DEPARTMENT OF JUSTICE

Antitrust Division

United States v. Monsanto Company and Delta and Pine Land Company; Public Comments and Response on Proposed Final Judgment

Pursuant to the Antitrust Procedures and Penalties Act, 15 U.S.C. 16(b)–(h), the United States hereby publishes the comments received on the proposed Final Judgment in *United States* v. *Monsanto Company and Delta and Pine Land Company*, No. 1:07–cv–00992, filed in the United States District Court for the District of Columbia on May 31, 2007, and the United States's response to those comments.

Copies of the comments and the United States's response to the comments are available for inspection at the Department of Justice Antitrust Division, 325 Seventh Street, NW., Room 215, Washington, DC 20530, (202) 514–2481, and at the Office of the Clerk of the United States District Court for the District of Columbia, 333 Constitution Avenue, NW., Washington, DC 20001. Copies of any of these materials may be obtained upon request and payment of a copying fee.

J. Robert Kramer II,

Director of Operations, Antitrust Division.

In the United States District Court for the District of Columbia

[Civil Action No.: 1:07–cv–00992]

United States of America, Plaintiff, v. Monsanto Company and Delta and Pine Land Company, Defendants. Hon. Ricardo M. Urbina

Plaintiff United States's Response to Public Comments

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Plaintiff United States Response To Public Comments

Pursuant to the requirements of the Antitrust Procedures and Penalties Act, 15 U.S.C. 16(b)–(h) (''APPA'' or ''Tunney Act''), the United States hereby responds to the public comments received regarding the proposed Final Judgment in this case. After careful consideration of the comments, the United States continues to believe that the proposed Final Judgment will provide an effective and appropriate remedy for the antitrust violation alleged in the Complaint. The United States will move the Court for entry of the proposed Final Judgment after the public comments and this Response have been published in the **Federal Register**, pursuant to 15 U.S.C. 16(d).

On May 31, 2007, the United States filed the Complaint in this matter alleging that the proposed acquisition of Delta and Pine Land Company (''DPL'') by Monsanto Company (''Monsanto'') would violate Section 7 of the Clayton Act, 15 U.S.C. 18. Simultaneously with the filing of the Complaint, the United States filed the proposed Final Judgment and a Stipulation signed by plaintiff and defendants consenting to the entry of the proposed Final Judgment after compliance with the requirements of the Tunney Act. Pursuant to those requirements, the United States filed a Competitive Impact Statement (''CIS'') in this Court on May 31, 2007; published the proposed Final Judgment and CIS in the **Federal Register** on June 15, 2007, see *United States* v. *Monsanto Co.* and Delta and Pine Land Co., 72 Fed. Reg. 33336–01, 2007 WL 1708314; and published summaries of the terms of the proposed Final Judgment and CIS, together with directions for the submission of written comments relating to the proposed Final Judgment, in The Washington Post for seven days beginning on June 28, 2007 and ending on July 4, 2007. The 60-day period for public comments ended on August 27, 2007, and eleven comments were received as described below and are attached hereto.

I. Background

A. The United States Investigation of the Transaction

On August 14, 2006, Monsanto entered into an agreement to acquire DPL for approximately $1.5 billion. Over the following nine and a half months, the United States conducted an extensive, detailed investigation into the competitive effects of the proposed transaction. As part of this investigation, the United States issued Second Requests to the merging parties, as well as Civil Investigative Demands to all of the major cottonseed companies and cottonseed trait developers. The United States received and considered more than a million pages of responsive material and deposed relevant Monsanto and DPL executives. More than 125 interviews were conducted with customers, competitors, and others with knowledge of the industry and competitive conditions, including national and regional agricultural supply companies, grower organization representatives, USDA cotton experts, and agricultural economists and academics. The United States met repeatedly with concerned parties,

including DuPont, one of the commenters, analyzing their allegations and submissions.[1]

In its investigation, the United States considered the potential competitive effects of this transaction on numerous products and geographic areas. For several of these, the United States concluded that the proposed merger was unlikely to reduce competition.[2] As the Complaint alleges, the transaction did, however, threaten competition with respect to traited cottonseed sales in two geographic regions—the MidSouth and the Southeast.[3]

B. The Traited Cottonseed Markets

Most cottonseed sold today contains ''transgenic traits''—genetic material from other organisms that is inserted into the cottonseed germplasm to give the cotton plant desirable characteristics. Two types of transgenic traits currently are available: (1) Herbicide tolerance traits, such as Monsanto's ''Roundup Ready'' and recently introduced ''Roundup Ready Flex'' (''Flex''), which make the cotton plant able to withstand spraying with particular herbicides, and (2) insect resistance traits, such as Monsanto's ''Bollgard'' and new ''Bollgard II,'' which make the cotton plant toxic to certain pests.

Cotton farmers overwhelmingly prefer traited seeds because their use significantly reduces labor and input costs. In 2006, farmers planted about 87% of the cotton acres in the U.S. with traited seeds. *USDA Cotton Varieties Planted 2006 Crop Report*. Most traited cottonseed is ''stacked'' to include both herbicide-tolerant and insect-resistant traits. In the Southeast and MidSouth, 90.8% and 89.3% (respectively) of the seed sold in 2006 included both types of traits, and farmers now rarely purchase seed that contains only an insect-resistant trait.[4]

At the time the Complaint was filed, DPL and Monsanto, via its Stoneville business unit, were significant producers of traited cottonseed in the United States. Indeed, DPL and Stoneville together accounted for over 90% of traited cottonseed sales in the MidSouth and Southeast regions of the United States where cotton farmers place the most value on insect-resistant and herbicide-tolerant traits. That vigorous competition would have been lost as a result of the transaction.

As the Complaint alleges, Monsanto is currently the dominant provider of insect-resistant and herbicide-tolerant traits for cotton.[5] Monsanto's insect-resistant and herbicide-tolerant traits accounted for over 96% of the transgenic traits in cottonseed nationwide in 2006; over 98% of the traited cottonseed sold in 2006 in the MidSouth and Southeast contained Monsanto's traits. Indeed, Monsanto's traits are the only traits found in any of the traited cottonseed DPL sold prior to the merger.

DPL was, however, positioning itself to move away from Monsanto's traits by exploring options with several trait producers that were developing insect-resistant and herbicide-tolerant cotton traits. The most advanced of these efforts was work with Syngenta to introduce VipCot—an insect-resistant trait that would compete with Monsanto's Bollgard traits. DPL's work with Syngenta had reached a stage where DPL had successfully introduced VipCot into 42 of its elite breeding lines.[6] DPL had already stacked five of the VipCot traited lines with Flex prior to the merger and anticipated commercializing those lines in approximately 2009. Following DPL's breeding protocols, DPL anticipated that stacked versions of the other 37 VipCot lines would have been ready for commercialization sometime between 2012 through 2016.

DPL's efforts with respect to a non-Monsanto herbicide-tolerant trait were at a more preliminary stage. In the summer of 2006, DPL entered into a licensing agreement with DuPont to introduce seed with OptimumGat, an herbicide-tolerant trait that would compete with Monsanto's Flex trait. At the time the Complaint was filed, DPL had not successfully introduced OptimumGat into any of its elite breeding lines. Rather, development work to advance the OptimumGat project remained primarily with DuPont. As a backup to the OptimumGat venture, DPL had also entered into agreements to test two other herbicide-tolerant traits that would compete with Monsanto's Flex, including a trait being developed by Bayer called Glytol.

Using VipCot in combination with one of the three herbicide tolerance options that DPL was exploring, DPL envisioned bringing a limited quantity of cottonseed with a non-Monsanto stack of insect-resistant and herbicide-tolerant traits to market as early as 2012. But in light of standard breeding and testing time requirements, it likely would have taken DPL several years longer to entirely phase out Monsanto's traits. Equally important, DPL's ability or willingness to switch totally away from Monsanto's traits was dependent on several assumptions—namely that farmers were satisfied with VipCot's performance versus Monsanto's Bollgard traits, and that DPL found a successful non-Monsanto herbicide-tolerant trait in the next few years.

As the Complaint further alleges, Monsanto knew that DPL was working with other trait companies and feared that a possible outcome of those partnerships would be that DPL ceased offering Monsanto's traits in its cottonseeds.[7] Monsanto thus had begun to take steps to strengthen its own proprietary seed platform to support its cottonseed trait business. In fact, the United States's investigation revealed that Monsanto was making a concerted effort to grow its share of traited cottonseed sales.

Foremost among these efforts was Monsanto's acquisition in 2005 of Stoneville, which had approximately 15% of the market for traited cottonseed nationwide and a 33% and 9% share of the MidSouth and Southeast markets, respectively. After acquiring Stoneville, Monsanto made significant investments in the company, including: Investing in upgrades of new buildings and

[1] The United States also spoke multiple times with representatives from the offices of the Attorneys General of 27 states interested in the progress of the United States investigation, including representatives of 16 of the 17 states where cotton is grown in the United States (Georgia's office elected not to participate). In this proceeding, thirteen states, representing less than 20% of U.S. cotton production, have signed onto a comment (discussed infra) questioning the proposed Final Judgment. Of the states signing the comment, Delaware, Kentucky, Rhode Island, Utah and West Virginia elected not to participate in any of the communications between the United States and states's representatives during the United States investigation. The comment does not explain either the scope of the investigation, if any, those non-participating states undertook to reach their conclusions or the reasons why none of the commenting states has initiated independent legal action to enjoin the transaction.

[2] Indeed, the United States concluded that, viewed as a whole, the transaction was likely to create some efficiencies that could benefit consumers. A Monsanto-DPL combination brings together firms with complementary strengths and assets. Monsanto has proficiency in transgenic trait development, and DPL had expertise in cottonseed breeding. Merging allows the two programs to operate in tandem. Through the integration of trait development and cottonseed breeding, traited cottonseed could reach consumers faster and at lower cost

[3] See Complaint at 12–13.

[4] Today, traited cottonseeds that contain only insect resistance account for less than 2% of total traited acres.

[5] See Complaint at 2–3.

[6] As discussed below, the relief provided by the proposed Final Judgment calls for divestiture of 43 DPL lines containing VipCot. The 43rd line included in the VipCot Assets is a line that DPL acquired from Syngenta in 2006 that already contained VipCot.

[7] See Complaint at 9–10.

greenhouses, lab equipment, ginning and delinting equipment, and warehouse and equipment storage; hiring additional employees for the breeding facilities, particularly at its Maricopa, Arizona, breeding facility which targeted creating varieties for the Southeast; improving Stoneville's manufacturing facilities, such as adding bagging, dust collection, and handling equipment; and improving Stoneville's molecular marker capabilities and library.

Monsanto also had been engaging in other efforts to develop proprietary cotton germplasm. Those included (a) researching exotic strains of cottonseed (which the proposed Final Judgment refers to as the ''Advanced Exotic Yield Lines''), (b) mapping molecular markers for select breeding crosses that would enable Monsanto to expedite identification and further breeding of the most promising progeny from those crosses (which the proposed Final Judgment refers to as the ''MAB Populations''), and (c) establishing the Cotton States program, through which Monsanto obtains licenses to promising germplasm from university breeding programs and private breeders, and, after introducing traits, licenses the resulting traited cottonseed varieties to small cottonseed companies and distributors seeking to sell traited cottonseed under their own brands.

Monsanto's internal business plans projected that as a result of these efforts, Stoneville's market share in the Southeast and MidSouth would grow substantially over the next few years. Indeed, Monsanto projected that Stoneville, with Monsanto traits, and DPL, with non-Monsanto traits, would have roughly equal market shares by approximately 2015, with Dow and Bayer traited seeds holding much smaller shares. Accordingly, if unremedied, the combination of Monsanto and DPL would have combined the two largest traited cottonseed options for farmers in the MidSouth and Southeast.[8]

C. The Competitive Effects of the Transaction

Based on this evidence, the United States determined that the merger of the two companies would likely lessen competition in the near, medium and long term. In the near term, absent the transaction, Monsanto's efforts to increase Stoneville share in the MidSouth and Southeast would give farmers more choices and could lead to lower prices.[9] Also in the near term (beginning in approximately 2009), the entry of DPL seed containing Syngenta's VipCot trait stacked with Monsanto's Flex trait could have offered farmers a new insect-resistant trait option and put some pressure on the price for insect-resistant traits.[10] The United States's investigation revealed that the most significant competitive effect of the transaction likely would have occurred in the medium term (beginning in approximately 2012) when DPL would first be able to offer cottonseed stacked solely with non-Monsanto traits and farmers in the MidSouth and Southeast would benefit from the emergence of competition between two germplasm/trait platforms, namely, Stoneville seed with Monsanto traits and DPL seed with VipCot and a non-Monsanto herbicide-tolerant trait.

The United States also found that Monsanto's acquisition of DPL, if unremedied, would threaten longer term harm by deterring or delaying the entry of new types of cotton traits in the MidSouth and Southeast.[11] Cotton trait developers would not have a seed partner independent of Monsanto with seeds suitable for the MidSouth and Southeast. Given the significance of the MidSouth and Southeast cotton growing regions, the inability to reach farmers in these regions would reduce potential returns from investments in developing cotton traits. And even if other potential sources of revenue for trait developers were sufficient to support continued investment in cotton trait development,[12] the benefits of these investments would not reach farmers in the MidSouth and Southeast.

D. The Proposed Remedy

The proposed Final Judgment remedies the anticompetitive effects of the acquisition alleged in the Complaint-the elimination of competition between DPL and Monsanto for the development, breeding and sale of traited cottonseed and the elimination of DPL as a partner independent of Monsanto for developers of traits that would compete against Monsanto-in three principal ways:

First, the proposed Final Judgment requires Monsanto to divest the Enhanced Stoneville Assets to an acquirer who is capable of using the assets to compete effectively. The Enhanced Stoneville Assets include Stoneville's U.S. cottonseed business, key cottonseed lines developed by DPL for the MidSouth and Southeast, and additional Monsanto cotton breeding assets.

The Enhanced Stoneville Assets provide the acquirer what it needs to continue Monsanto's efforts to increase Stoneville's share and be an effective ongoing seed competitor in the near term and beyond. Moreover, the acquirer will be able to use these assets, on its own or in partnership with other trait developers, to breed and commercialize high quality cottonseed for the MidSouth and Southeast with non-Monsanto traits, preserving medium and longer-term competition that would otherwise have been lost as a result of the merger.

Second, the proposed Final Judgment requires Monsanto to divest the VipCot assets to Syngenta and to allow Syngenta to breed with the VipCot traited lines. This will preserve the potential for near term benefits from VipCot entry, as well as medium and longer term benefits from stacking VipCot with non-Monsanto herbicide traits (including other nascent traits) and developing improved germplasm.

Third, the proposed Final Judgment requires Monsanto to modify two sets of licenses to eliminate restrictions on the use of non-Monsanto traits: (1) Its cottonseed trait licenses with seed companies to permit licensees to breed and sell, without penalty, cottonseed containing non-Monsanto traits and cottonseed containing both licensed Monsanto traits and non-Monsanto traits, and (2) its Cotton States licenses to remove any provision that allows Monsanto to terminate the license if the

[8] The United States's investigation found that Bayer's efforts prior to the merger to develop germplasm for the Southeast and MidSouth, if successful, would not likely bear fruit any sooner than 2016. Given the early stage of Bayer's breeding efforts in those geographic areas, the United States did not rely on this as a source of potential entry. In contrast, Dow has developed some varieties suitable for the MidSouth and potentially the Southeast, which will enter the market some time in the 2008 to 2011 time frame. However, given limitations in its current trait licensing agreements with Monsanto, it was unclear that entry of Dow varieties would have a significant competitive effect in those markets.

[9] With its dominance in traits, Monsanto might have recaptured any seed price reductions through higher trait fees.

[10] Because DPL would have had to combine VipCot with a Monsanto herbicide-tolerant trait, Monsanto might have recaptured any reduction in fees for an insect-resistant trait through increases in fees for Monsanto's herbicide-tolerant trait.

[11] In addition to potentially new insect resistant and herbicide tolerant traits, there is current transgenic trait research regarding, among other things, drought tolerance, nematode resistance and yield.

[12] These other revenue opportunities arise from the fact that (a) many potential cotton traits have applications across other crops, including corn and soy, that offer significantly more revenue potential than cotton, (b) the demand for traited cottonseed outside the United States is significant and growing, and (c) there is substantial cotton acreage within the United States in regions other than the MidSouth and Southeast, namely the Southwest and West.

licensee sells cottonseed containing other traits.

In the United States's judgment, the asset divestitures and license modifications required by the proposed Final Judgment remedy the competitive harms identified in the Complaint.

II. Developments Since the Filing of the Complaint

The United States filed the Complaint and Proposed Final Judgment on May 31, 2007. The Court entered the Hold Separate and Preservation of Assets Stipulation and Order on June 1, 2007, and Monsanto completed its acquisition of DPL on that same date. Since the filing of the Complaint, the following events have occurred in furtherance of the requirements set forth in the proposed Final Judgment and the Tunney Act:

A. Approval of Acquirers of the Enhanced Stoneville Assets

Section IV.E. of the proposed Final Judgment requires defendants to divest the Enhanced Stoneville Assets to an acquirer acceptable to the United States. The acquirer must have a credible commitment to the traited cottonseed market and have the intent and capability of competing effectively. Shortly after acquiring DPL, Monsanto proffered Bayer CropScience (''Bayer'') and Americot Inc. (''Americot'') to the United States as potential acquirers of the Enhanced Stoneville Assets, with Bayer set to acquire all of the divestiture package except for certain assets relating to the Southwest market which would be sold to Americot. The United States evaluated the proposed acquirers, including analyzing the terms of the proposed purchase agreements, the terms of other recent contracts between Monsanto and Bayer, the market presence of both proposed acquirers, and other information bearing upon the acquirers' capabilities to use the divested assets effectively in competition with Monsanto/DPL.[13]

Bayer proposed to purchase the bulk of the Enhanced Stoneville Assets for $310 million. Its commitment to the cottonseed market is demonstrated by, among other things, its successful entry into the Southwest cottonseed market under the Fibermax and AFD brands.[14] Bayer's growth in this market has been impressive; it entered the Southwest market in 1999 and, by 2006, had a significant share of seed sales in that region and had displaced DPL as the market leader. In addition to cottonseed sales, Bayer has had an active cottonseed trait development program, which has resulted in the marketplace introduction of its Liberty Link herbicide-tolerant trait.[15] In addition to these cottonseed efforts, Bayer also operates one of the world's largest crop protection and agricultural chemical companies, providing it ready access to agricultural distribution channels in the MidSouth and Southeast as well as pesticide, herbicide, and seed treatment products to complement its cottonseed offerings.

Despite these strengths, Bayer has not been successful in cottonseed sales in the MidSouth and Southeast, largely as a result of inferior germplasm for those regions. Acquiring the Enhanced Stoneville Assets will enable Bayer to become a more effective competitor in the MidSouth and Southeast[16] by giving Bayer high-quality germplasm specifically targeted toward the regions' growing conditions, breeding stations focused on developing varieties for those regions, and experienced personnel.[17]

To avoid creating any competitive issue in the Southwest where Bayer is strong, Bayer did not acquire that portion of the Enhanced Stoneville Assets best suited for producing traited cottonseed for the Southwest region of the United States—i.e., the assets related to Stoneville's NexGen brand of cottonseed.[18] Those assets, which include cottonseed lines and a dedicated breeding program targeting the Southwest, generated over $16 million in sales for Stoneville in 2006, and Monsanto projected they would generate $36 million in sales by 2010. Americot, a regional cottonseed company founded in 1987 that sells seed predominantly in west Texas, acquired the NexGen assets for just over $6 million. With a recently upgraded breeding facility dedicated to developing lines for the Southwest, Americot is well positioned to use the NexGen assets effectively.

Based on analysis of these factors, the United States determined that divestiture of the Enhanced Stoneville Assets to Bayer and Americot satisfied the objectives of the proposed Final Judgment and approved the proposed acquirers. Monsanto divested the Enhanced Stoneville Assets on June 19, 2007.[19]

B. VipCot Assets Offered to Syngenta

Section V of the proposed Final Judgment requires Monsanto to offer certain DPL cottonseed lines containing Syngenta's traits (the ''VipCot Assets'') to Syngenta. Under the proposed Final Judgment, Monsanto cannot satisfy the required divestiture of the VipCot Assets without the United States first approving the terms of the licenses pursuant to which Monsanto offers Syngenta the assets. Since May 31, 2007, the United States had numerous discussions with Monsanto and Syngenta regarding the terms of these licenses. On August 27, 2007, Monsanto and Syngenta entered into an interim Material Transfer and Use Agreement to facilitate transfer of VipCot traited cottonseed to Syngenta for further development prior to Monsanto providing final licenses that meet the

[13] The United States was already familiar with both Bayer and Americot's existing U.S. cottonseed operations, having interviewed representatives of these companies on numerous occasions and reviewed business documents provided by both companies during the Monsanto/DPL investigation.

