that sell corn and/or soybean seed that do not have their own trait development program, and many of which do not have their own breeding programs for developing germplasm.¹⁷ These Independents in-license traits and germplasm from larger companies and breed them to produce finished commercial seed.

Once the finished seed is produced, the product is marketed to growers. In some regions of the country, such as the South, finished seed is generally distributed through retail outlets that also sell agricultural chemicals and a wide variety of other agricultural goods and services. In other regions of the country, small local Independents may sell finished seed directly to farmers, while regional or national seed companies may sell finished seed through independent farmer-dealer networks, as well as through retail

¹⁷ As a result of Monsanto acquisitions, the number of Independents has decreased significantly in recent years. For a list of major Monsanto acquisitions, see Appendix.

outlets. Other agricultural products and services – including seed “treatments,” crop advisory services, grain purchasing, and credit – are often provided by many of the same companies involved in the production and distribution of seed.

B. Role of Independents

The chain of distribution for crop seed plays an important role in competition. Farmers obtain the traits they desire in their seeds from seed companies. Trait developers own some seed companies, while other seed companies are independently owned. Nationally, Independents account for approximately 32 percent of the soybean seed sales and 25 percent of the corn seed. Independents are significant in the route to market for trait developers for several reasons.

First, Independents have special, and usually personal, relationships with the farmers they serve. Many farmers consult with Independents in deciding which traited seeds to plant. Because of the many variables involved in attempting to ensure a successful planting and harvest, Independents frequently elect to concentrate on a limited geographical area. They are often the leading seed suppliers in their area of operation. Farmers, therefore, typically rely on their Independents for products with desired traits, rather than buying their seed from the larger, national companies that also develop traits and germplasm.

Second, the rate of adoption of new traits and seeds can occur slowly. Farmers tend to adopt new seed varieties gradually, and ordinarily they will only switch products after seeing proof that seeds will grow well in local conditions. Even if a trait developer could replicate the Independents’ customer relationships, it faces the difficult prospect of convincing customers to quickly change to new traits and seed varieties based on different germplasm.

Third, many farmers perceive that they will receive the most benefit by remaining with the same seed supplier and brand from year to year.

C. Pioneer’s Role in the U.S. Seed Industry

i. HISTORY OF PIONEER

Pioneer, with research facilities in 30 countries worldwide, develops, produces, and markets hybrid corn, sorghum, sunflower, soybean, alfalfa, wheat, canola, and vegetable seeds. The company was instrumental in one of the most important genetic accomplishments of American agriculture, the development of hybrid corn.

Pioneer was established in 1926 in Johnston, Iowa as the Hi-Bred Corn Company under the leadership of Henry Wallace. In the 1930s, as a result of drought, erosion, and

pestilence, which caused harsh growing conditions, demand for hybrid seeds increased, and Pioneer flourished. Founder Henry Wallace left Pioneer in 1933 to follow his father as Secretary of Agriculture, and later became Vice President under Franklin D. Roosevelt.

By the end of the 1940s, nearly all American farmers had made the transition to hybrid corn seed, and Pioneer expanded its research facilities to Florida and South America in the 1950s, which allowed Pioneer breeders to grow multiple crops in a single calendar year, greatly accelerating the pace of hybrid development.

In the late 1980s and early 1990s, Pioneer expanded into biotechnological research and was instrumental in collaborating with Monsanto, Dow, and others to develop, introduce, and popularize seed products developed with the application of biotechnology. Those traits, Roundup Ready® in soybeans, YieldGard® corn borer protection, and Herculex® insect protection in corn, are now standards for input traits in corn and soybeans.

Throughout its history, Pioneer has followed the principles embodied in “The Long Look,” a document that guides its business to this day.¹⁸

ii. DUPONT’S ACQUISITION OF PIONEER

In 1997, DuPont formed a research alliance with Pioneer, pursuant to which DuPont acquired a 20 percent share in Pioneer. In 1999, DuPont acquired the remaining 80 percent of Pioneer. DuPont was active in the development, production, and distribution of biological and chemical agricultural products, in particular in the field of crop protection, as well as in molecular biology research for the development of new plant traits to produce biotech seeds. The acquisition provided DuPont, whose scientists had great success at genetically altering the nutritional attributes of crops, with Pioneer’s expertise in the research and development, production, and distribution of seeds. Pioneer possessed the world’s largest proprietary seed bank as well as a global seed sales force, strengthening DuPont’s connection of its biotech labs to farmers.