[14] Bayer's willingness to commit such a large amount of capital to acquiring the assets also tends to indicate Bayer's interest in using the Enhanced Stoneville Assets to create a viable competitor to Monsanto/DPL.

[15] Liberty Link makes cotton tolerant to glufosinate herbicides and is only available in Bayer's FiberMax cottonseeds, which are primarily used in the Southwest where they perform well.

[16] Upon acquiring Stoneville, Bayer publicly noted, ''[t]he new germplasm and the geographic reach of the Stoneville business East of Texas ideally complement Bayer's cotton seed and trait business.'' See May 31, 2007 press release, ''Bayer CropScience agrees to acquire U.S. cotton seed company Stoneville for US-$310 million,'' available at <*http://www.bayercropscience.com/bayer/cropscience/cscms.nsf/id/20070529_EN?open&ccm=400*>.

[17] In its submitted comments, DuPont specifically questions Bayer's ability to compete in the MidSouth and Southeast, citing the fact that Bayer had not successfully penetrated those markets in the past. DuPont Comments at 18. See also AAI Comments at 16. However, DuPont's claim merely highlights Bayer's prior difficulty in accessing or developing competitive germplasm for these regions, rather than speaking to Bayer's ability to succeed once it has such germplasm. That Bayer can fully succeed when it has access to competitive germplasm is well documented by its successful entry in the Southwest market.

[18] Stoneville started its NexGen germplasm program to develop cottonseed adapted to growing conditions in the Southwest growing region. Bayer's Fibermax and AFD brands also have a significant presence in this region.

[19] The sale of divestiture assets during the pendency of the Tunney Act review of a proposed final judgment is consistent with the United States's standard practice, as is permitting closing of the transaction challenged in the Complaint. The materials filed with the Complaint included a Hold Separate and Preservation of Assets Stipulation, requiring the parties to maintain certain assets separate after the close of the merger (in this instance, DPL's assets) until the United States was assured that the acquirer or acquirers proposed by Monsanto for the Enhanced Stoneville Assets would meet the standards set forth in the proposed Final Judgment (i.e., the acquirer was capable of operating a viable cottonseed business using the divested assets). This procedural setting allowed Monsanto and DPL to close their merger shortly after the Complaint and Proposed Final Judgment were filed and to expeditiously complete the sale of the Enhanced Stoneville Assets to Bayer and Americot, thereby ensuring that neither the Enhanced Stoneville Assets nor DPL were held in competitive limbo during the pendency of the Court's review.

terms of the proposed Final Judgment. Pursuant to that agreement, Monsanto delivered to Syngenta certain seeds that the proposed Final Judgment requires Monsanto to offer to Syngenta. After obtaining approval from the United States, Monsanto, on November 27, 2007, offered to Syngenta the licenses required by the proposed Final Judgment.

C. Third Party License Modifications

Section VI of the proposed Final Judgment requires Monsanto to revise certain third-party cottonseed licenses and gives the United States sole discretion to approve the proposed revisions. The United States engaged in continuing negotiations with Monsanto to ensure that the revisions satisfied the terms of the proposed Final Judgment. On November 15, 2007, Monsanto, pursuant to Section VI.B. of the proposed Final Judgment, provided to the United States for its approval copies of the modified licenses Monsanto intended to offer to third party seed companies; the United States approved the modified licenses on November 20, 2007. Monsanto then provided to the licensees the offers containing the modified license language. The offers remain open until March 31, 2008.

D. Filing of Public Comments

During the 60-day public comment period called for by the Tunney Act, the United States received comments from the following eleven organizations and groups: the American Antitrust Institute (''AAI''); Attorneys General of Virginia, Arkansas, Delaware, Kentucky, Maryland, New Mexico, North Carolina, Ohio, Oklahoma, Rhode Island, Tennessee, Utah, and West Virginia (the ''States''); California Consumers United (''CCU''); E.I. du Pont de Nemours & Co. (''DuPont''; the Illinois Stewardship Alliance (''ISA''); the International Center for Technology Assessment/Food Safety (''ICTA''); a comment signed by the president of Plains Justice, the president of the Women, Food, and Agriculture Network, and the president of the Iowa Farmers Union (''Plains Justice''); a comment signed by a group of Texas cotton gins and other cotton based associations (''Texas Cotton Associations''); the Ohio Farmers Union (''OFU''); the Organization for Competitive Markets (''OCM''); and the Wisconsin Farmers Union (''WFU'').

The criticisms offered by the Commenters generally fall into four areas: (1) The appropriate standard of review; (2) the sufficiency of the divestiture to preserve competition in the relevant markets; (3) the workability of the remedy; and (4) purported competitive harms not alleged in the Complaint. Upon careful review, the United States believes that nothing in the comments warrants any changes to the proposed Final Judgment or is sufficient to suggest that entry of the proposed Final Judgment is not in the public interest. We address these issues below and explain why the criticisms raised in the comments are not valid.

III. The Standards Governing the Court's Public Interest Determination

A. The Appropriate Legal Standard

As discussed in detail in the Competitive Impact Statement (at 23–27), the Court, in making the public interest determination called for by the Tunney Act, is required to consider certain factors listed in the Act relating to the competitive impact of the judgment and whether it adequately remedies the harm alleged in the complaint.[20] This public interest inquiry is necessarily a limited one as the United States is entitled to deference in crafting its antitrust settlements, especially with respect to the scope of its complaint and the adequacy of its remedy. *See generally United States* v. *Microsoft Corp.,* 56 F.3d 1448, 1458–62 (D.C. Cir. 1995); *United States* v. *SBC Commc'ns,* 489 F.Supp.2d 1, 12–17 (D.D.C. 2007).

With respect to the scope of the complaint, the Tunney Act review does not provide for an examination of possible competitive harms the United States did not allege. *See, e.g., Microsoft,* 56 F.3d at 1459 (stating that the district judge may not ''reach beyond the complaint to evaluate claims that the government did *not* make'').[21] The reviewing court may look beyond the scope of the complaint only when the complaint has been ''drafted so narrowly as to make a mockery of judicial power.'' *SBC Commc'ns,* 489 F.Supp.2d at 14. That is not the case here as the Complaint properly alleges the harm the transaction is likely to cause in the relevant product and geographic markets. Indeed, multiple commentors recognized the sufficiency of the Complaint: The States, for example, note that ''the United States acknowledges the significant anticompetitive effects that the acquisition will have on the development, production and distribution of cotton biotech traits and seeds.''[22] DuPont similarly states that ''the Complaint filed by the Justice Department's Antitrust Division details the serious harm to farmers and consumers that will result,'' and further acknowledges that the ''Complaint sets forth a clear and compelling story of the competitive injury that will result from the proposed transaction.''[23]

With respect to the sufficiency of the proposed remedy, a district court must accord due respect to the United States's views of the nature of the case, its perception of the market structure, and its predictions as to the effect of proposed remedies. *E.g., SBC Commc'ns,* 489 F.Supp.2d at 17 (United States entitled to ''deference'' as to ''predictions about the efficacy of its remedies''); see also CIS at 24–26. Under this standard, the United States ''need only provide a factual basis for concluding that the settlements are reasonably adequate remedies for the alleged harms.'' *SBC Commc'ns,* 489 F.Supp.2d at 17. DuPont, referencing the Division's review of Monsanto's abandoned attempt to purchase DPL in 1998, suggests that the ''government has an extra burden * * * when it changes its view on an identical transaction.''[24] But the assertion finds no support in the language of the statute or the caselaw. This is not surprising given that it contravenes long-established precedent holding that a prosecutor's exercise of discretion carries no estoppel effect. Moreover, DuPont's position would inappropriately require the court to engage in extensive fact finding of historical events—in essence, a trial within a trial—simply to determine whether the two transactions were in fact ''identical'' and whether the government accepted a less effective remedy than it would have the first time.[25]

[20] See 15 U.S.C. 16(e)(1)(A) & (B). The Microsoft court explained that a court making a public interest determination under the Act should consider, among other things, the relationship between the remedy secured and the specific allegations set forth in the government's complaint, whether the decree is sufficiently clear, whether enforcement mechanisms are sufficient, and whether the decree may positively harm third parties. Microsoft, 56 F.3d at 1458–62.

[21] Were a court to reject a proposed decree on the grounds that it failed to address harm not alleged in the complaint, it would offer the United States what the Court of Appeals for the D.C. Circuit referred to as a ''difficult, perhaps Hobson's choice,'' in that the United States would have to either redraft the complaint and pursue a case it believed had no merit, or drop its case and allow conduct it believed to be anticompetitive to go unremedied. Microsoft, 56 F.3d at 1456.

[22] States Comments at 6.

[23] DuPont Comments at 2 & 19.

[24] DuPont Comments at 3.

[25] In fact, DuPont's factual premise is flawed. Contrary to DuPont's suggestion, the fact that Monsanto abandoned its initial proposed acquisition of DPL in the face of a threatened enforcement action by the United States does not imply that no remedy would have been acceptable to the United States in 1999. Rather, it implies only that Monsanto was at that time unwilling to agree to remedies deemed necessary by the United States.

B. The Appropriate Inquiry Is Whether the Remedy Preserves Competition, Not Whether It Replicates DPL

Some of the commentors criticize the remedy, particularly the Enhanced Stoneville Assets divestiture, for not creating a competitor that mirrors DPL in scope and independence.[26] But they pose the wrong standard for evaluating the effectiveness of the remedy. Because the antitrust laws seek to protect competition, the purpose of the remedy is not to recreate DPL but to preserve the competition that DPL brought to the market—to ensure that cotton farmers continue to realize the competitive benefits they would have had but for the merger.

Thus, the key questions in evaluating the remedy are: (1) Does it ensure that farmers will continue to benefit from competition to develop, commercialize and sell cottonseed in the MidSouth and Southeast?, and (2) Does it preserve the likely benefits to competition that would have arisen from development of cottonseed for the MidSouth and Southeast containing non-Monsanto traits? The proposed remedy does both, as we explain in more detail below.

For some commentors, however, no remedy would suffice for this transaction or even any other potential acquisition of DPL. They essentially argue not only that the sole effective remedy in this case would be to block the transaction outright but that DPL must be kept as it is—independent of any trait provider—in perpetuity, available at any time for partnership with any trait provider that chooses to work with it.[27] This is a extraordinary proposition, and it is wrong. It relies on a static view of the market, presuming that DPL is essential to a competitive traited cottonseed market; it discounts the incentives and abilities of others, such as Bayer and Syngenta, to compete; it ignores market facts, such as Stoneville's efforts and growing success in the MidSouth and Southeast; and it would deny DPL and consumers the efficiencies that would come from vertical integration with a trait provider (evidenced by the significant number of seed companies that are vertically integrated into trait development).

In short, the remedy, when considered in light of the applicable legal standard and the appropriate inquiry, satisfies the public interest requirements set forth in the Tunney Act.

IV. Response to Comments Criticizing the Sufficiency of the Remedy

Several commenters offer criticisms regarding the sufficiency of particular aspects of the remedy.[28] Before addressing these criticisms, it is important to note that the remedy should be evaluated as a whole. It is not necessary that each asset included within the remedy package, on a stand-alone basis, sufficiently preserves competition. Rather, the key determination is whether, as directed by the proposed Final Judgment, the entire remedy maintains competition for the development, commercialization and sale of traited cottonseed in the relevant markets. The remedy here accomplishes this goal by bringing together:

- An ongoing, historically successful cottonseed company, Stoneville, that has sold cottonseed in the MidSouth and Southeast since 1922, and in which Monsanto has recently invested heavily;
- Changes in Stoneville's trait licenses with Monsanto that give the purchaser of the Enhanced Stoneville Assets terms similar to those held by DPL;
- All of Monsanto's ongoing germplasm enhancement efforts that supported its internal predictions of substantial Stoneville market share growth over the next five years;
- Eight DPL elite conventional breeding lines that serve as the germplasm source for approximately 60% of DPL's sales in the MidSouth and Southeast;
- Twelve DPL elite conventional breeding lines that DPL anticipated would be the germplasm source for its next generation of traited seed in the MidSouth and Southeast;
- The requirement that the purchaser of the Enhanced Stoneville Assets be capable of and committed to using the assets to compete for traited cottonseed sales in the relevant markets;
- Divestiture to Syngenta of the VipCot development work to prevent any significant delay in bringing cottonseed with non-Monsanto traits to the marketplace; and
- Changes in Monsanto's trait license agreements with other cottonseed companies to allow them, without penalty, to stack non-Monsanto and Monsanto traits and to sell cottonseed that includes non-Monsanto traits.

This far-reaching remedy does not depend on the future success of each and every one of its components. Even if some component of the remedy were to fall short of expectations—e.g., one of the next-generation DPL lines fails to continue exhibiting the high performance characteristics that it has exhibited thus far—it would not jeopardize the efficacy of the remedy. Taken as a whole, there is no question that the remedy satisfies its goal of curing the competitive harms alleged in the Complaint. Nevertheless, we respond below to commentors' particular concerns.

A. Divestiture of the Stoneville Business Unit and Monsanto Germplasm Provide the Acquirer a Firm Foundation on Which To Compete in the MidSouth and Southeast Markets

Some commenters claim that Stoneville will not provide the acquirer of the Enhanced Stoneville Assets with an adequate foundation on which to compete against Monsanto/DPL.[29]

Stoneville, however, is an ongoing business, which has operated in the relevant markets for over 80 years and has significant capabilities and growth potential. It offers high quality germplasm and has a strong developmental pipeline. Its divestiture, coupled with additional cotton germplasm from Monsanto's breeding programs, will provide the principal acquirer—Bayer—a well-developed infrastructure and significant germplasm assets.

1. Stoneville Infrastructure

When Monsanto acquired Stoneville in 2005, Stoneville was a freestanding cottonseed company with a strong breeding program, as well as a national sales and marketing force. These existing assets had been sufficient to position Stoneville as a national provider of traited cottonseed—second only to DPL in the MidSouth and Southeast. As described above, Monsanto nonetheless took several steps to enhance Stoneville's breeding capabilities. With these investments, Stoneville is poised for significant growth, as reflected by Monsanto's internal projections.

DuPont nevertheless suggests that Stoneville's lack of viability as an

[26] See, *e.g.*, States Comments at 7 (''divested Stoneville is not the equivalent of DPL''); WFU Comment at I (proposed remedy ''does not even come close to replacing independent DPL'').

[27] See, e.g., States Comments at 7 (''[S]toneville has been divested to Bayer, a trait development competitor of Monsanto. Because of this, Stoneville can never duplicate DPL's unique position as an independent cotton seed company that can use its successful and high-quality germplasm to partner with several different biotech companies to develop viable competitive alternatives to Monsanto's monopolies in traits.''); OFU Comments at 1 (Enhanced Stoneville Assets do ''not take the place of an independent Delta and Pine Land'').

[28] See States Comments at 6–8; ICTA Comments at 6–8; AAI Comments at 8–16; DuPont Comments at 9–18; OFU Comments at 1; WFU Comments at 1; Texas Cotton Associations at 2; ICTA Comments at 1; Plains Justice Comments at 1; ISA Comments at 1; 0CM Comments at 2.

[29] See DuPont Comments at 6, 13 and 14; 0CM Comments at 2; States Comments at 4 and 7.

ongoing business is evidenced by trait developers choosing not to work with Stoneville between 1999 and 2005, when Stoneville was independent of Monsanto.[30] In making this argument, DuPont fails to note the fundamental reason why trait companies, including DuPont, chose not to work with Stoneville; namely, that under Stoneville's licenses with Monsanto at that time, Stoneville could not stack a non-Monsanto trait with a Monsanto trait.[31] Similarly, Stoneville was likely to be reluctant to provide a platform for an unproven trait because the terms of its Monsanto licenses became less lucrative if it worked with a non-Monsanto trait (e.g., it received a smaller share of the trait fee collected by Monsanto from farmers). In contrast, DPL could freely work with non-Monsanto traits, including stacking them with Monsanto traits, without risking reduction in its fee share or losing its Monsanto trait license altogether. The Enhanced Stoneville Assets include trait licenses from Monsanto that are comparable to those held by DPL pre-merger, and free of the restrictions that previously existed in Stoneville's licenses.

DuPont also claims that the divestiture is insufficient in that it does not provide the acquirer enough breeding stations, comparing DPL's eleven global breeding stations with Stoneville's two breeding stations.[32] That comparison, however, is misleading. Though DPL has eleven breeding stations worldwide, only five develop varieties for the MidSouth and Southeast. The divestiture includes the two breeding facilities that Stoneville used for developing MidSouth and Southeast varieties,[33] and Bayer has two additional breeding stations located in those regions, bringing Bayer's total to four after the divestiture. Accordingly, as a result of the sale of Enhanced Stoneville assets to Bayer, DPL–Monsanto and Bayer will have breeding infrastructures similar in size and scope focused upon developing varieties suited for the MidSouth and Southeast.

2. Monsanto/Stoneville Germplasm

The remedy provides the acquirer of the Enhanced Stoneville Assets all U.S. Stoneville cotton germplasm, as well as germplasm from Monsanto's Advanced Exotic Yield and Marker Assisted Breeding programs. For various reasons, commentors fail to understand the significance of these divestitures.

a. The Breeding Process

Much of the criticism results from lack of familiarity with the cottonseed breeding process. To address that deficiency, we provide below a short primer on cottonseed development.

There are two breeding stages in the development of quality, traited cottonseed. Breeders first develop elite conventional (nontraited) lines and, from those, they proceed to develop commercial traited varieties. In developing an elite conventional line, the breeder begins by crossing two elite lines that the breeder anticipates will produce quality offspring. The result of that cross will be many progeny plants with differing characteristics. The breeder then evaluates and selects some subset of the progeny as promising enough to continue in the breeding process. In the greenhouse, the breeder then self-pollinates the progeny plant (i.e., crosses the plant with itself), evaluates its progeny, and makes further selections. This process is typically repeated four times in the greenhouse as the breeder continues to make selections based on observable plant characteristics. Promising lines then are grown in the field and subjected to additional testing.

At the end of this process, which takes approximately six years, the finished line can take either or both of two paths. If the seed company intends to commercialize the line as a conventional variety, the company will subject the line to an additional year of field trials and then over the course of the next two years ''bulk'' the line up for commercial sale. If the seed company intends to use the finished line as a traited variety, the seed company will subject the line to a separate procedure. The finished line (the ''recurrent parent'') will first be crossed with a donor plant that contains the desired trait to introduce or ''introgress'' the trait into the recurrent parent line. After that initial cross, progeny plants are selected on the basis of agronomic characteristics and the presence of the trait. Those plants are then typically ''backcrossed'' with the recurrent parent, which involves pollinating the plants with pollen from the recurrent parent. Backcrossing brings the plant closer to the genetics of the recurrent parent, except that the trait is now present. Breeders typically backcross three to five times. Once the backcrossing is completed, the seed company puts the resulting traited seed through a period of increased testing and eventually bulking up for commercialization. Limited quantities of a traited variety from that recurrent parent will be commercially available approximately five years after the recurrent parent is available for breeding.[34]

b. Stoneville Germplasm

The proposed Final Judgment provides the acquirer of the Enhanced Stoneville Assets with all of Stoneville's U.S. germplasm.[35] DuPont, however, questions the likelihood that the varieties in Stoneville's development pipeline will be successful.[36] The evidence, however, shows the strength of the pipeline and, as Monsanto itself had predicted, its strong likelihood of commercial success.

Stoneville has over fifty lines in its pipeline for possible commercialization in the MidSouth and Southeast between 2008 and 2012. Stoneville's pipeline is the product of its traditional focus on mid- to full-season varieties found in the MidSouth as well as a more-recent sustained and intensive research effort to develop germplasm suitable for the Southeast.[37] Stoneville has historically been more successful at capturing sales in the MidSouth than in the Southeast (as evidenced by its 2006 share of 16% in the MidSouth versus 8% in the Southeast) because its breeding program had focused primarily on varieties

[30] DuPont Comments at 15.

[31] DuPont further suggests that Stoneville's inferiority as a trait partner is evidenced by Monsanto choosing to purchase DPL. DuPont overlooks the important fact that DPL had a pending lawsuit against Monsanto under which Monsanto faced a potential $2 billion liability. By purchasing DPL, Monsanto eliminated that liability. Although not a merger-specific efficiency, eliminating this potential liability provides an explanation for Monsanto's decision to undertake the acquisition. Monsanto's desire to resolve that litigation also contradicts ISA's assertion that ''the clear reason for Monsanto's acquisition of Delta is elimination of competition in seeds.'' ISA Comments at 1.

[32] DuPont Comments at 15; see also States Comments at 3.

[33] Monsanto also used facilities in Georgia and North Carolina in part for cottonseed development. Because Monsanto used those facilities for development of several crops besides cotton, and Monsanto included in the Enhanced Stoneville Assets the cottonseed-related tangible assets kept at those sites, the United States did not require divestiture of the real property supporting those facilities.

[34] Breeding a traited variety from elite parents can take as little as four years or as long as seven. The seven year outer time frame can be reduced by several means, including: using counter-seasonal breeding; using molecular markers to reduce the number of crosses used in introgression and increase stages; using high quality germplasm as the trait donor, in the case of creating a stacked variety, using a trait donor that contains both of the desired traits; limiting the number of official variety trials prior to making the seed available for sale; and bringing a more limited volume of seed to market in the launch year.

[35] As discussed above, this includes all germplasm with the exception of the NexGen varieties Americot acquired.

[36] DuPont Comments at 9–10.

[37] Full-season varieties typically perform better in the Southeast than the early- to mid-season varieties that excel in the MidSouth.

harvestable early in the growing season. When Emergent Genetics (''Emergent'') acquired Stoneville in 1999, however, it saw the Southeast as a lucrative growth area and began taking steps to increase Stoneville's efforts to breed mid- to full-season varieties (i.e., varieties better suited to the longer growing season afforded in the more southern growing areas). To this end, in 2001 Emergent acquired Helena Chemical's breeding program, which included germplasm lines suited for the Southeast. In addition, Emergent established a breeding station in Arizona with the specific mission of breeding mid- and full-season varieties.

When Monsanto acquired Stoneville in 2005, it continued these efforts to breed varieties suitable for the Southeast, significantly increasing the number of testing plots and aggressively using counter-season production to accelerate the introduction of full-season varieties. According to Monsanto's internal field tests, conducted prior to entering the agreement to acquire DPL, several of Stoneville's lines are performing in yield trials on par with DPL's most successful varieties in the MidSouth and Southeast, DP555 and DP444. Indeed, Monsanto anticipated that its efforts to improve Stoneville's breeding program would result in Stoneville gradually increasing its national share from 13% in 2006 to nearly 20% by 2010 (this estimate did not include the likely share increases that would stem from germplasm being developed by Monsanto outside of Stoneville that the proposed Final Judgment also requires to be divested).[38]

c. Additional Monsanto Germplasm

The proposed Final Judgment also requires Monsanto to divest cotton lines from its valuable internal research and development efforts—the Advanced Exotic Yield lines and the Marker Assisted Breeding (''MAB'') populations—regardless of whether Monsanto considered those lines to be part of Stoneville. In this way, the remedy ensures that the acquirer has the breadth of Monsanto's cottonseed development programs that would have been used to compete against DPL absent the transaction.

i. Advanced Exotic Yield Lines

DuPont implicitly criticizes the inclusion of the Advanced Exotic Yield Lines in the divestiture package, suggesting that because the CIS describes the value of these developmental lines as ''promising,'' the lines likely will be of little commercial value to the acquirer of the Enhanced Stoneville Assets.[39] Although Monsanto started its Advanced Exotic Yield program as a means of identifying traits in exotic cotton plants that would increase yields when bred into more traditional commercial lines, that program also resulted in the creation of finished elite lines that have achieved significantly better yields in field tests than the current leading varieties in the MidSouth and Southeast. As noted in the CIS, Monsanto planned to bring the first traited varieties from these lines to market by 2009. Monsanto forecasted that these traited varieties would be a significant driver of market share for Stoneville.[40]

AAI suggests that the acquirer will have little incentive to commercialize these varieties because they contain Monsanto traits. The comment offers no explanation of why the acquirer would forgo a significant profit opportunity by abandoning germplasm that appears to have significant advantages relative to competing germplasm that also contains Monsanto traits. In any case, Bayer has already publicly touted its acquisition of the Enhanced Stoneville Assets as including ''access to additional high performing cotton products with insect-resistant and herbicide-tolerant Monsanto traits.''[41]

AAI also contends that many of the Advanced Exotic Yield Lines ''are of extremely limited value to the acquirer'' because they already contain Monsanto traits and ''[b]reeding out Monsanto traits and then breeding in competing traits will take a long time.''[42] AAI's criticism, however, reflects a misunderstanding of the value of the lines and the various methods by which the acquirer can use them. In the near term, the acquirer can commercialize varieties from the Advanced Exotic Yield Lines that currently contain Monsanto traits. Sales of such varieties likely would be important for the acquirer in growing Stoneville's market share. In the medium and longer terms, the acquirer can use the lines as breeding stock to introduce varieties containing, in whole or in part, non-Monsanto traits. It can do this by two different methods. First, it could simultaneously breed out any Monsanto traits that are not desired while breeding in new traits. Under this method, it could use any of the lines, including the four recurrent parents,[43] as a parent in crosses that ultimately result in commercial varieties containing the desired traits, including varieties containing only non-Monsanto traits. Such a process could be carried out within the five year time horizon during which DPL anticipated it could bring non-Monsanto traited seed to market.[44] Under the second method, which would take additional time, the acquirer could breed out the Monsanto traits to make new conventional lines[45] and then use those conventional lines as breeding stock to launch varieties containing non-Monsanto traits.

Commenters' concerns regarding the rights retained by Monsanto to the Advanced Exotic Yield Lines also lack merit.[46] The rights retained by Monsanto to these lines merely allow Monsanto to continue a trait research program that, if successful in identifying a yield trait that could be introgressed into cotton varieties, would significantly benefit cotton farmers. Moreover, the proposed Final Judgment makes clear that, whether or not its research program is successful, Monsanto cannot encumber in any way the acquirer's use of the Advanced Exotic Yield Lines.

ii. MAB Populations

AAI and DuPont question the value of the MAB lines to the acquirer of the Enhanced Stoneville Assets, pointing to language in the CIS which states that

[38] DuPont notes that Stoneville's share in the Southeast and MidSouth has been in decline as evidence that its potential to compete in the future is not bright. DuPont Comments at 14. However, because Emergent's and Monsanto's investments in Stoneville's breeding capabilities are so recent, Stoneville's share declines do not accurately reflect Stoneville's potential. In 2007, Stoneville reversed the trend of declining share. According to USDA's annual reports on cotton varieties planted, Stoneville's breeding efforts are, as Monsanto predicted, beginning to produce results. From 2006 to 2007, Stoneville's share increased from approximately 13% to 15% nationwide and from just over 8% to 11% in the Southeast.

[39] DuPont Comments at 11 and 15.

[40] Despite their origin in a trait research program, further breeding and commercialization of these lines requires only traditional breeding techniques.

[41] Bayer, Investor Handout, Q2 2007, *http://www.investor.bayer.de/user_upload/2747/*.

[42] AAI Comments at 13.

[43] One of the recurrent parents is a conventional line and can be used immediately for breeding a variety that contains only non-Monsanto traits. The other three recurrent parents were originally created by crossing a variety containing Bollgard with an exotic variety and those parents accordingly contain the Bollgard I trait. If Bayer chooses, it can use these three parents immediately to breed varieties that contain a stack of a non-Monsanto herbicide trait and Bollgard II (breeding in Bollgard II does not require breeding out Bollgard I).

[44] Under this method, a breeder would cross an Advance Exotic Yield Line containing Monsanto traits with a line that contains non-Monsanto traits. The breeder can then select from the progeny offspring that lack the Monsanto traits and advance those offspring through traditional breeding methods to create the desired variety.

[45] Breeders can create a finished conventional line by crossing an Advanced Exotic Yield Line containing Monsanto traits with a conventional line and then selecting progeny that lack traits for further breeding.

[46] See ICTA Comments at 7; AAI Comments at 9.

some of the MAB lines contain Monsanto's traits.[47] In essence, such comments suggest that the Enhanced Stoneville Assets divestiture is only effective as a remedy to the extent the divestiture gives the acquirer access to conventional cotton lines. Since the acquirer would need to breed Monsanto's traits out of some of the MAB lines to create non-Monsanto traited lines, the commenters conclude that the competitive value of the MAB lines to the acquirer is limited in the near term and at most questionable in the longer term. That conclusion is incorrect.

Monsanto's MAB cotton program involved identifying genetic markers for important agronomic characteristics in the progeny resulting from the cross of two elite lines. The goal of the MAB program was two-fold. First, breeders could use these markers to make better informed selections from the progeny plants and could thereby produce a variety that likely was agronomically superior to, and bred more quickly than, a variety derived from traditional breeding selection methods. Monsanto anticipated that commercial varieties from the MAB program would become available as early as 2012. Second, and in the longer term, a large library of such genotypic information would offer breeders the ability to make better decisions about what elite varieties to cross in the first instance. Accordingly, divesting the MAB populations and the accompanying molecular mapping data provides the acquirer of the Enhanced Stoneville Assets with germplasm and genetic information that will enhance its offerings over the medium term and provide a significant informational foundation for successful competition over the longer term.

With respect to the specific concern that the MAB populations are of little value to the acquirer because some contain Monsanto traits, the AAI overstates the scope of the limitation articulated in the CIS. While many of the MAB populations are based on a cross involving a parent that contains a Monsanto trait, approximately 37% of them are not. Moreover, as explained above, the time line for creating and commercializing conventional versions from lines containing Monsanto traits, or creating versions containing traits other than Monsanto's, is approximately five years.

B. Additional DPL Germplasm Provides Important and Meaningful Value

Given the growth projections in Monsanto's business documents, the Stoneville germplasm combined with the Monsanto Advanced Exotic Yield and MAB cottonseed lines arguably would be sufficient to enable the acquirer of the Enhanced Stoneville Assets to compete effectively against DPL cottonseed. However, the proposed Final Judgment seeks to further ensure effective competition by supplementing the Monsanto assets with certain key DPL germplasm lines consisting of 20 lines representing the pedigrees of many of DPL's popular current varieties in the MidSouth and Southeast as well as a significant portion of DPL's breeding pipeline for these areas. Commenters had several concerns regarding these 20 lines,[48] which we address below.

1. The DPL Germplasm Is of High Quality

Some commenters question whether the 20 DPL lines will produce competitive traited varieties.[49] The United States used two methods to select the 20 lines, both of which were designed to identify the lines that had the greatest chance of commercial success in the MidSouth and the Southeast. First, the United States looked to the germplasm in the pedigrees of the DPL varieties currently performing best in the MidSouth and Southeast (based on total sales). The eight divested DPL lines that fall into this germplasm category[50] are prevalent in the pedigrees of the DPL varieties most successful in the MidSouth and Southeast today; five of these lines[51] are the recurrent parents of the DPL varieties accounting for about 60% of DPL's 2006 cottonseed sales in the Southeast—the growing region where DPL holds the greatest share advantage.[52] Any of these lines could be used immediately as a recurrent parent for a traited variety, as well as for breeding stock for developing new elite lines.

Second, the United States examined what germplasm DPL was counting on for its future seed sales, recognizing that breeding programs are not static. Thus, the other twelve DPL lines included in the divestiture package—even though not currently offered for sale or found in the pedigrees of current bestsellers—were selected because DPL gave them the highest rating of the select group of lines that it had in the pipeline for trait introduction in its MidSouth and Southeast breeding programs.[53] DPL had in fact already introgressed Syngenta's VipCot trait—the foundation of DPL's effort to move away from Monsanto—into these lines, revealing DPL's confidence that they were most likely to produce high yielding varieties suitable for the MidSouth and Southeast.[54] These lines would likely have been the source for any non-Monsanto traited varieties that DPL would have brought to market in the MidSouth and Southeast from 2012 to 2016. Because these lines are finished elite lines, any competent breeder (such as the breeding personnel at Stoneville and Bayer) could have traited versions of any of these lines ready for commercialization within approximately the next five years, *i.e.*, within the same time frame that DPL could bring a non-Monsanto herbicide-tolerant seed to market.[55]

Finally, some commenters opine that the mere fact that this germplasm has not yet been tested in the marketplace

[47] AAI Comments at 13; DuPont Comments at 11.

[48] See AAI Comments at 12; DuPont Comments at 12; and OCM Comments at 3.

[49] For example, DuPont raises questions about the process used in selecting these 20 lines. DuPont Comments at 12. The AAI suggests that the chances of the government picking good varieties is low. AAI Comments at 13.

[50] Lines DP 5690, DP 491, DP 2156, DP 565, DP 5305, DP 5415, and Delta Pearl.

[51] Lines AZ2099, DP 491, DP 565, DP 415, and Delta Pearl. Delta Pearl is the recurrent parent of DPL's wildly successful DP 555 BGIRR (which accounted for over 18% of all U.S. cottonseed sales in 2007 and over 80% of total cottonseed sales in the Southeast in 2007). Dupont notes ''the CIS does not disclose how many other DPL germplasm lines are represented in the lineage of these currently popular varieties.'' DuPont Comments at 12. No other DPL germplasm lines are represented in the lineage of the traited varieties derived from these five lines.

[52] OCM's and AAI's representation that these eight lines reflect only 1% of cotton acreage is based only on their share of sales when offered as conventional commercial varieties. OCM Comments at 3; AAI Comments at 12. However, the relevant statistic is the one cited above and in the CIS; namely, the role these lines have had in fostering DPL's current share of traited varieties in the MidSouth and Southeast.

[53] The United States's investigation revealed that over the past several years DPL's breeders have established a four-tier system for ranking the potential of germplasm the breeders have under development. From 2004 (when DPL set up the rating system) to 2007, only fifteen lines across DPL's five MidSouth and Southeast oriented breeding stations received DPL's highest internal ranking. The ranks assigned by DPL reflect the results of extensive field testing. Under the proposed Final Judgment, twelve of those lines will go to the acquirer of the Enhanced Stoneville Assets.

[54] Similarly, in 2006 DPL attempted to introduce potential OptimumGat events into seven DPL lines, hoping by that process to create a plant in which OptimumGat successfully imparted herbicide tolerance. While that attempt by DPL and DuPont failed to produce any potential candidates for use as an OptimumGat donor parent, the fact that all seven of the lines used in that experiment are among the twelve divested further demonstrates the high regard DPL had for these lines.

[55] Thus, AAI's criticism (p. 12) that the ''acquirer is therefore obtaining only the raw inputs necessary to breed varieties that could be commercially viable in the future and only after considerable expenditure'' is incorrect.

inherently diminishes its value.[56] As discussed above, the divested material is hardly of unpredictable quality. The twelve lines of DPL germplasm were selected precisely because those lines' superior performance had already been observed and relied upon by DPL's breeders.[57] DPL was developing the next generation of germplasm that it planned to use in connection with marketing non-Monsanto traits. Divestiture of this germplasm will allow the acquirer to continue these efforts and not rely solely on currently available material.

2. The Acquirer Will Be Able To Use This Germplasm Effectively

Some commenters suggest that it will take the acquirer anywhere from eight to fifteen years to commercialize traited varieties from these 20 lines.[58] To fact, it should take far less time. Because all 20 of the DPL lines in the Enhanced Stoneville Assets are finished elite conventional lines, they can be immediately used as a recurrent parent for a cross with a trait donor. Assuming competing traits are available to breed into them, traited varieties from these lines could reach the market in approximately five years—the same general time frame in which DPL could have introduced non-Monsanto traited varieties absent the merger.[59]

Contrary to DuPont's suggestion,[60] the acquirer of the Enhanced Stoneville Assets will not be at a disadvantage with respect to effectively using the DPL germplasm lines included in the package. The proposed Final Judgment specifically provides that the acquirer will receive applicable performance data and other information.[61] Such information transfers are a routine practice in the seed industry when germplasm or seed companies are bought or sold (which also occurs routinely)—the books, logs, and other documentation about a breeding line are transferred with the line even if the breeder does not go to the new owner of the line. These materials will readily allow the Stoneville breeders to understand the work that has been done on these lines to date and to move the lines forward in their breeding program.[62]

The States also contend that ''even post-acquisition, Monsanto retains the right to * * * preclude [the acquirer of the divested DPL lines from us[ing] them with non-Monsanto cotton biotech traits.'' States Comments at 7. Under the proposed Final Judgment, the acquirer of the DPL lines can freely use them to create varieties that contain (a) solely non-Monsanto traits, (b) Monsanto's Bollgard II and non-Monsanto herbicide tolerant traits, and (c) Monsanto's Flex, non-Monsanto insect resistant traits and non-Monsanto herbicide tolerant traits. The only limitation regarding use of non-Monsanto traits is that for a period of seven years the acquirer cannot commercialize varieties from the DPL lines that solely have Bollgard II, Flex and a non-glyphosate cotton herbicide tolerant trait currently commercialized in cotton. The only non-glyphosate cotton herbicide tolerant trait currently commercialized in cotton is Bayer's Liberty Link. This limitation adds to Bayer's incentive to introduce a non-Monsanto glyphosate tolerant cotton trait as a substitute for Monsanto's Flex.

3. Monsanto/DPL's Use of the Germplasm Does Not Diminish Its Value to the Acquirer and Provides Farmers Continued Benefits

Some commenters claim that the fact that Monsanto retained the right to continue working with the DPL lines, so long as the commercialized variety contains Monsanto-only traits, means that these lines have little value to the acquirer[63] and provides Monsanto an improper benefit.[64] First, to the extent that the DPL germplasm provides the acquirer of the Enhanced Stoneville Assets with a variety that has strong agronomic characteristics, the acquirer will have every incentive to market that product. Indeed, rather than being reason for concern, Monsanto's desire to retain rights to these lines is further indication of the value of this germplasm within DPL's breeding program.

Second, the licensing back of the lines to Monsanto/DPL benefits cotton farmers. For example, if Monsanto did not have a license for the to-be-divested DPL lines that are recurrent parents to existing DPL traited varieties (including DP555, which contains Monsanto's traits), Monsanto would have to remove these varieties from the market, significantly limiting options for cotton farmers. Similarly, without such a license, Monsanto would have to discard any varieties in DPL's developmental pipeline that have the divested lines as a recurrent parent, even if those lines already contain only Monsanto's traits. The commenters do not explain why competition would be served by denying cotton farmers these varieties.[65]

C. The Remedy Preserves Incentives and Opportunities for Effective Traited Cottonseed and Trait Development Competition

Commentors expressed concern about the opportunities for trait developers. Those concerns, however, are misplaced as discussed below.

1. Syngenta Will be Able to Effectively Use the VipCot Assets

Some commenters[66] express concern that certain provisions of the license

[56] See, e.g., ICTA Comments at 7 (''Twelve of the 20 lines are experimental lines with unproven and hence uncertain commercial potential.'').

[57] In further support of its claim that 20 lines are insufficient, DuPont claims that ''DPL introduced 64 unique cotton varieties in the past eight years, but only 14 ever came to represent 1% or more of annual U.S. cottonseed acres.'' DuPont Comments at 16. The statistic, however, is misleading. One elite breeding line can result in multiple unique varieties in two independent ways: varieties with the same recurrent parent can be differentiated based on their trait composition; additionally, the process of introgressing a trait into a conventional elite parent may yield multiple promising and distinctive progeny that have commercial potential. For example, Delta Pearl is the recurrent parent of five traited varieties introduced by DPL between 2000 and 2006 as well as being offered as a conventional variety. Similarly, DP491 is the recurrent parent of four traited varieties as well as being offered as a conventional variety. Thus, divesting 20 lines provides the potential for many more than 20 commercial varieties.

[58] Several commenters, citing provisions in the Complaint (¶ 15) and the CIS (at p. 16), provide time frames ranging from eight to fifteen years for how long it would take the acquirer to bring traited varieties of the DPL germplasm to market. E.g., States Comments at 6 (8–10 years); AAI Comments at 12 (10 years); and OCM Comments at 2 (8–15 years).

[59] Commenters ignore the fact that DPL has already completed the bulk of the breeding process on the divested lines (*i.e.*, the first six or seven years of making crosses and winnowing progeny). Commenters' citations to the Complaint and CIS are thus inapplicable. See Complaint ¶ 15 (referring to the time period for bringing a new variety to market from an initial cross of two cotton lines—the divested lines are well past that stage) and CIS at 16 (referring to DPL using the divested lines to bring varieties to market ''over'' the course of the next decade, not, as AAI suggests, for at least another ten years).

[60] DuPont Comments at 13.

[61] See proposed Final Judgment Schedule B, Section 2.

[62] Bayer has already received this information from DPL in conjunction with the divestiture of the 20 DPL lines.

[63] States Comments at 7 (''even post-acquisition, Monsanto retains the right to sell the most popular seeds from those lines''); OAG at 3 (20 lines ''is not even a true divestiture''); DuPont Comments at 13 (divestiture of DPL germplasm is non-exclusive).

[64] ICTA Comments at 7; see also AAI Comments at 10; DuPont Comments at 13.

[65] ICTA's concern about the provision allowing DPL to sell conventional versions of the DPL divested lines is also misplaced. ICTA Comments at 4 (''DoJ has absolutely no basis for proposing, or assessing the adequacy of the remedy cited above''). At the time the Complaint was filed, the 2007 seed purchasing season was already under way and DPL was selling some of the divested lines as conventional varieties. Thus, the provision permitting DPL to continue to sell these varieties in 2007 merely avoided disruption to farmers who wanted to buy these conventional varieties for that season.