iii. CURRENT TRAJECTORY AND COMING INNOVATIONS

¹⁸ Pioneer, *The Long Look*, available at <http://www.pioneer.com/web/site/portal/menuitem.03e948d54b97c318bc0c0a03d10093a0/>:

1. We strive to produce the best products on the market.
2. We deal honestly and fairly with our employees, customers, seed growers, sales force, business associates and shareholders.
3. We advertise and sell our products vigorously, but without misrepresentation.
4. We give helpful management suggestions to our customers to assist them in making the greatest possible profit from our products.

DuPont is entering into a period where farmers will see the largest gains ever from its research. In 2007, Pioneer won the prestigious Agrow Award for Best R&D Pipeline in recognition of its broad array of biotech traits in development.¹⁹ Pioneer anticipates being able to increase yields by 40 percent in corn and soybeans over the next decade. This increase will be driven by improvements in its proprietary germplasm base, discovery, and development of proprietary and licensed biotech traits, and its unique ability to integrate those assets into the products Pioneer's customers need. It should be noted, however, that Pioneer's level of future investment in trait development – like that of virtually every other trait developer – is largely dependent upon its ability to reach a critical mass of consumers with its innovation through an open, competitive marketplace for the products it creates.

The next-generation herbicide tolerance trait, Optimum[®]GAT[®], is an example of the new products Pioneer is bringing to market. By combining tolerances to two different classes of herbicides – glyphosate and acetolactate synthase herbicides – Optimum[®]GAT[®] allows farmers to apply either herbicide, or tank-mixes of the two, to address specific weed problems, including so-called Roundup[®]-resistant weeds. This technology will provide farmers with greater flexibility and choice in their weed management programs. Moreover, substantial laboratory and field data confirm that Pioneer soybeans with the Optimum[®]GAT[®] trait, combined with Pioneer's elite Y-series germplasm and Monsanto's Roundup Ready[®] gene, actually produce a six percent, or 3+ bushel/acre, yield advantage on average, compared to Pioneer's current products with the Roundup Ready[®] gene alone. The potential value of this new product should be apparent: an average increase in yield of just one bushel per acre across all U.S. soybean acres is worth nearly \$700 million per year.

In addition to Optimum[®]GAT[®], Pioneer is using its improved genetics and biotech expertise to develop other input traits to provide benefit to America's farmers, such as drought tolerance and insect and disease resistance.²⁰ Pioneer's drought tolerant traits are expected to reach the market by the middle of the next decade.

Pioneer is making significant advances in next-generation insect resistant traits. This represents an increasingly important area of trait development as farmers more often are demanding seeds that contain dual modes of action (*i.e.*, the inclusion of multiple traits that provide resistance to the same insect from two genetic sources). In the area

¹⁹ Press Release, DuPont, DuPont Recognized for Best Agricultural R&D Pipeline and Products (Oct. 17, 2007), *available at* <http://www.pioneer.com/web/site/portal/menuitem.e7441ee76bf493eaa6522972d10093a0/>.

²⁰ See, *e.g.*, Pioneer, 2009 Crop Genetics Pipeline–Corn, *available at* http://www.pioneer.com/CMRoot/Pioneer/research/pipeline/DuPont_BG_Pipeline.pdf.

of disease resistance, Pioneer also anticipates that it soon will be able to offer a trait that will provide resistance to Anthracnose Stalk Rot, a common corn disease that can devastate crops.

Further, Pioneer is on track for widespread commercialization of its high oleic soybean output trait early this decade. High oleic soybeans produce highly stable oil, eliminating the need for hydrogenation that produces unhealthy trans fats. Oil made from seeds containing this trait will be similar to olive oil and offer higher nutritional value than traditional hydrogenated soybean oil.

In each of the cases described above, the value of any individual trait will depend in large part upon the freedom of seed companies and growers to combine those traits with today's widely adopted traits – and no non-Monsanto trait can achieve significant market penetration unless Independents have the freedom to combine such traits with Roundup Ready®. In fact, as newer traits are added that improve the value of each bushel of grain, basic input traits could become even more valuable. This relationship makes it absolutely essential that seed companies are free to pick and choose the traits and germplasm they wish to combine and offer to growers. Farmers, in turn, need to have complete freedom to select the combinations of traits and germplasm that meet their needs on every acre.