[66] See e.g., ICTA Comments at 7–8; AAI Comments at 10.

agreements accompanying the divestiture of the VipCot Assets will unnecessarily restrict Syngenta's use of the assets.[67]

As noted above, the development of Syngenta's VipCot trait in DPL seed was at an advanced stage when Monsanto's acquisition of DPL was proposed. The United States required the divestiture of the most advanced of DPL's VipCot lines not to ensure that Syngenta could replace Stoneville as a competitor against DPL the Enhanced Stoneville Assets divestiture addresses that harm but to prevent any delay to VipCot's commercialization as a result of the merger. The terms of the proposed Final Judgment will provide Syngenta the rights it needs to bring VipCot to market and, thus, fulfill the goal that the VipCot Assets divestiture is intended to accomplish.

As provided in the proposed Final Judgment, the divestiture of these 43 lines to Syngenta offers several possible paths to market for this traited germplasm.[68] Syngenta could start its own seed company using this germplasm as a base either on its own or via a joint venture—and make sales of the traited seed directly to distributors or farmers. Syngenta already operates soy and corn seed companies in the United States and is one of the largest providers of cotton-related herbicides and insecticides in the world. Syngenta also is a partner with DuPont in a recently formed joint venture called Greenleaf Genetics, which the companies established to out-license the companies' proprietary corn and soybean genetics and biotechnology. In addition, Syngenta has the option of licensing the traited germplasm to other seed companies, such as Bayer, Dow and Americot, which already have breeding and distribution programs in place.[69]

The requirement in the proposed Final Judgment that a commercialized variety derived from the VipCot Assets contain one of four listed Syngenta insect-resistant events is not unduly restrictive.[70] These are the four ''versions'' of the insect-resistant trait that Syngenta and DPL were most confident could achieve commercial success in the near-to-medium-term. This restriction, therefore, is directly tied to the harm that divesting the VipCot Assets is designed to remedy; namely, delay in the introduction of the VipCot traits that DPL and Syngenta had been positioning to enter the market.[71] It is unlikely that any new insect-resistant traits developed by Syngenta other than VipCot would be available for more than a decade, and any such trait likely could in any event be stacked with one of the four existing events consistent with the proposed Final Judgment.

2. The Remedy Will Preserve Opportunities for Trait Developers to Market Nonmonsanto Traits In Competitive Cottonseed

Some commenters expressed concern that post-merger there will no longer be a sufficient base of non-Monsanto controlled cottonseed to support future trait development.[72] However, the Enhanced Stoneville Assets divestiture provided for in the proposed Final Judgment establishes a substantial future platform for cotton trait developers to use to reach farmers in the MidSouth and Southeast.

In addition, the third party license changes required by the proposed Final Judgment promote the development and commercialization of competitive cottonseed with non-Monsanto traits by giving cottonseed companies the ability to partner with trait developers other than Monsanto without any financial penalty. Currently, DPL seed accounts for approximately 43 percent of U.S. cottonseed acres, leaving over half of all U.S. cottonseed acres available to trait developers who seek to compete against the merged Monsanto/DPL. Commenters fail to explain why this amount of acreage is insufficient, especially given the additional returns on investment in cotton trait research that could be gained from Stoneville's likely growth in the MidSouth and Southeast, possible cross-crop trait applications, and international cottonseed markets.

With regard to the license changes, AAI suggests that Monsanto's trait licensing practices should be addressed in a separate case, claiming that the required licensing modifications do not help to remedy the loss of competition alleged in the Complaint.[73] To the contrary, the modifications specifically address competition lost from Monsanto's acquisition of DPL, since DPL's licenses did not limit its ability and incentive to work with non-Monsanto trait providers.[74] These trait providers will now be able to work with cottonseed companies who previously had restricted licenses.

3. The Remedy Should Not—and Does Not—Guarantee the Introduction of DuPont's OptimumGat Trait

Several commenters express concern that the remedy is insufficient because it does not ensure that DuPont's OptimumGat trait will reach the market.[75] As discussed above, the proposed remedy preserves the potential for the development and introduction of competing herbicide-tolerant traits in the MidSouth and Southeast. OptimumGat may prove to be such a trait, but there was never any certainty of that even without the merger.[76] Indeed, DPL was itself exploring herbicide-tolerant trait alternatives with developers other than DuPont. For example, Bayer and Syngenta independently have been working on herbicide-tolerant traits for cotton that could be commercialized on or before the time when DPL could have brought OptimumGat to market absent the merger. Thus, there was never any guarantee that OptimumGat would ultimately be commercialized in cotton even if DuPont were able to continue working with an independent DPL,[77] and it would be inappropriate for an antitrust remedy to establish a guarantee that the market would not have provided.

[67] The proposed Final Judgment requires Monsanto to divest to Syngenta 43 advanced DPL germplasm lines traited with VipCot and related assets necessary to bring varieties from these lines to market.

[68] The United States has worked with Monsanto and Syngenta to ensure that the divestiture (including access to any required licenses) is accomplished under terms that do not restrict Syngenta's competitiveness and are commercially reasonable.

[69] Of course, Syngenta also could license just the VipCot trait to seed companies if the DPL-traited germplasm is not attractive to potential licensees or if Syngenta wished to keep the DPL germplasm for its own branded seed product.

[70] See AAI Comments at 10.

[71] Contrary to the apparent perception of some commentors (see, e.g., ICTA Comments at 8), this aspect of the proposed Final Judgment is not designed to ensure, by itself, an adequate platform of high-quality germplasm for future trait developers. The limitations on Syngenta's use of the germplasm are appropriate to match this aspect of the remedy to its more-narrow objective preventing the merger from delaying VipCot's commercialization—and unrestricted access to this germplasm is unnecessary in light of the other elements of the proposed Final Judgment.

[72] See, e.g., OFU Comments at I (''competing seed trait developers will have great difficulty gaining access to the market''); OCM Comments at 3.

[73] AAI Comments at 15.

[74] In requiring these changes, the United States made no determination as to whether any provisions in Monsanto's licenses violated the antitrust laws.

[75] See, e.g, DuPont Comments at 2 (DuPont terminating research and development for OptimumGat in cotton); States Comments at 4 (claiming that ''because of DeltaMax's termination, Monsanto's cotton herbicide-tolerant trait dominance is assured for the foreseeable future'').

[76] As noted above (supra p. 5), development efforts for introducing OptimumGat in DPL germplasm were at a preliminary stage.

[77] See DPL 2006 Form 10K.

4. The Remedy Will Preserve the Number of ''Platforms'' for Trait Development That Existed Pre-Merger

Commenters suggest that because Bayer itself develops traits it will not work with other trait developers and that the remedy thus fails to preserve trait development opportunities.[78] Even if the claim were true, the competitive harm identified in the Complaint is still addressed: pre-merger, farmers in the MidSouth and Southeast looked forward to a choice between Stoneville/Monsanto and DPL/non-Monsanto traited cottonseed; post-merger they still will have a choice as they will look forward to competition between Stoneville/Bayer and DPL/Monsanto.

It is important to bear in mind that DPL itself might not have continued to work with multiple competing trait developers. Contemporaneous DPL business documents indicate that DPL likely would have selected only one non-Monsanto stack to bring to market in light of the costs associated with breeding traited varieties, commercially distributing multiple varieties, and managing the requirements and earning potentials of licences with trait developers. Thus, DPL likely would have chosen only *one* non-Monsanto insect-resistant trait and one non-Monsanto herbicide-tolerant trait to promote. It is also likely that DPL would have continued offering a Monsanto stack because of the apparent market demand for Monsanto's traits.[79]

In any event, Bayer has very strong incentives to use other third-party traits if those traits are better than the traits it can develop on its own. Indeed, Monsanto will have the same incentive. Competition from one will spur the other to try to offer the best product, regardless of whether the included trait is developed in-house or licensed from a third-party.[80] (And, it bears remembering, such development of traits is, and would have been absent the merger, likely to occur nearly a decade in the future.)

V. Response to Comments That the Remedy Is Not Workable

A number of commenters posit that the remedy provided for in the proposed Final Judgment is not in the public interest because the remedy is ''conduct-based''[81] as opposed to ''structural,'' and because the required divestitures have ''strings attached,'' such as licenses running between Monsanto and the acquirers of the divested assets. These commenters further assert that these provisions essentially render the remedy too costly to administer, or will require too much ongoing involvement and policing by the United States or the Court to be effective. As explained below, the proposed Final Judgment provides an effective remedy that is clean and certain (i.e., consisting of one-time, well-defined events that do not involve costly government regulation of the market), is consistent with the Merger Remedy Guide issued by the United States,[82] and does not involve cumbersome monitoring by the United States or the Court.

A. The Divestitures and License Changes Are One-Time Events, Not Ongoing Behavioral Remedies

The remedies proposed by the United States are one-time events calling for the divestiture of identifiable and transferable assets and intellectual property as well as modifications to certain licenses. These are not conduct remedies that involve ongoing entanglement in market operations or regulation of Monsanto's ongoing conduct.[83]

Specifically, the proposed Final Judgment calls for the divestiture of Stoneville, an ongoing cottonseed business that has been bought and sold on several occasions, including all of Stoneville's domestic germplasm, breeding, and sales and marketing assets, together with the information and intellectual property necessary to use those physical assets. In addition to the Stoneville business unit, the remedy calls for the divestiture of additional complementary assets, i.e., the 20 DPL cotton germplasm lines.[84] The transfer of this package of assets is a one-time event that constitutes a workable remedy to preserve competition and provides clear lines of ownership, with Bayer owning outright the Stoneville business, as well as the 20 lines formerly belonging to DPL. In its basic structure, this remedy is not different from the commercial transfer and licensing of germplasm and related intellectual property that occurs routinely in the marketplace.

Some commenters suggest that aspects of the remedy involving licensing arrangements are unworkable conduct remedies that are inconsistent with the United States's policies on merger remedies.[85] The United States's Merger Remedy Guide, however, explains that proper merger remedies can ''involve the sale of physical assets'' as well as the ''sale or licensing of intellectual property.''[86] Licensing is routine in this industry, where companies often combine the work of others (e.g., germplasm, traits, intellectual property) with their own useful developments and introduce better products for the market. The licenses in this case were crafted so that each company would know which rights it would retain after the divestiture to help ensure a workable remedy.

The divestiture of the VipCot Assets to Syngenta is also a workable remedy. The germplasm divestiture is accomplished though a license to Syngenta rather than absolute ownership, but the method of transfer will not affect Syngenta's ability to compete effectively as Syngenta will have a non-terminable and royalty-free license to use the divested lines.[87] As discussed above, the provisions in the proposed Final Judgment offer Syngenta several alternatives for bringing the DPL germplasm to market, and entry of VipCot-traited varieties will alter the structure of the traited cottonseed market regardless of the means selected.

Finally, the proposed Final Judgment's requirement that Monsanto modify existing third party licenses is also a one-time event. The changes to these licenses require modification of certain terms that will enable those third parties to work more readily with non-Monsanto trait providers.

B. Monitoring Compliance With the Remedy Will Not Unduly Burden the United States or the Court

Contrary to some commenters' suggestions, the terms of the proposed Final Judgment do not require cumbersome monitoring of the

[78] States Comments at 7.

[79] DPL's agreements with Syngenta and DuPont did not require exclusivity, and future market conditions (especially demand by farmers for Monsanto's proven traits) might have dictated that DPL continue offering Monsanto traits. Internal DPL business documents suggest that it planned to follow this course.

[80] Recognizing this dynamic, third-party trait developers will have incentives to continue research efforts.

[81] See e.g., AAI Comments at 9–10; CFS Comments at 7–9; DuPont Comments at 13–14; States Comment at 7.

[82] See U.S. Dep't. of Justice, Antitrust Div., Antitrust Division Policy Guide to Merger Remedies, (October 2004), available at *http://www.usdoj.gov/atr/public/guidelines/205108.pdf* (hereinafter ''Merger Remedy Guide'').

[83] See Merger Remedy Guide at 7–12 (describing the differences between structural and conduct remedies).

[84] The Merger Remedy Guide recognizes that there may be instances when ''additional assets from the merging firms will need to be included in the divestiture package.'' Merger Remedy Guide at 12.

[85] ICTA Comments at 6–8; AAI Comments at 9.

[86] Merger Remedy Guide at 7.

[87] Merger Remedy Guide at 15 n.22 (describing requirements that the Division typically imposes on structural remedies involving licensing).

marketplace by the United States or the Court.[88] For example, pointing to certain conditions and limitations placed on the germplasm to be divested under the proposed Final Judgment, AAI asserts that the divestitures are a ''conduct-based, regulatory-style 'fix' that imposes on this Court a monitoring and compliance burden that it should be loathe to undertake.'' [89] These criticisms grossly overstate monitoring issues associated with the proposed Final Judgment.

As stated above, the asset divestitures and license modifications are one-time events that, in fact, have already been accomplished in their entirety or have been implemented successfully in significant part. There remains, of course, the possibility that a dispute under one of the asset purchase agreements or licenses will arise in the future. Such a possibility exists in nearly every case in which the United States requires divestitures. As a general matter, such disputes would not require intervention by the United States, as the parties to the dispute can rely on contract procedures and other remedial steps to reach a resolution. Accordingly, while the United States will continue to monitor Monsanto's behavior to ensure compliance with the judgment, the prospect of the United States and this Court becoming enmeshed in the types of disputes enumerated by the commenters is both exaggerated and remote.

VI. Response to Comments That Raise Issues Beyond the Scope of the Court's Review

Several commenters express concerns about competitive issues not raised in the Complaint. As discussed above in Section III.A., issues beyond the scope of the Complaint are outside the purview of the Court. However, even if the Court were to consider the merits of these alleged concerns, the United States appropriately concluded that permitting the transaction will not give rise to the posited harms.

A. Crops Other Than Cotton

Several commenters expressed concern that the merger will have a detrimental impact on the development of traits for corn and soy.[90] These commenters argue that a reduced revenue opportunity in cotton will make trait producers hesitant to develop traits as they will have fewer opportunities to profit from their investment. Market conditions belie that prediction.

The revenue opportunities for corn and soy traits far exceed those for cotton, based on available acres. The market for biotech soy is more than four times greater than the market for biotech cotton in the United States, and more than three times greater worldwide. The market for biotech corn is at least four times greater than that for cotton in the United States, and at least 1.3 times greater than that for cotton worldwide. Within the United States, the combined market opportunity to sell biotech soy and biotech corn is roughly 130 million acres, whereas there are only 15 million cotton acres.[91] That revenue opportunity has proven sufficient for DuPont to continue its commercialization of OptimumGat in corn and soy and to continue research and development of other transgenic traits [92] and likely would provide similar incentives for other trait developers.

B. Conventional Cottonseed

ICTA suggests that the transaction will result in harm to a conventional cottonseed market.[93] The merger does not, however, substantially alter incentives of seed companies to offer conventional varieties. Absent the merger, DPL's share of the trait fee charged by Monsanto reflected a significant share of DPL's revenues, and DPL's revenues from trait fees would have become even larger as it shifted to non-Monsanto traits. Accordingly, even without the merger, DPL would have had substantial incentives to shift sales from conventional to traited seed so as to earn these fees. Further, ICTA fails to explain why, assuming there is a core set of farmers committed to using conventional seed, Monsanto or Bayer would not continue to have sufficient incentives to provide conventional seed to them.[94]

C. The Southwest and West Traited Cottonseed Markets

ICTA contends that the transaction will harm competition for traited cottonseed in the Southwest and West regions of the United States. A close examination of the facts reveals the lack of support for ICTA's claim.[95]

With respect to the Southwest,[96] DPL and Stoneville have a much smaller competitive presence than they do in the MidSouth or Southeast, in large part because their germplasm is not uniquely suited for the Southwest region. As reflected by the 2006 market shares for traited cottonseed in this region, there are a number of competing companies: Bayer 46%; DPL 26%; Stoneville 15% (Stoneville branded seed 5% and NexGen branded seed 10%); Americot 5%; All-Tex 3%; UAP 3% and Croplan 1%.[97] The divestiture of the Enhanced Stoneville Assets to Bayer and Americot does not significantly alter the competitive situation. Because Stoneville developed its NexGen brand seed specifically for the Southwest market and Americot acquired Stoneville's NexGen-related assets, the Southwest market will continue to have three seed companies with significant shares (Bayer/Fibermax, Monsanto/DPL and Americot/NexGen) and three additional companies with a smaller presence (All-Tex, Croplan, and UAP).

With respect to the West, a proper analysis must recognize that Arizona and California are very different and relatively small markets.[98] In California, nearly all of the cotton grown is either pima or acala (a form of upland cotton) [99] Stoneville does not sell pima

[88] See ICTA Comments at 8–9; AAI Comments at 11.

[89] AAI Comments at 11.

[90] See, e.g., States Comments at 5, 9; ISA Comments at 1; OFU Comments at 1; OCM Comments at 2; Plains Justice Comments at 1.

[91] Monsanto estimates, from Hugh Grant, Chairman, President, and CEO, Monsanto, Presentation at Sanford Bernstein Strategic Decisions Conference, slide 11 (May 30, 2007), *http://www.monsanto.com/pdf/investors/2007/05-30-07.pdf.*

[92] See Investor Day Presentation at slides 34, 36 and 40.

[93] See, *e.g.*, ICTA at 28, 43.

[94] ICTA notes that ''40%'' of the 36 conventional varieties planted in 2006 were DPL varieties. According to USDA 2006 data, DPL offered fifteen conventional varieties, with seven of those fifteen having sales in the MidSouth and Southeast. Six of those seven were divested to Bayer as part of the Enhanced Stoneville Assets.

[95] ICTA Comments at 5.

[96] Though the USDA classifies the Southwest as comprising Texas, Oklahoma and Kansas, we have included New Mexico in our analysis of the region. New Mexico has two distinct cotton growing areas that can be roughly described as Eastern New Mexico and the Mesilla Valley. The same cotton varieties that grow successfully in Texas and Oklahoma are used in Eastern New Mexico whereas acala varieties are primarily grown in the Mesilla Valley. Because the vast majority of cotton acreage in New Mexico is in the eastern region, we have included data from that region in our analysis of the Southwest.

[97] The United States derived the above estimated shares of traited cottonseed sales in the Southwest (including New Mexico for the reasons discussed above) from USDA data and other data received during the course of the United States's investigation. These shares discount ''saved seed''—conventional seed that a farmer saves from one year's crop to plant the next year (a practice that is more prevalent in the Southwest than the other regions due to the greater use of conventional seed which seed companies do not prohibit farmers from saving). USDA data ascribes saved seed to the seed company that originally produced the seed—even if the actual sale of that seed occurred in a previous year—and thus significantly overstates branded seed companies' shares in the region.

[98] As noted above, while classified by the USDA as part of the West, most of New Mexico's cotton production occurs in the eastern part of the state and requires the same varieties that perform well in the Southwest.

[99] There are two species of cotton grown in the United States: Pima and upland. Furthermore, there

or acala varieties. Based on 2006 market shares for traited upland varieties grown in California (which ignores the large volume of pima cotton grown in California), Stoneville has only a 3% share, while Dow has a 43% share, Bayer 38%, DPL 13% and UAP 3%. Accordingly, the transaction does not significantly affect traited cottonseed competition in California.

Like the MidSouth and Southeast, the USDA data suggest there are two significant sources of upland cottonseed in Arizona: DPL with 73% and Stoneville with 20%. Because the proposed Final Judgment adequately addresses competition issues in the MidSouth and Southeast by requiring divestiture of the Enhanced Stoneville Assets, it also resolves any potential issues for Arizona. Further, because Arizona's geography is well-suited for seed production of Southeast and MidSouth varieties, a significant amount of the upland cotton planted in Arizona is grown by farmers under contract with DPL and Stoneville for the purpose of producing cottonseed (rather than cotton fiber).[100] Thus, DPL's and Stoneville's shares in Arizona primarily reflect that they perform a substantial amount of seed production there.

D. Prices for Cottonseed Sold for Livestock Feed

OFU predicts that prices paid for cottonseed used in livestock feed will increase due to the merger.[101] The comment appears to misunderstand the source of cottonseed used for feed. Such seed does not come directly from the cottonseed companies. Rather, seed used for feed is the by-product of the cotton production process. The licensing agreements farmers sign in order to plant transgenic seed prevent them from planting the seed from their crop; hence, they typically sell any seed extracted from the cotton during the ginning process for oil or feed.[102] That seed does not pass through the hands of a cottonseed company on its way to be sold as feed. Nor does the OFU explain how the merger would affect prices of cottonseed sold for feed. Historically, the price of cottonseed used as livestock feed has remained fairly stable even as the price of transgenic planting seed has increased. Over the past ten years the price of seed for feed has averaged $107 per short ton, a fraction of what farmers pay per bag of transgenic seed.[103] Moreover, the price of cottonseed sold for feed is likely affected by other sources of livestock feed. Finally, even if the price paid by farmers for cottonseed for planting did affect the price of feed cottonseed, since the proposed Final Judgment preserves traited cottonseed competition, the merger should have no adverse impact on the price of feed cottonseed.