D. History of Agriculture Biotechnology

Agriculture biotechnology has revolutionized farming in the U.S. by enabling farmers to better protect crops from certain insects, herbicides, and other soil and plant conditions that evolve over time. In 2008, 92 percent of all soybeans and 80 percent of all corn planted in the U.S. contained at least one biotech seed trait.

While improving crops through genetics is as old as agriculture itself, the discovery in the 1970s that genes could be extracted from one organism and inserted into another's DNA forever altered the trajectory of agriculture and farming. During this time period, scientists discovered enzymes that permitted DNA molecules to be cut in specific locations and joined with other DNA molecules. Since the characteristics, or traits, of organisms are encoded in their DNA, this allowed the DNA sequences specifying a specific trait to be excised from one organism and inserted into a different organism. Through this genetic engineering, scientists, and researchers began to make significant steps towards developing crops with traits not achievable through traditional breeding.

In 1985, genetically engineered plants resistant to insects, viruses, and bacteria were field tested for the first time, and, in 1986, genetically engineered tobacco plants, modified with the addition of a gene from the bacterium *Bacillus thuringiensis* (Bt) to

produce an insecticidal toxin, making the plant resistant to the European corn borer and other pests, underwent field trials in the U.S. and France.

The 1990s saw considerable growth in a wide range and variety of biotechnological applications and traits. As farmers learned more about the technology, and as Independents successfully integrated individual traits such as Roundup Ready® into their highest-performing germplasm, the adoption of biotech seeds progressed quickly. Between 1996 and 2008, the total number of acres planted worldwide with genetically modified biotech seed increased from 4.2 million to 2 billion acres.²¹

II. Current Biotech Licensing Practices and Competition

Monsanto is far and away the dominant developer and licensor of genetically modified biotech seed traits used in corn and soybeans, the two largest cash crops in the U.S. Today, by its own estimates, Monsanto possesses an 86 percent market share of herbicide tolerant corn biotech seed traits; a 65 percent market share of insect resistant corn biotech seed traits; an 83 percent market share of “stacked” corn biotech seed traits (combined herbicide tolerant and insect resistant biotech seed traits); and virtually a 100 percent market share of herbicide tolerant soybean biotech seed traits.²² As a result of its dominant position, Monsanto has been able to impose on its licensees a variety of restrictions in the way that traits can be used. The most pernicious of these practices includes prohibiting seed companies from combining, or “stacking,” in soybean seeds non-Monsanto traits with Monsanto’s monopoly platform trait, Roundup Ready®. In an effort to extend that monopoly past the expiration of its Roundup Ready® patents and prevent the emergence of generic competition in glyphosate tolerance, Monsanto has embarked on a campaign to force Independents and farmers to switch from Roundup Ready® to Roundup Ready 2 Yield® in soybeans. Unless checked by timely and comprehensive government action, the extension of Monsanto’s platform monopoly will establish for the foreseeable future one company as

²¹ International Service for the Acquisition of Agri-Biotech Applications, ISAAA Brief 39-2008: Executive Summary, Global Status of Commercialized Biotech/GM Crops: 2008, The First Thirteen Years, 1996 to 2008, *available at* <http://www.isaaa.org/resources/publications/briefs/39/executivesummary/default.html>.

²² Monsanto, Supplemental Toolkit for Investors (June 2009), *available at* http://www.monsanto.com/pdf/investors/supplemental_toolkit.pdf.

the gatekeeper to future innovation in biotechnology and germplasm improvement, and as the sole arbiter of the new products that become available to farmers.²³

A. Stacking Restrictions

As noted above, seeds containing multiple traits comprise a rapidly growing percentage of the market. These products are part of the next generation of modern agriculture, as seed companies and farmers begin to produce grain with output traits that improve health and nutrition, milling, or other characteristics, and continue to address the ongoing challenge of resistance to common weeds and insects. The freedom of Independents and farmers to pick and choose the best combinations of traits and germplasm to address specific needs will be critical to the success of farmers in realizing the value of traited seeds over the coming decades.

License agreements with provisions that arbitrarily prohibit or limit the ability of seed companies to combine desired traits represent a significant threat to this next generation of farm inputs. Because of the widespread adoption of Roundup Ready® in soybeans, the most prevalent of those restrictions are those in Monsanto's licenses that prohibit the stacking of any non-Monsanto trait with Monsanto traits. These restrictions on Independents foreclose a substantial portion of the total market to competing trait developers and eliminate competitive alternatives for Independents and their grower customers. When combined with seed companies owned or controlled by Monsanto, the restrictions on the Independents' ability to stack non-Monsanto traits with Roundup Ready® foreclose well in excess of 60 percent of the soybean seed market to competing trait developers.

Left unchecked, these exclusionary restrictions will continue to limit the introduction of new, high-value output traits that have the potential to significantly increase the value of growers' crops. A high oleic trait in soybeans, such as the Plenish™ high-oleic trait, offers consumers the benefits of improved health and nutrition in soybean products. Without the ability to freely combine these output traits with ubiquitous input traits such as glyphosate tolerance, Independents will be unable to offer these products without Monsanto's permission. Such restrictions reduce the opportunity for innovation to be

²³ Monsanto already has made it clear that it controls which companies have access to which products, stating that it treats Independents "differently" and that if a particular Independent "wanted to make a stack, [Monsanto is] open to those discussions." *Monsanto's Response to Associated Press Article on Licensing*, available at http://www.monsanto.com/monsanto_today/for_the_record/ap_competition_story_response.asp.

rewarded in the marketplace, thus discouraging future investments in the development of such traits by Pioneer and others.

Pioneer believes that the ability to choose should not be left to the beneficence of a monopolist. Importantly, the DOJ has already recognized the adverse impact to competition of anti-stacking restrictions. In approving Monsanto's 2007 acquisition of Delta and Pine Land Company, the DOJ required that Monsanto eliminate stacking prohibitions in its cotton trait licenses.²⁴ Monsanto's anti-stacking provisions in its corn and soybean trait licenses are equally pernicious.

Anti-stacking licensing provisions are anticompetitive in much the same way that Microsoft's practice in the 1990s of prohibiting computer manufacturers from, among other things, adding non-Microsoft icons or folders to Windows, was found to be exclusionary. Microsoft attempted to justify these restrictions on the grounds that holders of valid intellectual property rights can do with them what they will, without giving rise to antitrust liability. Rejecting that argument as "border[ing] upon the frivolous," the full U.S. Court of Appeals for the D.C. Circuit unanimously ruled that "[i]ntellectual property rights do not confer a privilege to violate antitrust laws." *U.S. v. Microsoft Corp.*, 253 F.3d 34, 63 (D.C. Cir. 2001) (quoting *In re Indep. Serv. Orgs. Antitrust Litig.*, 203 F.3d 1322, 1325 (Fed. Cir. 2000)). The court went on to note that the proposition that lawfully acquired intellectual property rights cannot give rise to antitrust liability is "no more correct than the proposition that use of one's personal property, such as a baseball bat, cannot give rise to tort liability." *Id.* Like Microsoft, through its Roundup Ready® trait Monsanto controls the platform to which competitors require access, and its restrictions on a "primary distribution channel" are "prevent[ing] the effective distribution and use of products that might threaten [its] monopoly." *Id.* at 58.

Restrictions on stacking also closely resemble the restrictions on interconnection to the telephone network found to violate Section 2 of the Sherman Act in *United States v. AT&T Co.*, 524 F. Supp. 1366 (D.D.C. 1981). AT&T effectively prohibited the interconnection of customer provided equipment to the telephone network. The court held that AT&T had used its "local exchange monopolies to foreclose competition in the terminal equipment market by refusing unreasonably to interconnect equipment not provided by the Bell System, or by unreasonably impeding such interconnection." *Id.* at 1352. The court made similar findings with respect to interconnection restrictions imposed on competing providers of long distance telephone service. *Id.* at 1357. Just as AT&T was not permitted to use its ownership of the monopoly telephone platform to determine which products could be offered to customers in adjacent markets, like

²⁴ Final Judgment, *United States v. Monsanto Co.*, No. 07-cv-992, at § VI (D.D.C. Nov. 6, 2008).

home telephones, an attempt by a monopolist to control the combination of traits from competing sources constitutes an improper attempt to exclude competition in violation of Section 2 of the Sherman Act.