E. Alleged Monsanto Exclusionary Business Practices

The States contend that Monsanto will engage in exclusionary business practices post merger, such as ''acquisitions of independent seed companies and germplasm providers to enhance its monopoly position in both seed and traits; long-term, highly restrictive licensing agreements that encourage the sale of Monsanto's biotech traits exclusively; licensing restrictions that prevent independent seed companies from combining Monsanto biotech traits with non-Monsanto traits; and bundling rebates on seeds, traits and chemicals to exclude competitors from retail distribution channels.''[104]

Given both the breadth and lack of specificity of this contention, it is difficult to discern how it relates to the transaction at issue here. The actions on the laundry list articulated by the States are ones Monsanto could undertake with or without this merger, and the States do not explain why the transaction would change Monsanto's incentive or ability to engage in them. Nor do the States explain why such actions, if designed to have an anticompetitive effect, would be successful in light of the preservation of competition achieved by the required divestiture of the Enhanced Stoneville Assets.[105]

Furthermore, though the United States made no determination regarding the competitive effect of certain business practices, some aspects of the proposed Final Judgment would make it difficult for Monsanto to engage in certain of the purportedly anticompetitive practices suggested by the States. For example, the proposed Final Judgment requires Monsanto to remove anti-stacking provisions in its licenses to other seed companies and penalties for working with competing trait providers. Also, it requires Monsanto to notify the United States in advance of purchases of independent cottonseed companies and germplasm providers, affording an opportunity to investigate and if necessary challenge any that might be anticompetitive.[106]

Finally, and most fundamentally, the antitrust laws will continue to apply and would proscribe conduct by Monsanto that runs afoul of applicable legal standards.

VII. Conclusion

After careful consideration of the public comments, the United States remains of the view that the proposed Final Judgment provides an effective and appropriate remedy for the antitrust violation alleged in the Complaint and that its entry would therefore be in the public interest. Although the proposed Final Judgment, like any settlement, was a product of negotiation and compromise,[107] it fully achieved the United States's goals in this action. Even if the court might be inclined to view the issues differently, the purpose of Tunney Act review is not for the court to engage in an ''unrestricted evaluation of what relief would best serve the public'' [108] or to determine the relief ''that will best serve society,'' [109] it is simply to determine whether the proposed decree is within the reaches of the public interest—''even if it falls short of the remedy the court would impose on its own.'' [110]

The Court is to consider ''the impact of entry of such judgment upon competition in the relevant market or markets, upon the public generally and individuals alleging specific injury from the violations set forth in the complaint including consideration of the public benefit, if any, to be derived from a determination of the issues at trial'' [111] Because the markets identified in the Complaint are the only ones in which competition is likely to be lessened as a result of the merger, the impact of

are different types of upland cotton grown in the United States. In California, most of the upland cotton grown are acala varieties.

[100] The USDA survey data does not distinguish between cotton grown primarily for seed production and cotton grown as a crop.

[101] OFU Comments at 1.

[102] There would be excess seed even if farmers were able to replant transgenic seed because an acre of cotton yields far more seed than is necessary to replant that acre.

[103] USDA, Oil crop Situation and Outlook Yearbook, May 2007, at 47. The price of $107 per short ton translates to a price of $2.75 per 50 pound bag. In contrast, a 50 pound bag-equivalent of DP555BGRR would cost a farmer in Georgia roughly $130 for the seed alone, plus an additional $292 for the trait fee.

[104] States Comments at 8.

[105] Bayer, Dow, DuPont and Syngenta all have agricultural products that could be added to a bundle that includes cottonseed.

[106] Proposed Final Judgment at 19.

[107] In this context, it is important to bear in mind that because Monsanto had committed to selling Stoneville as a condition of its acquisition agreement with DPL, a challenge to the acquisition by the United States would have had to overcome the adequacy of a Stoneville divestiture to remedy any alleged harm.

[108] *United States* v. *BNS, Inc.*, 858 F.2d 456, 462 (9th Cir. 1988) (citing *United States* v. *Bechtel Corp.*, 648 F.2d 660, 666 (9th Cir. 1981)).

[109] Bechtel, 648 F.2d at 666.

[110] *United States* v. *AT&T Co.*, 552 F. Supp. 131, 151 (D.D.C. 1982).

[111] 15 U.S.C. 16(e)(l)(B).

entry of the proposed Final Judgment will be to restore any competition lost as a result of the merger. Farmers in the MidSouth and Southeast who might have otherwise suffered injury from the violation set forth in the Complaint will retain their current and prospective competitive choices for traited cottonseed by virtue of the contemplated divestitures. Based on the factors set forth in the Tunney Act, the proposed Final Judgment is in the public interest.

Pursuant to Section 16(d) of the Tunney Act, the United States is submitting the public comments and its Response to the **Federal Register** for publication. Our response is also being provided to each of the commenters. After the comments and the United States's Response to Comments are published in the **Federal Register**, the United States will move this Court to enter the proposed Final Judgment.

Dated: March 05, 2008.

Respectfully submitted,

For Plaintiff:

Jill A. Ptacek (WA Bar #18756)

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Tunney Act Comments of the American Antitrust Institute on the Proposed Final Judgement

The American Antitrust Institute (AAI) is an independent Washington-based nonprofit education, research, and advocacy organization. The AAI's mission is to increase the role of competition, assure that competition works in the interests of consumers, and challenge abuses of concentrated economic power in the American and world economy. The AAI has had an interest in this proceeding because it raises critical issues of competition policy and consumer choice involving a key agricultural supply chain cotton. The AAI White Paper issued in November 2006 discusses some of the key issues raised by the merger.[1]

Pursuant to Section 2(b) of the Antitrust Procedures and Penalties Act (APPA), 15 U.S.C. 16 (the ''Tunney Act''), The AAI submits these comments on the Proposed Final Judgment (PFJ or consent decree) in the above-mentioned case. Congress has made this Court the final arbiter of the propriety of mergers under the antitrust laws. The Court must ''determine that the entry of such judgment is in the public interest.''[2] If the Court cannot make this finding, it must reject the PFJ unless more adequate provisions are made to protect the public interest. In the following analysis, the AAI respectfully argues that for the numerous reasons set forth in these comments, the PFJ is not in the public interest and must be rejected by the Court.

I. Competitive Issues Raised by the Proposed Merger

At first blush, the products and markets affected by the proposed merger of Monsanto and Delta and Pine Land (Monsanto/D&PL) appear technical and complex. But some background provides ample basis for a clear understanding of the competitive issues raised by the merger. Cotton can be grown with three major types of seed: (1) Organic; (2) conventional, and (3) genetically modified or ''traited.'' Cotton is also grown in four regions of the U.S.—the Southeast, Mid-South, Southwest, and West. This has generated demand for cotton varieties that thrive in different soil types and climates.

Cotton is also an insect-intensive crop and competes for space with weeds. As a result, agricultural biotechnology has played a major role in the development of cotton varieties that contain genetically engineered ''traits'' that make the plants resistant to insects (insect-resistant) and tolerant to herbicides (herbicide-tolerant), which are sprayed on the plants. Conventional cottonseed does not contain such genetic traits. Organic cotton contains neither genetic traits and is grown in a way that meets organic growing standards.

The merger involves two major markets. One is the market for development of ''cotton traits.'' Monsanto has a 95% share of this market with its hugely attractive and successful insect-resistant traits Bollgard and successor Bollgard II and herbicide-tolerant traits Roundup Ready and successor Roundup Ready Flex. The second market is that for ''traited cottonseed.'' Cotton traits are ''introgressed'' (i.e., inserted through genetic engineering) into cotton ''germplasm,'' which is the genetic material that gives a cotton variety its specific characteristics. Commercially successful varieties are obtained at the very high risk of failure, i.e., after years of costly breeding and cross-breeding that ultimately produces desirable plant characteristics demanded by cotton farmers. D&PL has a 79–87% share of the Mid-South and Southeast relevant markets for traited cottonseed. The merger raises three competitive issues:

- *Horizontal-elimination of actual competition.* The merger combines two competitors—Monsanto's Stoneville business and D&PL—in the market for traited cottonseed.
- *Horizontal-elimination of a potential competitor.* The merger eliminates D&PL as a potential partner for cotton traits developers that compete with Monsanto.
- *Vertical-combination of two firms in a vertically integrated chain.* The merger combines upstream cotton traits developer Monsanto with downstream traited cottonseed seller D&PL in a vertical combination.

II. Summary of the DOJ Documents

A. Complaint/Competitive Impact Statement

The Complaint focuses on two of the three major competitive effects listed above. It first alleges that the merger of Monsanto and D&PL will substantially lessen competition in the product market for the ''development, commercialization and sale of traited cottonseed.'' Farmers likely would have fewer choices of, and face higher prices for, traited cottonseed (Complaint at 11–12.) Relevant geographic markets are the Southeast and the Mid-South. (Complaint at 10.) Together, these regions account for 50% of cotton grown in the U.S. Cottonseed containing both (i.e., ''stacked'') insect-resistant and herbicide-tolerant traits comprises the vast majority of cottonseed planted in these regions.

In the Southeast, D&PL has an 87% market share and Monsanto's Storteville has 8%. Combining Monsanto and D&PL increases concentration by 1,489 HHI, for post-merger concentration of 9,184 HHI. In the Mid-South, D&PL has a 79% market share and Monsanto's Stoneville has 17%. The merger increases concentration by 3,310 HHI for a post-merger HHI of 9,110. (Complaint at 11.)

The Complaint explains that entry into the traited cottonseed market requires both the assets and expertise to breed high-performing varieties of cottonseed and to develop or access traits to breed into the cottonseed. Each step requires many years and tens of millions of dollars. (Complaint at 12.) Moreover, traits developers must have access to a sufficient supply of high-quality cotton germplasm. (CIS at 11.) The Complaint thus alleges that:

If there were a small but significant increase in the price of traited cottonseed

[1] See *http://www.antitrustinstitute.org/Archives/552.ashx.*

[2] 15 USC. 16(e). See. *e.g., United States* v. *Microsoft Corp.*, 56 F.3d 1448, 1458 (D.C. Cir. 1995).

within regions such as the Mid-South and Southeast, it is not likely that farmers would switch to other crops or switch purchases to conventional (non-traited) cottonseed or cottonseed varieties that are not suited to their region in sufficient volumes to make the price increase unprofitable. (Complaint at 10–11.)

The second adverse competitive effect identified by the Complaint is the elimination of D&PL as a partner for traits developers that compete with Monsanto. D&PL has partnered with Monsanto to produce traited cottonseed. However, D&PL has recently pursued more lucrative alternative partnerships with rival firms such as Syngenta. After the merger, those efforts would be ''substantially delayed or prevented,'' as would ''efforts to develop other traits that would compete with Monsanto traits and that would provide benefits to United States cotton farmers * * *'' This would likely reduce choice and raise prices for traited cottonseed. (Complaint at 12.)

B. Proposed Final Judgment

The PFJ sets forth a three-pronged remedy to address horizontal issues raised by the merger: (1) Divestiture of the Enhanced Stoneville Assets; (2) divestiture to Syngenta of D&PL germplasm containing the jointly developed VipCot traits; and (3) modification of Monsanto's Cotton States and other third-party traits licenses.

1. Enhanced Stoneville Assets

The PFJ proposes divestiture of the Enhanced Stoneville Assets. Three components make up the package of assets. First, Monsanto's Stoneville cotton business will be sold, including: Breeding facilities, tangible assets, brand names, breeder records, and other intangible assets. Second, the PFJ requires that Monsanto germplasm be divested. This includes four sources: (1) The ''exclusive right'' to commercialize varieties from the Advanced Exotic Yield lines; (2) all germplasm from the Marker-Assisted Breeding populations—the primary development source for Stoneville varieties; (3) a ''non-exclusive, royalty free license'' to sell and breed with varieties from the Cotton States program currently sold by Stoneville; and (4) all other germplasm in Monsanto's possession. Third, the PFJ requires the divestiture of 20 lines of ''elite'' D&PL germplasm. (CIS at 12–19.)

2. Syngenta/VipCot Divestiture

This divestiture includes 43 lines of ''promising'' D&PL germplasm into which D&PL has incorporated the VipCot insect-resistance traits. The lines will be sold to rival traits joint developer Syngenta along with performance data and certain other information. Anticipated commercialization of five of the germplasm lines is expected by 2009, three lines by 2010/2011, and the remaining lines by 2011 or beyond. Under the divestiture, Syngenta has exclusive rights to commercialize varieties developed from the lines to be divested as long as they contain one or more Syngenta-developed traits, including the VipCot traits.[3] (CIS at 19–20.)

3. Modifications to Monsanto's Cotton States and Seed Company Licenses

The PFJ requires that Monsanto modify their Cotton States and third-party cottonseed traits licenses to remove restrictions on ability of licensees to develop, market, or sell cottonseed containing non-Monsanto traits. This includes combining (i.e., stacking) Monsanto with non-Monsanto traits. The PFJ also requires Monsanto to modify its Cotton States license to eliminate any provision that allows for termination if the licensee sells cottonseed containing non-Monsanto traits. (CIS at 20–21.)

III. Mismatches Between the Complaint and the PFJ

The AM respectfully argues that the PFJ falls seriously short of remedying the violations alleged in the Complaint. In *Microsoft,* the Court explained that in making a public interest determination under the APPA, it should consider (among other things), the relationship between the remedy secured and the specific allegation set forth in the government's complaint, whether the decree is sufficiently clear, whether enforcement mechanisms are sufficient, and whether the decree may positively harm third parties.[4]

The Supreme Court has emphasized that the purpose of a remedy is to restore or protect competition.[5] The CIS recognizes that ''the acquirer of the Enhanced Stoneville Assets'' * * * must have a credible commitment to the traited cottonseed market and have the intent and capability of competing effectively in the market.'' (CIS at 12.) The Antitrust Division Policy Guide to Merger Remedies (''Policy Guide'')[6] emphasizes this point:

> The goal of a divestiture is to ensure that the purchaser [footnote omitted) possesses both the means and the incentive to maintain the level of premerger competition in the market(s) of concern. * * * (Policy Guide at 9.)

The *Policy Guide* further states that:

> There must be a significant nexus between the proposed transaction, the nature of the competitive harm, and the proposed remedial provisions (Policy Guide at 2.)

The consent decree meets neither of these objectives, for four major reasons. Any and all of these reasons undermine the requisite nexus between the remedy and the alleged violation that is required for the PFJ to fully restore competition and therefore be in the public interest.

A. The ''strings attached'' approach to the divestitures of Monsanto and D&PL germplasm make it, in effect, a conduct-based remedy.

Divestiture of germplasm is a key component of the remedial approach taken in the consent decree. The Complaint recognizes the crucial role of germplasm in developing and commercializing traited cottonseed when it states:

> A company with a large collection of high quality, or elite, germplasm has a competitive advantage because the company has the ability to identify the best genetic material and use it in a wide variety of possible cross combinations, resulting in a greater likelihood of developing a successful variety. (Complaint at 5.)

In attempting to address the Complaint's concerns regarding actual and potential competition, the consent decree requires Monsanto and D&PL to divest various lines of germplasm. However, these divestitures come with significant ''strings attached,'' essentially making it an inadequate conduct-based remedy that masquerades as structural reform.

The consent decree is replete with exceptions, exclusions, and conditions on the to-be-divested lines of germplasm. For example, Monsanto will be allowed to obtain a license back from the acquirer to continue to use the Advanced Exotic Yield lines for its ongoing trait research project. (CIS at 15.) The PFJ also requires the divestiture of a ''non-exclusive, royalty-free license'' to sell and breed with varieties from the Cotton States program sold by Stoneville. (CIS at 15.) And Monsanto ''* * * may retain, with certain limitations, certain categories of [other] Monsanto germplasm used

[3] Monsanto will also provide the recurrent parent conventional germplasm for each line until December 21, 2014 and offer Syngenta a license to its Roundup-Ready Flex so that it can commercialize VipCot lines with stacked traits.

[4] Microsoft, 56 FJd at 1458–62.

[5] Ford Motor Co., 405 U.S. at 573; du Pont, id.

[6] United Statement Department of Justice, Antitrust Division. Antitrust Division Policy Guide to Merger Remedies. October 2004. pp. 3–4.

predominantly in its trait development and licensing business.'' (CIS at 16.)

Moreover, under the terms of the PFJ, the merged company can retain a license to use the 20 lines of D&PL germplasm to breed new varieties and sell exclusively varieties that contain only Monsanto traits. Monsanto/C&PL can continue to sell (for a limited time) conventional versions of divested varieties. The merged company may also prevent the acquirer from triple-stacking Monsanto's herbicide-tolerant and insect-resistant traits and non-Monsanto traits for a period of seven years after the divestiture. (CIS at 17–18.) Finally, divestiture of the exclusive right to the D&PL VipCot germplasm is contingent on Syngenta commercializing varieties that contain at least one of the VipCot insect-resistance traits. (CIS at 19–20.)

There is little precedent, or logic, to support the highly-qualified divestiture of tangible germplasm assets set out in the consent decree.[7] For example, the contingency on the VipCot divestiture ignores the possibility that Syngenta might undertake development of traits that are superior to or supersede the VipCot lines. The divestiture thus binds Syngenta to a current ''snapshot'' of the market and undermines the possibility that to effectively compete, the firm might make changes to its R&D strategy. The remedy will require: (1) Compliance with complex and varied licensing terms; (2) monitoring of the applicable time periods attached to various exclusions and limitations; and (3) policing of the specific purposes for which the merged company can retain use of the divested germplasm lines. All of this is costly, burdensome baggage that the consent decree necessarily attaches to the divestiture.

As a result, the germplasm ''divestitures'' required in the PFJ are really not a structural remedy at all. Rather, they are a conduct-based, regulatory-style ''fix'' that imposes on this Court a monitoring and compliance burden that it should be loathe to undertake. The logic behind the antitrust agencies' preference for structural antitrust remedies is well known. For example, the *Policy Guide* states that:

> A carefully crafted divestiture decree is ''simple, relatively easy to administer, and sure'' to preserve competition [footnote omitted]. A conduct remedy, on the other hand, typically is more difficult to craft, more cumbersome and costly to administer, and easier than a structural remedy to circumvent. (Policy Guide at 8.)

In sum, the ''divesture'' of germplasm is crippled by competition-impairing restrictions and provides the merged company with ongoing access to the assets. This ''strings attached'' approach to the divestiture of tangible property is unprecedented and will virtually ensure that the acquirer does not possess the means or incentive to maintain the level of pre-merger competition in the relevant markets.

B. The PFJ fails to create a viable competitor because it creates a patchwork of assets with no proven track record in the market.

The Antitrust Division's policy guidelines make the point that time and incentive are of the essence in restoring competition lost by the merger:

> The package of assets to be divested must not only allow a purchaser quickly to replace the competition lost due to the merger, but also provide it with the incentive to do so [footnote omitted]. (*Policy Guide* at 11.)

The CIS appears to recognize this imperative when it explains that the divestiture of Stoneville alone would be inadequate to restore the lost competition between Monsanto and D&PL (CIS at 14.) Thus, the PFJ requires that additional Monsanto and D&PL germplasm accompany Stoneville, collectively making up the Enhanced Stoneville Assets. This approach, however, is inadequate to remedy the alleged violation because it creates a ''patchwork'' of assets with no proven track record in the market. A number of facts clearly illustrate this problem.

First, the PJF merely requires the transfer of some ''promising'' and ''developmental'' lines of Monsanto and D&PL germplasm to the acquirer that have no demonstrated, immediate commercial value. For example, the CIS explains that four of the eight lines of elite D&PL germplasm include the ''recurrent conventional parents'' that account for 55% of the cotton varieties sold in the Southeast.[8] (CIS at 16.) It is important to note, however, that the commercial varieties that make up this 55% resulted from breeding and cross-breeding the recurrent conventional parents. The acquirer is therefore obtaining only the raw inputs necessary to breed varieties that could be commercially successful at some time in the future and only after considerable expenditure. As they currently exist (i.e., without further breeding), the eight D&PL germplasm lines to be divested account for varieties that are planted on a mere 1% of the cotton acres in the Mid-South and Southeast.[9]

Moreover, twelve of the 20 D&PL germplasm lines are only in the breeding ''pipeline,'' and could produce commercial varieties only over the next 10 years. (CIS at 16) This is perilously close to the expiration of the PFJ and the time frame the CIS identifies as necessary for new entry into the market for developing, commercializing, and selling traited cottonseed. Eighty percent of the D&PL VipCot germplasm to be divested under the decree is also unlikely to prove up commercially success varieties for at least another five years. (CIS at 19.)

Finally, the Advanced Exotic Yield lines and Marker-Assisted Breeding populations of germplasm are of extremely limited value to the acquirer. The CIS itself notes that this germplasm provides a ''* * * limited platform for introducing non-Monsanto traits because many are already introgressed with Monsanto traits.'' (CIS at 15, n. 2.) The consent decree requires the merged company to allow the acquirer to breed out Monsanto traits. Breeding out Monsanto traits and then breeding in competing traits will take a long time, assuming the acquirer even has the wherewithal to do so.