A more recent antitrust benchmark is the Federal Trade Commission's challenge last month to Intel's conduct that entrenched its monopoly position in computer chips, and it, too, supports the view that Monsanto's practices are anticompetitive and illegal.²⁵ To begin with, Monsanto's shares in corn and soy traits of 79 percent and 98 percent, respectively are comparable to, or higher than, Intel's 75-85 percent share in CPUs. Second, an important premise of the FTC case is that Intel has inordinate leverage because its processors are "must haves" for its customers. As explained above, Monsanto's Roundup Ready[®] trait similarly has become a platform that seed companies need. And Monsanto, like Intel, is using its restrictive agreements and practices to foreclose new competitors from gaining access to customers. Ultimately, the FTC focused on "the synergistic effect of all of [Intel's] wrongful conduct," and that is exactly the point antitrust enforcers should focus on in connection with Monsanto's efforts to protect its dominant position.

B. Roundup Ready[®] 2 Yield and Generic Competition

i. A NEW TRAIT?

As Monsanto's final patent for its Roundup Ready[®] herbicide-tolerant trait in soybeans nears expiration no later than 2014, Monsanto has introduced Roundup Ready 2 Yield[®] as a "new" herbicide-tolerant trait product, which Monsanto claims has improved yields over Roundup Ready[®] soybeans. In fact, Roundup Ready 2 Yield[®] utilizes the same gene as Roundup Ready[®], inserted at a different site on the soybean genome, and confers no new functionality. Moreover, despite Monsanto's marketing claims, Roundup Ready 2 Yield[®] soybeans have not demonstrated superior yield to Roundup Ready[®], even as Monsanto has announced that the price of Roundup Ready 2 Yield[®] soybeans will exceed Roundup Ready[®] by some 42 percent.²⁶

²⁵ *In the matter of Intel Corp.*, F.T.C. Dkt. No. 9341 (filed Dec. 16, 2009).

²⁶ Jack Kaskey, *Monsanto to Charge as Much as 42% More for New Seeds*, Bloomberg News (Aug. 13, 2009), available at <http://www.bloomberg.com/apps/news?pid=20601012&sid=aLW8VZBkP3PA>.

This would not matter if, after patent expiration, seed companies were free to offer “generic” Roundup Ready® in competition with Roundup Ready 2 Yield®. The market would then determine the appropriate mix of products and price. The emergence of generic competition is also fully consistent with fundamental principles of U.S. patent law, under which trait developers become entitled to the free use of the Roundup Ready® trait upon expiration of the patent and consumers reap the benefits of a public good. There is substantial doubt, however, whether these benefits will be realized in light of Monsanto’s practices.

In 2008, Monsanto began an aggressive campaign to switch Independents from Roundup Ready® to Roundup Ready 2 Yield® soybeans. Monsanto informed Independents that they must convert all of their seed lines from Roundup Ready® to Roundup Ready 2 Yield® if they wished to continue licensing a Roundup Ready® soybean trait. Because the vast majority of farmers will not purchase soybean seeds without a proven glyphosate-tolerant trait, this requirement operated as a threat to drive Independents out of the soybean seed market unless they agreed to switch to Roundup Ready 2 Yield® completely.

ii. A CHANGE IN POSITION?

On the eve of the deadline for submission of these public comments, Monsanto announced that it will not force seed companies to switch to Roundup Ready 2 Yield® and destroy their seed inventories containing the Roundup Ready® trait.²⁷ This purported change in position comes too late for the many seed companies that have already switched to Roundup Ready 2 Yield®. Despite Monsanto’s professed intention to give seed companies a “choice” of Roundup Ready® or Roundup Ready 2 Yield®, we are unaware of Monsanto offering any seed company which has already switched and/or signed and Roundup Ready 2 Yield® license the opportunity to return to a Roundup Ready® license.

Quite apart from this problem, there are many other gaps and uncertainties in Monsanto’s purported change in position. For example, will Monsanto continue to improve and out-license Roundup Ready® soybean lines for those ISC’s who rely on Monsanto germplasm for their seed products? Will Monsanto allow Roundup Ready® licensees to have continued access to Monsanto’s best soybean germplasm, or will they be required to switch to Roundup Ready 2 Yield® in order to access those lines? Will seed companies be allowed to retain and use their breeding material containing the Roundup Ready® trait at the expiration of their Roundup Ready® licenses? Will Monsanto allow Roundup Ready® licensees to make stacks with non-Monsanto

²⁷ Andrew Pollack, *As Patent Ends, A Seed’s Use Will Survive*, N.Y. Times, Dec. 17, 2009, at B3.

soybean traits? Does Monsanto agree that these same restrictions should be removed for other traits and crops that they outlicense? These and many other important questions have been left unanswered in Monsanto's statements.

Finally, the concessions described by Monsanto are non-binding and unenforceable. Absent legally binding reform, Monsanto's announced "concession" that it will no longer enforce contractual provisions requiring Independents to switch to Roundup Ready 2 Yield® is meaningless and will be seen as such by seed companies and farmers, who will have been simply put on even more explicit notice that their future business plans are subject to the whim and caprice of a monopoly provider.

C. Regulatory and Legislative Reforms

Monsanto's recent purported position shift highlights a major gap in the regulatory structure as patents begin to expire on ag biotech traits such as Roundup Ready®. Approximately 50 percent of the soybeans harvested in the U.S. are exported. In order for soybeans harvested in the U.S. to be accepted in the grain channel, regulatory approvals are required in countries that import soybeans, including the EU, China, Japan, Korea, and Taiwan. Without such regulatory approvals, soybeans with the Roundup Ready® trait cannot enter the grain channel.

Obtaining regulatory approvals begins with scientific data on the trait being developed, including its performance in plants, its potential side effects on non-target pests, its inclusion in animal and human diets, and the potential for resistance by target pests. This data generation process takes years to complete and submit to regulatory agencies. Logically then, the process must begin before patent expiration if a generic trait is to reach the market when first permitted. Unlike the pharmaceutical industry, there is no Hatch-Waxman type patent infringement defense for activities reasonably deemed necessary for obtaining regulatory approvals for biotech traits. Accordingly, companies wishing to prepare for independent regulatory submissions risk patent infringement claims in the U.S. if data collection activities are started prior to patent expiration. The data generation process can take an additional two years following patent expiration. Thus, without reform, companies wishing to sell Roundup Ready® post-patent may not even be able to submit the necessary data to foreign governments until some two years after patent expiration.

The delays can continue even after the regulatory dossier is submitted to the regulators in each country. Of the main soybean importing countries, the EU is estimated to take the longest, where the complete review and approval process would take approximately 36-40 months. Absent further action, therefore, it is likely that the soonest new registrations could be approved is over five years after patent expiration, resulting

in at least a two-year gap between 2017, the date through which Monsanto has agreed to maintain its registrations, and the date by which one or more other seed companies could obtain independent registrations.

Monsanto currently controls the use of the regulatory data packages necessary for import approvals for Roundup Ready® in all major export markets for U.S. grain producers. Recently, Monsanto has stated that “[b]eginning in 2015, Roundup Ready® technology will be publicly available” and toward that end, it will maintain these approvals for “at least” three years, through 2017.²⁸ But maintaining the registrations in place for three years post-patent does not give other seed companies sufficient time to obtain registrations for a generic Roundup Ready® product. Thus, Monsanto’s statements raise more questions than answers. Will Monsanto agree that licensed trait developers can generate regulatory data to gain approval of those stacks prior to patent expiration? Will it permit that activity starting today, so that generic versions of Roundup Ready® can be sold in the marketplace as soon as the patents expire?

The uncertainty caused by Monsanto’s creation of this potential “regulatory gap” has real and immediate consequences for Independents and other industry participants who must make decisions in the near term about how to commit their resources. Roundup Ready® represents only the first of many opportunities for trait developers, Independents, and growers to realize the benefits of the U.S. patent system. There will be more opportunities to come, as the patents on other familiar biotech traits expire. However, few companies will be willing to make the substantial investments required to develop new products based in part on generic traits unless there is a clear path to market. Regulatory agencies and antitrust authorities must act now to ensure that there is an orderly, predictable, and enforceable set of rules and remedies in place that enable trait developers to make generic versions of biotech traits widely available upon expiration of the relevant patents.