Second, the success of the Enhanced Stoneville Assets, in part, rides on the ability of the government to pick ''winning'' lines of germplasm that can be bred into commercially successful cotton varieties. The Complaint emphasizes the importance of possessing both high-quality, and large quantities of, germplasm for competitive success. (Complaint at 5.) And the CIS, for example, describes the importance of D&PL's '' * * * extensive breeding programs, elite germplasm collection, technical service capabilities, know-how, brand recognition, and market position.'' (CIS at 8.) Given this complexity, the chances that the government picked winners in selecting

[7] The remedy is still problematic even if the PFJ treats the various lines of germplasm to be divested as intangible property. For example, the PFJ provides no explanation as to why germplasm would be considered an intangible asset or, lilt is, why anything short of relinquishing all rights to the germplasm assets is justified. Moreover, even if germplasm legitimately constitutes intangible property, the PFJ fails to address key issues such as how non-exclusivity and other restrictions on the use of the germplasm assets will fully restore competition. Such conditions may make it more difficult for the acquirer to differentiate its product from the merged firms' products. Moreover, if the acquirer is required to ''share'' rights to the germplasm, it may not invest in R&D and marketing to the extent that it would have if the Monsanto and D&PL had fully relinquished all rights to the germplasm.

[8] This 55% encompasses cotton grown in only one of the two relevant markets.

[9] See U.S. Department of Agriculture, Agricultural Marketing Service—Cotton Program. Cotton Varieties Planted: 2006 Crop, Memphis, Tennessee, August 2006, Table I and U.S. Department of Agriculture, National Agricultural Statistics Service, Louisiana Farm Reporter 7(10), May 17, 2007.

the germplasm lines to be divested are low. And it is possible that Monsanto/D&PL influenced the selection of germplasm lines through the information they did or did not disclose to the government (which would have been at an information disadvantage). If so, the merged firm would have no incentive to provide germplasm lines that could strengthen a rival in the market.

Pairing a smattering of unproven lines of germplasm that could be years away from producing successful, commercial cottonseed varieties with Stoneville in an untested combination will not create the capability for extensive breeding and cross-breeding that is essential for commercial success. Arguably, to fully restore competition, the acquirer would need access to sufficiently large quantities of germplasm that is currently producing commercial varieties or that could produce successful commercial varieties in far less than 10 years. As it stands, there exists no compelling evidence that the unproven, untested combination called the Enhanced Stoneville Assets would survive in the market, regardless of the identity of the acquirer.

C. The proposed divested assets, if acquired by Bayer, will not provide the firm with the tools necessary to be a viable competitor.

Under the terms of the consent decree, it is highly unlikely that the proposed acquirer (Bayer) of the Enhanced Stoneville Assets will be a viable competitor to the vertically-integrated firm created by the merger. The *Policy Guide* specifically addresses the importance of the size and market position of the merged firm in crafting divestitures. For example, it states that:

> * * * integrated firms can provide scale and scope economies that a purchaser may not be able to achieve after obtaining the divested assets. When available evidence suggests that this is likely to be the case (such as where only *large integrated* [emphasis added] firms manage to remain viable in the marketplace), the entity that needs to be divested may actually be the firm itself, and blocking the entire transactions rather than accepting a divestiture may be the only effective solution. (*Policy Guide* at 14–15.)

The Complaint acknowledges that the merged firm is enormous, with a 95% share of the cotton traits market and a 79–87% share of the relevant traited cottonseed markets. (Complaint at 2.) Presumably, it was the integration of traits development and traited seed that Monsanto wanted to achieve when it stated that the purpose of the merger was to ''* * * provide a complete platform of cutting-edge seed technologies to our global farmer customer base for years to come.''[10] To address the alleged violation, therefore, the remedy must consider both the vertically-integrated nature and the scale and scope of the merged firm. The consent decree stops well short of fulfilling these requirements, for the following reasons.

First, without a complement of sufficient, market-tested assets in both the cotton traits and traited seed markets, it will be extraordinarily difficult for the acquirer to effectively engage in head-to-head ''platform'' competition with a behemoth Monsanto/D&PL—a firm that is likely to be impervious or even hostile to competition. Even the government recognizes the importance of this level of competition. For example, the CIS explains that the purpose of divesting the Enhanced Stoneville Assets is to provide:

> ''* * * the scale and scope necessary in the Southeast and MidSouth to be an effective and competitive platform for trait development.'' (CIS at 16.) and a ''* * * foundation on which to replicate the platform for trait development and commercialization that D&PL previously provided.'' (CIS at 13.)

Moreover, the Complaint admits the inextricable link between the upstream traits development and downstream traited cottonseed market:

> ''Entry into the traited cottonseed business requires the assets and expertise *both* [emphasis added] to breed high-performing varieties of cottonseed and to develop or access traits to breed into the cottonseed.'' (Complaint at 12.)

Second, the consent decree's failure to include a requirement that human capital and know-how accompany the Enhanced Stoneville Assets only increases the chances that the buyer will have neither the wherewithal nor the incentive to compete against Monsanto/D&PL. Pairing only ''promising'' and ''developmental'' lines of germplasm with Stoneville in an untested, inadequate combination is injury enough. Omitting the human capital that is essential for viably maintaining the specific, technically complex assets that are being divested is akin to turning over the keys to a nuclear power plant without any personnel to operate it.

Third, and significantly, Bayer operates primarily in the Southwest where it sells its Fibermax brand of long-fiber cottonseed. As a result, it lacks experience with cotton varieties planted in the Mid-South and Southeast.[11] Bayer has also been a limited player in traits development, with one commercially successful herbicide-tolerant trait—Liberty Link.

In light of the large, vertically integrated nature of the merged company, it is incumbent upon the government to ensure that the consent decree produces a strong rival that can quickly and fully restore competition in the affected markets. This imperative takes on even more importance when the consent decree maintains the duopoly market structure in the Mid-South and Southeast markets. In sum, the remedy delivers none of the basic requirements to ensure that the acquirer has the tools necessary to compete with a large, integrated Monsanto/D&PL.

D. The PFJ requirement that Monsanto modify its Cotton States and other third-party seed licenses fails to address the alleged violation.

The final condition set forth in the consent decree is that Monsanto will modify its Cotton States and third-party seed licenses to remove restrictions on the ability of licensees to develop, market, or sell cottonseed containing non-Monsanto traits. The intent of this requirement is to:

> ''* * * give these rival cottonseed companies the ability to partner with trait developers other than Monsanto without financial penalty * * * and to provide traits developers with ''* * * access to close to half of the current U.S. cottonseed market without having to deal with Monsanto/D&PL'' (CIS at 21.)

This prong of the consent decree fails on numerous counts to establish a nexus with the alleged violations in the Complaint.

First, the consent decree essentially directs Monsanto to cease and desist from restrictive, potentially anticompetitive practices. The Complaint notes that ''Monsanto's trait licenses with most other cottonseed companies * * * severely restrict the ability of these companies to work with other trait developers * * *'' (Complaint at 8.) Indeed, competitors have alleged that Monsanto's trait licensing and pricing practices for cotton and other crops go beyond

[10] ''Monsanto Company to Acquire Delta and Pine Land Company for $1.5 Billion in Cash,'' Press Release dated August 15, 2006. Online, Available *http://www.monsanto.com/monsanto/layout/media/06/08–15–06.asp.* Many a commentator has noted the logic of vertical integration in traits development and traited seed: ''A new gene is worthless without a quality seed base to put it in and the infrastructure to deliver it. William Lesser, ''Intellectual Property Rights and Concentration in Agricultural Biotechnology,'' AgBioForum 1(2), 1998, p. 59, quoting from Furman Seltz LLC investment report.

[11] ''Bayer's Fibermax brand has only a 2–3% share of cotton planted in the Mid-South and Southeast markets. See USDA, Cotton Varieties Planted: 2006 Crop, p. 2.

intellectual property protection and punish licensees if they sell non-Monsanto traits or other competing products.[12] By imposing the licensing modification requirement, the government seems to be trying to correct for these practices through the remedy, although they are not alleged violations in the Complaint. These practices deserve to be the subject of a complaint in an appropriate case[13] and not merely mentioned on a list of conditions here.

Second, the license modifications are designed to eliminate prohibitions on rivals stacking their own traits with Monsanto traits. Such a restraint prevents—among other things—a rival producer of traited cottonseed from bringing varieties to market with both the insect-resistant and herbicide-tolerant traits that farmers demand. At the same these restrictions are ostensibly to be removed in one part of the PFJ, however, they are to be imposed in another. For example, the consent decree prevents the acquirer of the 20 lines of D&PL germplasm from stacking Monsanto and non-Monsanto traits for a period of seven years. Perversely, therefore, the remedy attempts to finally deal (albeit in the wrong venue) with Monsanto's restrictive practices but allows Monsanto to continue to apply them to the acquirer of the Enhanced Stoneville Assets.

Third, the licensing modification requirement does not address the alleged violation that competition in the Mid-South and Southeast relevant markets will be adversely affected by the merger. The CIS refers instead to a ''U.S. cottonseed market,'' which is not defined in the Complaint at all. Had the remedy been tied to the alleged violation, it would be clear that rivals would have access—not to half of the market—but only to between 8% and 17% of the market not occupied by D&PL in the Mid-South and Southeast.

Fourth, the consent decree contains little information on the scope of the license modification requirement. The *Policy Guide* warns explicitly against vagueness and lack of clarity in crafting merger remedies:

> ''Remedial provisions that are vague or that can be construed when enforced in such a manner as to fall short of their intended purposes can render the enforcement effort useless'' (Policy Guide at 5.) and that ''A defendant will scrupulously obey a decree only when the decree's meaning is clear * * *'' (*Policy Guide*'' at 5–6.)

It is unclear as to whether the requirement applies to current and/or prospective licenses or how the specific language of the Monsanto licenses will be revised. Moreover, the license modification requirement will require burdensome monitoring and compliance which, as noted earlier, the Court should be loathe to undertake.

In sum, the licensing modification requirement contained in the PFJ represents a vague, inconsistent, and misplaced attempt to finally address restrictive, potentially anticompetitive practices long-employed by Monsanto. And while these practices should be addressed elsewhere, they do not respond to any particular violation in any defined relevant market in the Complaint. As such, the remedy will not fully restore competition in the relevant markets.

IV. Conclusion

The Court should not give DOJ ''a pass'' in its review of this merger. The merger raises serious questions regarding a key agricultural supply chain and the many consumers that it will indelibly affect. There is little in the PFJ that is likely to preserve effective competition in the relevant markets, or to prevent the consumer harm that will flow from the impairment of competition. The proposed remedies are largely conductbased and really do not go beyond the scope of the original proposals offered up-front by Monsanto. Moreover, the PFJ ignores the fact that the acquirer of the divested assets must have both the means and incentive to compete with a large, vertically firm that possesses an unrivaled ''platfonn'' for trait development and traited seed commercialization. On this basis, the Court should reject the PFJ as insufficient and contrary to the public interest.

Respectfully Submitted,

Diana Moss,

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August 20, 2007

Ms. Donna N. Kooperstein,

Chief, Transportation, Energy & Agriculture Section, Antitrust Division, United States Department of Justice, 325 Seventh Street, NW., Suite 500, Washington, DC 20530.

Re: *United States* v. *Monsanto Company, et al.*

Dear Ms. Kooperstein:

I am writing you today as the Board President of California Consumers United to voice my concerns not only for the State of California but for the nation as a whole. As a consumer protection coalition, California Consumers United advocates for sound legislation and strong regulations that safeguard all California consumers against unfair business and marketplace predatory practices.

Increased agricultural concentration, which is occurring at an alarming rate, is harmful to our nation's economy and well-being. This concentration harms consumers and farmers in the state of California—and throughout the country—by leading to limited choices, higher prices, and increased costs. Monsanto's acquisition of Delta & Pine Land Company is one more example of this distressing trend.

Monsanto, an agriulture conglomerate, already has monopoly-like shares of biotech traits in several crops, including cotton. The Department of Justice's consent decree regarding Monsanto's acquisition of Delta & Pine Land Company will only reinforce Monsanto's control over the markets for cotton seeds and cotton biotech traits. This likely will result in severe consequences to Californians and cause damage to consumers in the form of higher prices and fewer choices. The remedy proposed by the Department of Justice to cure the anticompetitive effects of this deal—divestiture of a weak cotton seed company and a few lines of germplasm—are incapable of safeguarding competition.

There is already not enough competition in agriculture; the Department of Justice should not allow one company to control access to the cotton market. We therefore urge the Department of Justice to reconsider its consent decree or, if the Department will not change course, for the Court to reject it.

Sincerely,

Linda Love,

Board President, California Consumers United.

Submitted August 27, 2007

United States of America, Department of Justice, Antitrust Division, 325 7th Street, NW., Suite 500, Washington, DC 20530, Plaintiff, v. Monsanto Company, 800 North Lindbergh Boulevard, St. Louis, MO 63167 and Delta and Pine Land Company, 1 Cotton Row, Scott, MS 38772, Defendants.;

Case: I:07–cv–00992
Assigned To: Urbina, Ricardo M.
Assign Date: May 31, 2007

[12] For a summary of pending legal proceedings, see, e.g., Monsanto Company, Form 10-K. 2005. Online. Available *http://www.monsanto.com/monsanto/content/media/pubs/2005/MON_2005_10-K.pdf.* More detail on specific allegations regarding Monsanto's conduct involving cotton and corn is available in, e.g., *American Seed Co., Inc.* v. *Monsanto,* Case I:05–cv–00535–SLR, U.S. District Court for the District of Delaware, July 26, 2005, *Monsanto Company* v. *Syngenta Seeds, Inc.,* Second Amended Complaint, Civil Action No. 04–305–SLR (consol.), U.S. District Court for the District of Delaware, August 12, 2005; and *E.I. DuPont de Nemours and Company* v. *Monsanto Company,* Amended Complaint and Jury Demand, Civil Action No. 4:00–952–23, U.S. District Court for the District of South Carolina, May 24, 2001. These cases are provided for illustrative purposes—some are still pending and therefore outcomes are undecided.

[13] Moreover, Monsanto's practices should be examined not only with regard to the licensing of cotton traits, but corn and soybeans as well. It is not unusual for a company to adopt parallel competitive practices in various of its divisions, and what has been advantageous in another market might well be applied in the cottonseed market.

Description: Antitrust

Comments of Dupont on Proposed Final Judgment

This case raises critical issues regarding the future competitiveness of American agriculture. The transaction at issue combines the dominant supplier of biotech traits with the dominant cottonseed company. Among other things, it eliminates head-to-head competition in the development of new traits to challenge Monsanto's established monopoly. Since biotech is as important to agriculture as agriculture is to the U.S. economy, the competitive implications cannot be overstated.

There is no question that Monsanto's acquisition of DPL would violate the antitrust laws, and the Complaint filed by the Justice Department's Antitrust Division details the serious harm to farmers and consumers that will result. Nor is there any question that significant remedies are necessary, including divestitures and reform of Monsanto's restrictive licensing practices as proposed. The only question before the Court under the Tunney Act is whether the Antitrust Division settled for too little, i.e., whether the patchwork quilt of proposed remedies provides a viable alternative to the competitive presence of an independent DPL, such that trait developers will continue to incur the significant cost and risk of competing with Monsanto.

The answer to that key question, DuPont respectfully submits, is ''no.'' The objective facts on the face of the Complaint make plain that the ''Enhanced Stoneville'' collection of assets, even combined with their new owner Bayer, does not come close to creating a viable trait development partner that can replace DPL in terms of resources and market access for cottonseed. Accordingly, DuPont has determined that it cannot justify further investment in developing competing cotton traits, and is terminating that work. The bottom line is that, without substantial additional remedies, this transaction will reduce choices and raise prices for farmers and consumers.

A. Standard of Review

The Tunney Act imposes a duty on the reviewing court to evaluate the remedies proposed in light of the competitive injury detailed in the Division's Complaint. The statute requires that ''[b]efore entering any consent judgment proposed by the United States * * *, the court shall determine that the entry of such judgment is in the public interest.'' 16 U.S.C. 15(e)(1). In applying this ''public interest'' standard, the burden is on the government to ''provide a factual basis for concluding that the settlements are reasonably adequate remedies for the alleged harms.'' *United States* v. *SBC* v. *Verizon*, 2007 WL 1020746, *16 (D.D.C. 2007), citing *United States* v. *Microsoft Corp.*, 56 F.3d 1448, 1460–61 (D.C. Cir. 1995).

The Government has an extra burden, we submit, when it changes its view on an identical transaction within a span of only a few years. In 1999, the Division decided to challenge Monsanto's proposed acquisition of DPL,[1] indicating that no acceptable remedy was available. Since that time, the marketplace has changed in ways that make this combination even more competitively harmful:

- Monsanto's share of traits in cotton is higher;
- DPL's seed share in key cotton-growing regions is higher;
- DPL is actively engaged in joint development of traits that, but for this acquisition, would compete with Monsanto's trait monopoly.

In light of these heightened competitive concerns, the Court should expect that the Division will explain in detail the basis for the different outcome.

B. Acknowledged Competitive Harm

For the benefit of the reviewing Court, this section will distill the salient allegations underlying the violation alleged in the Complaint.

The Complaint begins with an arresting fact: Monsanto's share of biotech traits in cotton is ''over 96%.'' Complaint ¶ 3. The Division's subsequent characterization of Monsanto as the ''dominant'' supplier of traits thus is an understatement. Id. at ¶ 6. For important traits that are used in ''almost all'' cottonseed planted today to lower farming costs and increase yield (i.d. at ¶ 18–19, 22), Monsanto is essentially the only game in town.

There are challengers to Monsanto's trait monopoly, and that competition is what is at stake in this proceeding. As the Complaint recognizes, DPL was working with other biotech companies including DuPont to develop and commercialize traits and seed ''that would compete with'' Monsanto's existing traits. Id. at ¶ 26. DPL's competitive activity ''jeopardized'' Monsanto's trait monopoly, id. at ¶ 6, as Monsanto ''recognize[ed] the potential for a successful pairing of DPL's cottonseed with competing traits.'' Id. at ¶ 7. So Monsanto now has acquired DPL in a transaction that ''will * * * eliminate DPL as a partner independent of Monsanto for developers of traits that would compete against Monsanto,'' and therefore ''will *likely delay if not deter efforts to develop other traits that would compete with Monsanto traits.*'' Id. at ¶ 42 (emphasis added). As a result, ''farmers likely will have *fewer choices* of, and face *higher prices* for, traited cottonseed.'' Id. (emphasis added).

Importantly, the Complaint backs up these conclusions of severe competitive harm in violation of the Clayton Act with key facts regarding DPL's unique role as a trait development partner. Developing and commercializing a new trait to compete with Monsanto's entrenched position is no mean feat. It not only takes time and money, but requires specialized resources that DuPont and others do not have so were relying on DPL to supply, in several categories.

1. *Germplasm:* First, the Complaint explains the importance of germplasm, which is the genetic material that encodes agronomic characteristics of a plant, such as yield. Id. at ¶¶ 14–16. Successful cottonseed is created by combining (or ''crossing'') different lines of germplasm to enhance the performance characteristics of the plant. Id. As stated in the Complaint, this is not a one-shot effort, but rather an on-going one: ''to be competitive, cottonseed companies must continually work on developing new and improved cottonseed varieties through their breeding programs.'' Id. at ¶ 15 (emphasis added). The product of the initial cross is then ''further cross[ed]'' with still other germplasm lines. Id. This breeding process ''often requires thousands of attempts'' before germplasm with the right genetics is created that will be the basis for a successful commercial variety. Id. at ¶ 28 (emphasis added). It generally ''takes eight to ten years * * * until a new cottonseed variety is ready for market.'' Id. at ¶ 15 (emphasis added).

So there is no dispute that one very important key to successful breeding is the ''quantity and quality'' of germplasm lines available to be used in the thousands of crosses required to breed competitive cottonseed. Id. at ¶ 16. The Complaint states that a ''large collection of high quality * * * germplasm'' creates a ''competitive advantage.'' Id. The obvious reason is that a company

[1] As a senior Antitrust Division official testified before Congress, Monsanto called off its 1999 attempt to purchase DPL after DOJ ''indicated that it was prepared to sue to prevent consummation of the transaction.'' John M. Nannes, Statement Before the Subcommittee on Antitrust, Business Rights, and Competition, United States Senate Judiciary Committee (Sept. 8, 2000) (available at *http://www.usdoj.gov/atr/public/testimony/6581.pdf*).

with such assets is best positioned to engage in the ''wide variety of possible crossing combinations'' necessary to produce a ''successful variety.'' Id.

In this regard, the Complaint acknowledges that DPL is unique. Not only is it the ''largest cottonseed producer in the world,'' but it has ''the largest cotton germplasm collection.'' ID. at ¶¶ 13, 17 (emphasis added). Indeed, the Complaint recounts that Monsanto itself chose DPL as its development partner because it had, quite simply, ''the best germplasm.'' Id. at ¶ 20 (emphasis added). And DPL remains an ''attractive partner'' because of ''the strength and breadth of its germplasm base.'' Id. at ¶ 26 (emphasis added).

2. *Breeding Infrastructure:* Another key factor is the specialized facilities to effectively use the germplasm collection in a successful breeding program over time. Again, the Complaint sets DPL apart from other cotton companies. Its large network of facilities gives it ''more breeding capabilities than any competitor.'' Id. at ¶ 17 (emphasis added).

3. *Experienced Breeders:* The Complaint recognizes DPL has ''experienced and knowledgeable cotton breeders'' (id. at ¶ 5) with the ''know how'' and ''technical service capabilities'' to use all these assets in a highly effective manner that well exceeds that of any alternative cottonseed company. Id at ¶ 26. The Complaint states in unequivocal terms that DPL's ''over ninety years of germplasm development'' has produced not just the greatest breeding track record, but ''by far the greatest track record of success'' in the breeding of cottonseed varieties that are attractive to farmers. Id. at ¶ 17 (emphasis added).

4. *Market access:* This success is manifest in DPL's high share. It is again an understatement for the Complaint to say DPL has the best ''brand recognition'' and ''market position'' to support development and commercialization of competing traits. Id. at ¶ 26. In the ''important'' cotton growing regions of the Southeast and MidSouth, id. at ¶ 8, DPL has breathtakingly high shares of 87% and 79%. Id. at ¶ 4. Obviously, this level of market access is not only unique, but is extremely valuable to a trait development partner seeking a return on investment through a successful commercial launch.

5. *Stacking rights:* Another advantage of partnering with DPL is it has IP rights that the Complaint says ''most other cottonseed companies'' do not. Id. at ¶ 27. Since farmers want multiple traits, seed increasingly is sold with multiple traits ''stacked'' in it. Monsanto generally uses licensing terms that ''severely restrict'' the ability of a seed company to stack a non-Monsanto trait with a Monsanto trait. Id. DPL, as further evidence of its strong competitive presence, had stacking rights that are important in introducing new traits.

6. *Business Strategy:* Finally, DPL was motivated to support Monsanto's competitors like DuPont. It ''publicly stated its intent'' to work with other trait developers to ''replace Monsanto traits in its products.'' Id. at ¶ 6. This business ''strategy to replace (or 'trade-out') the Monsanto traits'' would be ''profitable for DPL.'' Id. at 25 * * *.

For all these reasons, DPL was not just an ''attractive partner'' for Monsanto's trait competitors (id. at ¶ 26), it was ''an unparalleled avenue through which to commercialize and market'' traits. Id. at ¶ 5 (emphasis added). No other cottonseed company has the combination of key resources, again in the superlative terms of the Division's Complaint:

- The ''LARGEST'' cotton germplasm collection, and
- The ''BEST'' germplasm, and
- ''MORE'' breeding capabilities ''than any competitor,'' and
- ''BY FAR THE GREATEST'' track record of success in breeding new cotton varieties, and
- ''87% and 79%'' of cottonseed sales in ''important'' regions, and
- STACKING RIGHTS ''most other cottonseed companies'' do not have, and
- An announced ''STRATEGY'' of working with Monsanto's competitors to develop and commercialize competing traits.

DuPont agrees with the Antitrust Division that this combination of resources is what makes DPL ''unparalleled'' in its ability to support the development and launch of competing traits. That is why DuPont was partnered with DPL to develop Optimum(tm) GAT(tm) for cotton, a new trait offering resistance to two different classes of herbicide that would provide a competitive alternative to Monsanto's RoundUp Ready monopoly. And DuPont agrees that significant divestitures and reform of Monsanto's ''severely restrict[ive]'' licensing terms are necessary parts of effective relief.

But DuPont respectfully submits that, even upon cursory review, the Complaint's exposition of DPL's competitive significance as a trait development partner makes clear that the remedies proposed fall far short of creating a viable alternative. Therefore they do not satisfy the legal standard of ''restoring competition'' to Monsanto's current trait monopoly. The following section analyzes why the proposed remedy does not adequately address the violation alleged in the Complaint.

C. Inadequacy of the Proposed Remedy

To settle the case, the Division offers a Proposed Final Judgment (''PFJ'') that is explained in the Competitive Impact Statement (''CIS''). The CIS sets the bar correctly: To ''ensure the continued presence of a cottonseed company independent of Monsanto with sufficient germplasm and breeding capabilities to serve as an effective platform for development of cottonseed traits in competition with Monsanto.'' Id. at 12. But the PFJ does not deliver: The remedies are self-evidently insufficient to provide a viable alternative to DPL as a trait development partner and thereby restore the competitive harm alleged in the Complaint. As discussed below, there is no ''factual basis'' on which the Court could conclude that the Proposed Final Judgment contains ''reasonably adequate remedies for the alleged harms'' and is in the public interest.

1. Proposed Remedy

a. *Stoneville:* First, Monsanto is required to divest its U.S. Stoneville business, including Stoneville's germplasm and assets, together with expanded stacking rights. PFJ at 3–4; CIS at 13–14. Describing Stoneville as ''the second largest traited cottonseed company in the MidSouth and Southeast'' (CIS at 9) greatly overstates its relative position. The CIS itself contains the share data making clear Stoneville pales in comparison to DPL: ''In the MidSouth, DPL and Stoneville account for approximately 79% and 16%, respectively, of traited cottonseed sales. In the Southeast, DPL and Stoneville account for approximately 87% and 8%, respectively, of traited cottonseed sales.'' Id. at 10. Further, published data from USDA demonstrates that Stoneville's share in those regions has declined over the past three years.[2]

Stoneville's germplasm pipeline is said to include: ''Approximately 35 mid-to full- and full-season lines for potential commercialization in the MidSouth and Southeast between 2008 and 2012.'' Id. at 13. The CIS does not explain what the likelihood this ''potential'' will come to fruition is, nor what share Stoneville predicts it could achieve. Nor, tellingly, does it state

[2] USDA Agricultural Marketing Service—Cotton Program, ''Cotton Varieties Planted'' 1998–2006, Table 1 [hereafter ''USDA Cotton Data''].

comparable figures for the number of lines DPL will offer in the same regions.

Although divesting Stoneville ''remedies'' the horizontal effect of increased concentration at the cottonseed level, it does not address the competitive harm at the trait level, as Stoneville is clearly an inadequate trait development platform.

b. *Additional Monsanto Cotton Germplasm:* Because of the inferiority of the Stoneville assets, Monsanto is required to divest other cotton germplasm that was not integrated into the Stoneville business. PFJ at 3–4, Schedule B. These assets are described as follows:

(i) ''*Advanced Exotic Yield Lines:*'' These ''promising developmental germplasm lines'' are derived from ''exotic cotton plants that could be bred into commercial varieties to increase yield.'' Monsanto reportedly ''anticipated'' that seed varieties that could be developed from this germplasm would be ''well-suited'' for the Mid-South and Southeast regions. Although the rights are termed ''exclusive,'' Monsanto retains the ability to obtain a ''license back'' for ''ongoing trait research.'' CIS at 14–15 (emphasis added).

(ii) ''*Marker Assisted Breeding (MAW) Populations:*'' This germplasm was developed in a ''program * * * *intended* to enable breeders to use sophisticated molecular technology to aid in the selection of promising lines * * *'' Id. at 15. Again, Monsanto is said to have ''*anticipated*'' that this germplasm could be used to develop seed products over four years. But the CIS acknowledges it is only a ''*limited platform*'' for competing traits because the purchaser will have to take the time and expense of first breeding out Monsanto traits. Id. at n. 2.

(iii) ''*Cotton States Germplasm*'' and ''*Other Germplasm:*'' Monsanto must divest only a *non-exclusive* license ''to sell and breed with varieties from Monsanto's recently established Cotton States program *that Stoneville currently sells today.*'' Monsanto also must divest only its rights ''to commercialize varieties that result from pre-existing crosses of Stoneville germplasm and Cotton States Licensors germplasm.'' And Monsanto must divest ''all other germplasm'' it currently holds, ''except * * * certain categories of germplasm used predominantly in its trait development and licensing business.'' Id. at 15–16.

c. *DPL Germplasm:* Yet a third tranche of divested germplasm consists of twenty DPL conventional varieties, including eight ''*in the pedigrees* of many of DPL's popular current varieties in the MidSouth and Southeast.'' PFJ at Schedule B; CIS at 16 (emphasis added). The CIS does not disclose how many other DPL germplasm lines are represented in the lineage of these currently popular varieties. Nor does it explain how many ''parents'' are required to develop a single competitive cotton variety.

The other twelve varieties reportedly ''constitute a *significant* portion of DPL's breeding pipeline for the MidSouth and Southeast and represent the varieties, and breeding stock for the varieties, that DPL had chosen to bring to market over the next decade.'' Id. Although we are told that ''[o]ver the past four years, each of these twelve varieties has been ranked by DPL * * * as falling within DPL's top category for conventional lines * * *'' Id. at 17, important questions remain unanswered, including:

- Where do these lines rank?
- How many other varieties are so ranked?
- How many other germplasm lines were required to create the twelve lines to be divested?
- How many would be required to create the next generation of these varieties?

The twenty DPL varieties to be divested will, like the non-Stoneville Monsanto germplasm, be released to their purchaser as stand-alone assets. They are not integrated within the Stoneville cotton development program, so will have several competitive disadvantages, including:

- They will not be accompanied by any of the development resources (breeding experts, infrastructure, etc.) used to create them at DPL.
- They will not be divested with access to ''performance data and other information'' deemed necessary to the divestiture of certain germplasm to Syngenta. Id. at 19.

The CIS does not explain how an acquirer could integrate all these disparate germplasm lines into an effective breeding program that might produce commercial varieties, or how long that would take.

Moreover, divestiture of the DPL germplasm is non-exclusive, in that Monsanto and DPL will ''retain a license to continue using these twenty lines to breed new varieties and to sell exclusively varieties that contain only Monsanto's traits.'' Id. at 17. That unusual weakening of the remedy is defended as necessary ''to preserve DPL's current competitiveness, prevent disruption to its breeding program, and provide DPL the ability to compete effectively in the future.'' Id. There is no explication of factual support for those conclusory statements.

The bottom line is that the acquirer of ''Enhanced Stoneville'' has the right to breed certain parent lines but not, in Dupont's experience, the resources to create commercial varieties in any reasonable amount of time. It must do so in competition with a combined Monsanto/DPL that retains all those resources, know how, and marketplace advantages. Nor, given that Monsanto/DPL retains parallel rights, does the CIS explain how the purchaser would have an incentive comparable to the incentive DPL's exclusive rights gave it invest in developing these lines before the merger.

2. Independent DPL vs. ''Enhanced Stoneville''

This is not a close call. The monopolist has acquired the premier development partner with all the necessary resources its rivals were relying on to be competitive. As a substitute, it proffered a cobbled-together combination of disparate germplasm and other assets with all sorts of strings attached that have no comparable competitive presence today or in the future, and then sold them to a company that brings no meaningful complementarity. This remedy plainly does not return the marketplace to the level of competitive trait development resources eliminated by the transaction. Taken alone, each element lacks attributes that DPL brings to the competitive landscape. Taken together, they are a ''mix and match'' group of assets that lack the necessary prospect of competitive viability the Antitrust Division itself says is critical to effective merger remedies. Rather, the combined Monsanto/DPL team is off and running in this competitive race while the Bayer/Stoneville team is stuck at the starting line trying to find the right shoes to put on.

First, the CIS acknowledges that ''[d]ivesting Stoneville by itself would not fully restore the lost competition between Monsanto and DPL.* * *'' Id. at 14. As has been discussed, Stoneville has a perennially low, and of late declining, share in areas identified as important for traits by the DOJ. The fact that DPL is 5 to 10 times larger than Stoneville reflects the inferiority of the Stoneville germplasm and breeding program.

There is no evidence Stoneville's germplasm is likely to improve significantly over time. Stoneville's breeding program lags DPL's significantly. For example, DPL has ''*eleven* strong worldwide plant breeding programs developing new elite

genetics to integrate existing and new biotechnology,'' compared to just two at Stoneville. ''Cotton and Soybean Seed Research,'' *http://www.deltaandpine.com/research.asp;* ''Delta & Pine Land Quarterly Summary,'' GARP Research and Securities (April 10, 2007).

Other industry participants have acknowledged Stoneville's inferiority as a development partner by their conduct. Although Stoneville was an independent cottonseed company between 1999 and 2005, the period during which various partnerships began work on non-Monsanto traits for cotton, companies like Dow, DuPont, Syngenta, and Bayer did not choose to collaborate with Stoneville, but with DPL. See Complaint ¶ 26. Even Monsanto would prefer to work with DPL rather than continue ''building its own cotton business'' with Stoneville. CIS at 8.

Divestitures of ''other Monsanto germplasm'' and select strains of DPL germplasm do not close the wide gap between DPL and Stoneville. The CIS contains many carefully chosen descriptions of the ''Enhanced Stoneville'' that clearly are damning with faint praise. For example, the CIS characterizes the ''Enhanced Stoneville Assets'' as providing ''tools'' that can be ''a significant base'' and even a ''foundation'' for competing trait developers. Id. at 13. Further, the CIS repeatedly describes the divested germplasm in aspirational terms, as ''promising'' and ''anticipated'' to be developed into competitive seeds at some point in the future. These characterizations are not a sufficient basis to conclude the remedy will meet the Division's own standard of creating a cottonseed company that competing trait developers can rely upon in making investment decisions.

Analysis of the USDA data further demonstrates the divested assets are inadequate to create a viable development partner. First, very few newly introduced varieties become commercial successes. DPL introduced 64 unique cotton varieties incorporating traits in the past eight years, but only 14 ever came to represent 1% or more of annual U.S. cottonseed acres USDA Agricultural Marketing Service—Cotton Program, ''Cotton Varieties Planted'' 1998–2006, Table 1. Thus, current expectations about the germplasm lines likely to produce competitive products in the future are not reliable, and clearly no substitute for DPL's ''by far the greatest track record of success'' in developing new cottonseed.

Moreover, what is successful for certain growing conditions will not necessarily be successful in others. That is why DPL has offered consistently over 20 commercial varieties in a single growing region. Indeed, again based on the USDA data, we find that 30 of the 40 varieties DPL offered in the Southeast or MidSouth regions in 2006 had less than 1% share in both of those regions. well over half of the varieties DPL offered in the Southeast or Mid South regions (48/73) never achieved a 1% share. Id.

Second, current market success is not a good predictor for the future commercial appeal of existing varieties or their offspring. Each year, roughly a third of American cotton acres are planted with new varieties that were commercialized within the previous three years, and roughly two-thirds of acres are planted with varieties less than five years old. 4. Even if the proposed germplasm divestitures created a lineup of competitive varieties in 2008, there is no assurance they will address the longer term loss of competition.

This point is key for trait developers facing major investment decisions. Traits must be sold in successive generations of popular cotton varieties, because most trait value is realized through sales in varieties that were not yet invented on the date of the trait's commercial introduction. For instance, analysis of the USDA data shows that, just three years after Monsanto's BollgardfRoundup Ready trait stack was introduced in 1997, over half of the acres planted with that stack were cotton varieties introduced after 1997.

For that reason, firms will only invest in trait development if they are working with a development partner with the germplasm and other resources to support the consistent introduction of new, commercially appealing varieties over the longer term. The ''Enhanced Stoneville'' assets do not warrant such a significant financial commitment. Further, divestiture of the other Monsanto and DPL germplasm under the proposed terms is even less likely to restore lost competition because it is, in many cases, nonexclusive and/or bound up with Monsanto intellectual property.

In a broader sense, the proposed divestitures are flawed because they lack organizational and developmental context. In its policy statements about remedies, the Division has explained that ''[r]estoring competition requires replacing the competitive intensity lost as a result of the merger.'' *Policy Guide to Merger Remedies* at 5. To ensure that this is the case, the Division emphasizes its preference for ''divestiture of an existing business entity that has already demonstrated its ability to compete in the relevant market.'' Id. at 12.

By contrast, the collections of germplasm to be divested are unrelated to one another and are not integrated into a single breeding program, as DPL was. These disparate assets thus lack many of the complements required to restore competition, including the breeders who have experience working with the assets in question, key historical information about performance and breeding history, and regional breeding facilities well-suited to the growing of distinct varieties. Stripped of their context in an existing business entity, the additional germplasm assets have ''not demonstrated the ability effectively to compete'' as set forth in the Division's internal policies. Id. at 13.

Bayer, which acquired the ''Enhanced Stoneville,'' offers no solace to trait developers. Bayer's 2006 share of cotton acres planted was just 3.1% in the Southeast region and 2.5% in the Mid South region. Between 1999 and 2006, according to USDA, Bayer introduced just one cotton variety that gained a share of 5% or more in either of these regions, compared to ten such varieties from DPL. So it has no track record of success in these key regions to build on. Adding ''Enhanced Stoneville'' and stacking rights is simply too little too late to make Bayer a viable trait development partner.

All these factors obviously increase the risk for any trait developer, and DuPont is no exception. It has invested millions of dollars in its joint development project with DPL. But, after evaluating its options in the wake of this transaction, it concluded that further investment with a cobbled-together Bayer/Stoneville does not make economic sense. DuPont therefore has initiated the process of terminating the project. The result, of course, is that Monsanto's monopoly in herbicide tolerant cotton traits will be preserved, so farmers will face fewer choices and higher prices.

D. Additional Remedies

The Complaint is clear that what makes the opportunity for cotton trait development attractive is the availability of an exceptional cottonseed company as a development partner. As discussed above, that company, DPL, has the best of all necessary attributes as a trait development partner: The best market access, best germplasm, best breeding programs, best track record of introducing successful new varieties, best IP rights, and best incentive to compete. The Complaint makes clear that DPL is by far the most attractive and efficient development partner,

indeed in DuPont's view the only viable partner in cotton.

The remedy therefore that would restore competition is one that maintains the competitive resources needed to develop new traits. Any remedy that eliminates an independent DPL has significant risks. But the only remedy DuPont can envision that would have a reasonable chance of preserving competition would be divesting all of DPL's germplasm and its breeding operations, as well as associated IP rights.

E. Conclusion

The Complaint sets forth a clear and compelling story of the competitive injury that will result from the proposed transaction. The remedy proposed in the Final Judgment falls far short of what would be necessary to have a reasonable prospect of maintaining competition in trait development. The result is clear: harm to farmers and consumers from a further entrenched Monsanto monopoly.

For the foregoing reasons, DuPont respectfully submits that the Proposed Final Judgment does not meet the ''public interest'' standard of the Tunney Act.

Respectfully submitted,

Thomas L. Sager,
Vice President and Assistant General Counsel, E.I. du Pont de Nemours & Company, 1007 Market Street, D–7038–3, Wilmington, DE 19898.

Dated: August 27, 2007.

Of Counsel:
Wm. Randolph Smith, Jeane A. Thomas, Ryan C. Tisch, Crowell & Moring LLP, 1001 Pennsylvania Avenue, NW., Washington, DC 20004.

August 10, 2007

Donna N. Kooperstein, Chief, Transportation, Energy & Agriculture Section, Antitrust Division, United States Department of Justice, 325 Seventh Street, NW., Suite 500, Washington, DC 20530.

Re: *United States* v. *Monsanto Company, et al., Case No. 1:07–cv–00992*

Ms. Kooperstein:

I am writing on behalf of our organization to object to the proposed final judgment that the U.S. Department of Justice (''DOJ'') has filed in the above-referenced lawsuit. Monsanto's acquisition of Delta and Pine Land Company (''Delta'') will solidify Monsanto's monopoly in the market for cotton seed and will have harmful ripple effects for Illinois's farmers, consumers and agricultural economy.

The State of Illinois has the second largest acreage of corn and soybeans planted in the United States. We are concerned that Monsanto's proposed acquisition of Delta is another step in its efforts to monopolize the market for seeds and biotech traits not just in cotton, but also in corn and soybeans. Monsanto is rapidly acquiring a variety of seed companies to commercialize its monopoly traits. In fact, its current iron grip on the corn seed market is an issue of extreme concern to our member farmers. With monopoly control over cotton, Monsanto will be able to prevent competing varieties from coming to market—alternative varieties that could have important application in corn and soybeans. The result will be devastating to Illinois farmers who need new and improved varieties to increase productivity in their crops and battle environmental conditions that threaten their livelihoods. Without market competition, our farmers will suffer from lack of alternative products and higher prices. We are disappointed that, by allowing this acquisition to proceed, the DOJ is ignoring the interests of our farmers and consumers.

The clear reason for Monsanto's acquisition of Delta is elimination of competition in seeds. There is nothing about the acquisition or the DOJ's proposed final judgment that will increase competition in cotton, or for that matter, in corn or soybeans. The divestiture of Stoneville, a much smaller cotton company, together with limited access to a limited line of seed germplasm, is not an adequate remedy. The acquisition hurts farmers and consumers, while only benefiting Monsanto.

Sincerely,
Bridget Holcomb,
Agricultural Policy Coordinator.