III. Conclusion

The call by Secretary Vilsack and Attorney General Holder for a review of competition policy as it applies to American agriculture could not be more timely, as the world’s growing need for agricultural productivity, and the ability of American agriculture to help meet that need, are at stake in the months and years ahead. DuPont/Pioneer appreciate the opportunity to be heard on these important issues.

²⁸ *Farm Groups Get an Earful in Seed Industry Tussle*, AgriPulse (Agri-Pulse Communications, Inc., Camdenton, M.O.), Dec. 16, 2009, at 8; Letter from James P. Tobin, Indus. Affairs Lead, Monsanto, to Stakeholders (Dec. 15, 2009).

These comments have focused on specific forms of conduct that are harming consumer welfare today by retarding innovation, raising prices, and reducing output. Perhaps more importantly, the comments address ongoing conduct, that unless remedied, threatens to extend monopoly power over a crucial agricultural input and to retard the pace of future innovation, thus threatening the achievement of critically important continuing advances in agricultural productivity and efficiency. The need for antitrust enforcement and other reform to ensure open, competitive seed markets is therefore urgent.

We commend Secretary Vilsack and Attorney General Holder for their leadership on these issues and look forward to further participating in these proceedings.

APPENDIX

Monsanto's Agricultural Acquisitions

In 1996, Monsanto began a multi-billion dollar spending spree, acquiring, merging with, or obtaining an interest in numerous agricultural companies. Prior to these acquisitions, Monsanto was already a significant presence in agricultural chemical markets with its Roundup®, Lasso®, and Harness® brand herbicides. Through its acquisitions, Monsanto acquired key patents and research technologies, as well as the premier corn germplasm licensing unit. Monsanto also has been steadily buying up Independents through its holding company, American Seeds, Inc. Monsanto's numerous acquisitions of Independents have served to deny trait competitors access to a significant portion of the market, reducing farmers' choices. Between 1996 and 2006, the number of Independents decreased from 600 to fewer than 250. Monsanto has further reduced competition over the past five years, by acquiring approximately 25 Independents. Monsanto now owns or controls a major portion of corn, cotton, soybean, canola, and vegetable seed at virtually all levels of the supply chain. Monsanto's major acquisitions include the following:

1. DeKalb Genetics Corp.—corn and soybean seed and germplasm (partial acquisition in 1996, full acquisition in 1998);
2. Calgene LLC—research in genetically modified foods (1997);
3. Asgrow Seed Co. LLC—corn and soybean seed and germplasm (1996);
4. First Line Seeds Ltd.—Canadian soybean seed (1998);
5. Holden's Foundation Seeds—corn germplasm (1997);
6. Plant Breeding International—European wheat, barley, canola, and potato seed (1999);
7. Cargill, Inc.'s international seed business—temperate and tropical corn seed (1998);
8. Agracetus—patents covering all transgenic cotton and soybeans (1996);
9. Ecogen Inc.—Bt toxin gene (1996);
10. Maharashtra Hybrid Seeds Co. Ltd.—Indian cotton, sorghum, pearl millet, sunflower, and heat seed (1998);
11. Channel Bio Corp.—corn and soybean seed (2004);

12. NC+ Hybrids Inc.—corn, soybean, sorghum, and alfalfa seed (2005);
13. Seminis Inc.—vegetable seed (2005);
14. Emergent Genetics, Inc.—cotton seed (2005);
15. Fontanelle Hybrids—corn, soybean, sorghum, alfalfa, and sunflower seed (2005);
16. Stewart Seeds—corn, soybean, and wheat seed (2005);
17. Trelay Seeds—corn, soybean, barley, oats, and alfalfa seed (2005);
18. Stone Seeds—corn, soybean, and alfalfa seed (2005);
19. Specialty Hybrids—corn seed (2005);
20. Gold Country Seed Inc.—corn, soybean, and alfalfa seed (2006);
21. Heritage Seeds—corn and alfalfa seed (2006); and
22. Delta and Pine Land Company—cotton seed (2007).

In addition to its numerous acquisitions, Monsanto also has prevented Independents from selling their business to any trait developer other than Monsanto by including in its trait licenses with Independents a number of terms that effectively act as “poison pills,” including onerous “change-in-control,” and “grantback” provisions. The net result of all of these provisions is that competing trait developers are foreclosed from a significant portion of the market, substantially reducing the economic incentive for innovation.