Tunney Act Comments of the International Center for Technology Assessment and Center for Food Safety on the Proposed Final Judgement

The International Center for Technology Assessment (CTA) is a non-profit, bipartisan organization committed to providing the public with full assessments and analyses of the impacts of technologies on society. CTA is devoted to fully exploring the economic, legal, ethical, social and environmental impacts that can result from applications of technologies or technological systems. The Center for Food Safety (CFS) is a national nonprofit membership organization founded by CTA to educate the general public and decisionmakers on the social, environmental and other impacts of agricultural technologies and systems; to secure adequate regulations to protect the general public and farmers from ill effects of agricultural technologies and systems; and to promote sustainable agriculture.

In February 2007, CTA and CFS published a comprehensive review of the proposed merger entitled ''Cotton Concentration Report: An Assessment of Monsanto's Proposed Acquisition of Delta and Pine Land'' (which we are also submitting as part of these comments).

CTA and CFS submit these comments and attachments pursuant to Section 2(b) of the Antitrust Procedures and Penalties Act (APPA), 15 U.S.C. 16 (the ''Tunney Act''). For the reasons discussed below, CTA and CFS believe that the Dept. of Justice's proposed final judgement (PJF) in this case is not in the public interest, and therefore must be rejected by this Court.

I. Background on the Cotton Seed Industry

Some basic background on the cotton seed industry is required to understand the competitive issues raised by the proposed merger.[1] There are two major types of cotton seed: (1) Conventional; and (2) genetically modified or ''traited'' cotton seed. Cotton is grown in four major regions of the U.S.: The Mid-South, Southeast, Southwest and West. Many different varieties of cotton have been developed by breeders. Cotton varieties have been bred for different combinations of properties, such as yield, disease resistance, suitability to certain climates or soil types, as well as quality characteristics such as fiber strength and length. ''Traited'' cotton seed is developed from conventional cotton varieties by means of genetic modification, which is used to introduce or ''introgess'' ''cotton traits.'' At present, cotton traits are limited to ''herbicide-tolerance'' (HT) and ''insect-resistance'' (IR). The HT trait allows farmers to spray herbicides on the cotton plant to kill surrounding weeds. The IR trait protects cotton from certain insect pests. Conventional cotton does not contain these traits. In 2006, the USDA identified 203 cotton varieties planted in the U.S.: 36 conventional varieties and 167 traited varieties (CTA, Figure 7).[2]

The merger involves two major markets. One market is the development, commercialization, and sale of cottonseed, both conventional and traited. The top three firms in this market are responsible for 92–93% of U.S. sales: DPL (51%), Bayer CropScience (30%) and Monsanto's Stoneville (12%) (CTA, Figure 1). The second is the ''upstream'' market for development of cotton traits. Monsanto has a 96% market share in traits, with Bayer and Dow accounting for the rest. Monsanto's HT traits are Roundup Ready and Roundup Ready Flex, both of which confer resistance to glyphosate herbicide; Monsanto's IR traits are

[1] Throughout these comments, we reference the attached ''Cotton Concentration Report'' for fuller discussion of issues raised. References are of the form ''CTA, Section #'').

[2] Unless otherwise noted, statistics on cotton varieties planted in the U.S. are derived from USDA, Agricultural Marketing Service, ''Cotton Varieties Planted'' report for 2006, which contains detailed information on varieties of cotton planted. Reference in CTA, Bibliography.

Bollgard and its successor, Bollgard II. The only other commercialized cotton traits are Bayer's LibertyLink (HT) and Dow's Widestrike (IR). 95% of traited cottonseed contains only Monsanto trait(s); 4% only Bayer's trait; and 1% a combination of a Monsanto and either a Bayer or Dow trait (CTA, Figure 2).

II. DoJ Construes Relevant Product Market Too Narrowly

DoJ defines the relevant product and geographic markets as ''the development, commercialization, and sale of traited cottonseed for the MidSouth and Southeast'' (CIS, p. 9). The DoJ bases its product market definition (''traited cottonseed'') on several empirically false statements. First ''Farmers grow substantially all of this important crop [cotton] from cottonseed that has been enhanced through the introduction of biotechnology traits (''traited cottonseed'')'' (Complaint at 2). Second: ''Today, almost all cottonseed varieties planted in the United States are traited. * * *'' (Complaint at 22). In fact, USDA data show that this is far from the case. First, of the 203 cotton varieties planted in 2006, just 167, or 82%, were traited. The remaining 36 varieties (18%) were conventional varieties. Hence, more than 1 of every 6 cotton varieties was conventional in 2006. Thus, traited cottonseed can by no stretch of the imagination be considered to comprise ''almost all of cottonseed varieties planted in the United States.''

Acreage planted to traited vs. conventional cottonseed breaks down in a similar manner. USDA data report 88% of U.S. cotton acreage planted to transgenic varieties, versus 12% planted to conventional varieties. 12% of the 15 million acres of cotton planted in 2006, or 1.8 million acres, were hence conventional. To say the least, it is difficult to understand how DoJ can claim ''substantially all'' U.S. cotton is produced from traited seed when nearly one in eight acres, comprising almost 2 million acres, is planted to conventional seed.

This overly narrow definition of the relevant product market leads DoJ to neglect several anticompetitive effects of the merger.

A. Declining Availability of Conventional Cottonseed, Higher Seed Prices

As noted above, DoJ defines the relevant product market as ''traited cottonseed.'' This definition implicitly ignores the very existence of conventional cottonseed, which forms a significant share of both cotton varieties and acreage planted in the U.S. However, the PJF proposes a partial remedy, albeit in an incidental and unsatisfactory manner, for this sector of the cottonseed market (i.e., conventional cotton varieties) that goes completely unanalyzed in the Complaint and CIS: ''The proposed Final Judgement allows Defendants to continue, for a limited period of time, to sell conventional versions of some of the divested DPL varieties currently being sold by DPL in and outside the United States, *providing for a continuity of supply of conventional cottonseed*'' (PJF, pp. 17–18, emphasis added). The evident need for a remedy expressed in the PJF stands in stark contradiction to DoJ's complete neglect of conventional cottonseed in its definition of the relevant product market in the Complaint and CIS. Because the CIS completely lacks an analysis of conventional cottonseed, and in fact virtually ignores its existence, DoJ has absolutely no basis for proposing, or assessing the adequacy of, the remedy cited above.

In fact, the merger will very likely have a number of serious anticompetitive impacts related to the conventional cottonseed market. First, availability of conventional cottonseed varieties will decline. DPL sold 15 conventional varieties in 2006, 40% of the 36 conventional varieties planted in 2006 (CTA, 3.2). Monsanto intends to reduce the number of conventional varieties offered by DPL, through ''accelerat[ing] biotech trait penetration'' (CTA, 3.2). Secondly, because conventional seed varieties are on average two to four times less expensive than traited seeds (CTA, 3.3, Figure 5, Appendix 3, and related discussion in text), farmers who prefer conventional seeds but cannot find suitable varieties will face substantially increased seed costs. See CTA, 2.4 for further discussion of the merger's adverse impacts on the conventional cottonseed market.

B. Declining Availability of Less Costly Traited Seeds, Increasing Seed Prices

A closely related impact of the merger is reduced offerings of cotton varieties with less expensive single vs. more expensive ''stacked'' (two) traits, and reduced offerings of less expensive first-generation vs. more expensive second-generation Monsanto traits. For instance, Monsanto has pledged to ''invest in penetration of higher-margin traits in Delta and Pine Land offerings.'' These proposed changes to DPL's product offerings (with respect to both conventional and traited seeds) are clearly not merely Monsanto's anticipated responses to farmer demand, but are expressions of a Monsanto strategy to increase profits through exercize of market power. These anticompetitive effects of the merger (reduced choices, increased seed prices) are addressed in detail in CTA 2.5, 3.3; Figures 5 & 6, Table 1 and Appendix 3).

III. DoJ Construes the Relevant Geographic Markets Too Narrowly

A striking feature of DoJ's settlement documents is the lack of any broader analysis of the cottonseed industry. One searches in vain for some argument or justification to explain DoJ's failure to analyze either (1) the national market in cottonseed; or (2) DoJ's restriction of the relevant geographic markets to the MidSouth and Southeast regions. On the first point, the CIS states clearly that: ''The Complaint alleges that the likely effect of this acquisition would be to substantially lessen competition in the market for the development, production, and sale of traited cottonseed * * *'' (CIS, p. 1), without, initially at least, restricting the anticompetitive impacts to specific geographic regions. On the second point, beyond a bare mention of the existence of the Southwest and West geographic markets, neither the Complaint nor the CIS discusses the Defendants' involvement in these markets. Yet despite DoJ's failure to analyze either of these two markets, or the national market, the CIS and PJF propose one remedy that explicitly addresses anticompetitive issues relevant to the national market in cottonseed, thus the Southwest and West markets as well as the MidSouth and Southeast (CIS, p. 21, discussed further below).

In fact, analysis of USDA data show that the Defendants together have a substantial presence in both markets: 29.16% of cottonseed sales in the important Southwest market (which includes Texas, the nation's leading cotton producer); and a still greater 40.51% of sales in the West.[3]

In the Southwest market, the merger would effectively result in Monsanto increasing its market share from 8.04% (Stoneville) to 21.12% (DPL), or an increase of over 2.5-fold. In the West market, Monsanto's post-merger share of cottonseed sales increases 3.6-fold, from 8.80% (Stoneville) to 31.71% (DPL).[4]

[3] USDA AMS 2006, cited above and attached. See Table entitled ''Estimated percentage of upland cotton planted to leading specified brands by growth area, 2006 crop'' p. 3. Note that DPL owns the Paymaster as well as the Deltapine brand. For documentation, see CTA, 2.1.1.

[4] Here, we assume that the market shares cited in the following discussion will not be altered by the Defendants' divestitures beyond that of Stoneville. The additional divestitures (e.g. of 20 DPL lines to Stoneville's acquirer and 43 lines to Syngenta) are

At present, these two geographic markets represent the only cottonseed markets in which the Defendants' competitors have a significant presence. The DoJ's CIS provides absolutely no analysis of how this substantial increase in Monsanto's post-merger market presence in these two important markets would affect competitiveness in the West and Southwest regions.

The concentration in these markets would increase substantially as a result of the merger, especially when considered in combination with Bayer's prospective acquisition of the Enhanced Stoneville Assets. Even without Stoneville, Bayer has a commanding 60.28% share of the Southwest market.[5] With Stoneville, this presence increases to 68.32%, or over two-thirds of the market. In the West, acquisition of Stoneville would increase Bayer's market share from 20.22% (note that Bayer purchased CPCSD in 2006, see CTA, 2.11 for documentation) to 29.02%.

Post-merger, the combined market share of the top two firms in the important Southwest market (which as noted above includes Texas, the nation's largest cotton producer) increases to an astounding 89.44%, and the corresponding market share in the West market to 60.73%. Top 3 market share would become 93.29% in the Southwest, and 96.60% in the West. The post-merger share of the national cottonseed market of just the top two firms rises to 92%, creating a virtual duopoly in cottonseed, with the Defendants controlling roughly 50% of the national market and Bayer controlling 42% (CTA, Figure 1).

Clearly, DoJ was remiss in not analyzing the merger's potential anticompetitive effects in the Southwest, the West, and nationally. The need for such an analysis is clearly indicated by DoJ's proposed remedy to the anticompetitive effects of Monsanto's restrictive licensing practices with third parties, which have allowed Monsanto to terminate licenses granted to cottonseed firms (licensees) which sell cottonseed containing non-Monsanto traits: ''These changes will give these competing cottonseed companies the ability to partner with trait developers other than Monsanto without any financial penalty and to offer traits desired by farmers. Trait developers will thereby have access to close to half of the current U.S. cottonseed market, without having to deal with the combined Monsanto/DPL'' (CIS, p. 21, emphasis added). Without having conducted any analysis of the national market in cottonseed, and having excluded from consideration two important geographical markets, DoJ is in no position to propose, or assess the adequacy of, a remedy that involves consideration of the national market in cottonseed.

The truth of this assertion is brought home by DoJ's reference, in the passage cited above, to ''competing cottonseed companies.'' If DoJ had analyzed the national market, it would have found that there are virtually no ''competing cotton seed companies'' of any size still active, due primarily to numerous acquisitions over the past decades, and particularly the last few years, resulting in an extremely high level of concentration in the cottonseed industry. USDA data show clearly that the number of cottonseed firms with sales appreciable enough to register in its surveys has declined dramatically over the past several decades (CTA, 21.1, Appendices I & 2), and particularly over the last four years: From 19 in 2003, to just 9 in 2006. Accordingly, the number of smaller cottonseed suppliers other than the top three firms (pre-merger) has declined from 16 to just six (CTA, 3.1). In short, DoJ's proposed remedy in favor of ''competing cottonseed companies'' may soon be irrelevant, if the exit of smaller companies from the market continues, and is accelerated by the merger, as appears likely. Clearly, DoJ should have analyzed the merger's potential to accelerate the exit of smaller companies from the cottonseed market, and the associated anticompetitive harms this would likely have (declining choice of cottonseed varieties, increased costs).

IV. DoJ's PJF Represents an Unwieldy and Unenforceable Conduct-Based Remedy Masquerading as a Structural Remedy Based on ''Divestitures'' of Germplasm

The primary means by which DoJ addresses the anticompetitive harms presented by the merger involves ''divestiture'' of germplasm. DoJ acknowledges the crucial role of germplasm in developing and commercializing cottonseed in the Complaint:

''A company with a large collection of high quality, or elite, germplasm has a competitive advantage because the company has the ability to identify the best genetic material and use it in a wide variety of possible cross combinations, resulting in a greater likelihood of developing a successful variety.'' (Complaint at 5.)

In addition, DoJ recognizes that divesting Stoneville alone would not be sufficient to restore competition lost by the merger Monsanto and DPL (CIS, p. 14). Accordingly, the PJF requires Monsanto and DPL to ''divest'' various lines of germplasm beyond that represented by Stoneville. Below, we discuss a few of the many exceptions and conditions attached to these divestitures of germplasm that render them ineffective as a remedy.

A. DPL Germplasm

DoJ states that: ''Defendants will divest twenty DPL conventional varieties'' (CIS, p. 16). First, only 8 of these 20 varieties are either commercial lines, and/or parents of lines that have been sold commercially. Six of these eight lines are listed as commercially sold varieties in 2006, when they comprised, collectively, just 1.76% of U.S. cotton planted in that year.[6] DoJ makes much of the fact that some of DPL's best-selling cotton varieties were derived, over years of breeding efforts, from four of these eight lines (CIS, p. 16). Yet as DoJ also acknowledges elsewhere, development of successful commercial cotton varieties from even high-quality parental lines can take 8–10 years, and cost tens of millions of dollars. Whether an acquirer will be able to develop commercially successful varieties from such parental lines at all, especially given the presence in the marketplace of successful varieties already developed from them, is extremely uncertain. The time required for breeding work that might result in commercially successful varieties is also uncertain, but could be substantial, and too long to promptly redress competitive harm, as merger guidelines require.

Twelve of the 20 lines are experimental lines with unproven and hence uncertain commercial potential. The acquirer (Bayer) may also lack the requisite expertise with cotton varieties of this type to effectively utilize them in breeding programs.

Still more troubling, Monsanto retains, or has the right to reacquire, substantial rights with respect to these 20 varieties (see Schedule B, Section 2, DPL Germplasm for the following discussion). For instance, Monsanto is entitled to re-acquire an exclusive

described only in relation to the MidSouth and Southeast markets.

[5] USDA AMS 2006, see table cited above. Note that Bayer owns not only the Bayer CropScience Fibermax brand, but also AFD Seed, which it purchased in 2005, and CPCSD (California Planting Cotton Seed Distributors), which it purchased in 2006. For documentation, see CTA, 2.1.1.

[6] See Table B of Schedule B—Enhanced Stoneville Assets. Reference to USDA AMS 2006, cited above, shows that collectively, 00W12 (DP393), Delta Pearl, DP5690, DP491, DP565 and DP5415 comprised 1.76% of U.S. cotton acreage in 2006.

license to sell varieties that are derived or bred from the DPL lines, and also contain only Monsanto traits. Recall that the chief value of these lines is as breeding stock. Secondly, Monsanto retains exclusive rights to sell any of the ''divested'' lines for sale in foreign countries where DPL is currently selling them and retain sufficient quantities of these lines for breeding purposes. Again, Monsanto can continue to breed with lines that DoJ chooses to designate as ''divested.''

Similarly, the ''divestiture'' of ''advanced exotic yield hues'' also comes with numerous strings attached. As with DPL Germplasm, Monsanto may retain ''research quantities'' of these lines ''to enable them to continue their trait development research.'' This exception is particularly curious in that DoJ's rationale for the exceptions (here and elsewhere) is to allow Monsanto ''to retain assets (and research rights to germplasm) that directly relates to trait development, while the advanced exotic yield lines were developed by Monsanto as part of a non-transgenic yield enhancement project; that is, as part of a project that involving traditional, non-biotech breeding work for development of higher-yielding varieties (CIS, p. 14–15). We note also that even DoJ admits that these lines will likely be unsuitable, at least within the term of the PFJ.

Finally, the ''divestiture'' of 43 of DPL's VipCot lines to Syngenta is similarly conditioned. Syngenta's ''exclusive rights'' to commercialize varieties developed from these lines is restricted to varieties that contain one of four traits (see Schedule C). If Syngenta were to develop a new trait not listed in Schedule C, and introgress it into one of these 43 lines, it could no longer commercialize it. This limitation is a significant restriction in light of the extremely high failure rate in agricultural biotechnology (CTA, 3.11, Appendix 7). This condition in effect puts DoJ in the unenviable position of ''picking a winner'' in a field littered with failed development projects. The commercial prospects of any of these 43 lines is also highly uncertain. DPL once promised commercialization of VipCot varieties by 2006 (CTA, 3.4.1). The commercialization date for eight of these lines is now projected for 2009–2011, with the majority pushed off until beyond 2011. These projected commercialization dates are notoriously unreliable, and DoJ's reliance on them as remedies to restore competition is naive.

These are just a few of the many exceptions, exclusions and conditions related to the ''divestiture'' which renders them ineffective as remedies. We would note that such restrictions have two weakening effects. First, they limit the ability of extremely weak competitors to successfully develop competing traited cottonseed varieties in a field in which Monsanto already has overwhelming dominance (as evidenced by its 95–96% market share in traits). Secondly, they provide the virtual monopolist Monsanto with rights to continue to sell certain of the ''divested'' lines, and/or to utilize ''divested'' germplasm in further breeding work, advantages which can only act to consolidate its monopoly position and forestall meaningful competition. For a fuller discussion of the competitive strength of a post-merger Monsanto-DPL, see CTA, 3.10 and Appendix 5.

B. DoJ's Conduct-Based Remedy Imposes Undue Obligations for Regulatory Oversight, Which DoJ Has Neither Time Nor Resources To Oversee

The numerous conditions attached to the sharing of rights to ''divested'' germplasm between Monsanto-DPL and Bayer-Stoneville and Syngenta imposes oversight obligations on DoJ which the Antitrust Division is ill-equipped to undertake. For instance, DoJ may be called upon to rule as to whether Monsanto has in fact complied with its obligation to provide Bayer with materials the latter needs to obtain regulatory approval of varieties Bayer develops from Null Lines derived from the ''divested'' advanced exotic yield lines, or as to whether compensation Monsanto seeks from Bayer for this task is in fact ''reasonable'' (Definitions, Null Line). Or, DoJ may have to rule on whether any retention by Monsanto of research quantities of advanced exotic yield lines does or does not adversely affect Bayer (Schedule B, clause 4c). Clause 4d of Schedule B may further require DoJ to police Bayer with respect to acquisition of certain patents, as well as enforce breeding and resale restrictions, in relation to the advanced exotic yield lines. These are just a very few of the oversight and enforcement responsibilities with which DoJ has saddled itself in the PJF. An examination of Schedules reveals many, many more. Not only is DoJ likely unequipped, in terms of expertise, to fairly adjudicate these matters, the resource burdens placed on DoJ in attempting to do so are unacceptable. Finally, the exceedingly complex terms in the PJF provide numerous opportunities for evasion of the terms of the settlement, which could easily subvert the remedies proposed.

V. Conclusion

DoJ's PJF is clearly inadequate to remedy the substantial anticompetitive impacts of the proposed merger. We have shown that DoJ has construed the relevant product and geographic markets too narrowly, and thereby failed to account for the merger's likely impact of reducing availability of conventional and less expensive traited cottonseed, thereby leading to reduced seed choices and increased seed costs for cotton growers. Likewise, by ignoring the national and two important regional markets, DoJ has neglected the precipitous decline in competition in the cottonseed industry as a whole that would likely be wrought by the merger, which also promises reduced choices and increased costs for cotton growers.

We have also pointed out the unwieldy, ''regulatory'' nature of this supposed structural remedy, which in fact is an extremely burdensome conduct-based remedy of just the sort that DoJ has neither the resources nor the expertise to police.

Finally, the proposed merger will create an extremely concentrated cottonseed industry dominated by two huge, vertically-integrated players (Monsanto and Bayer) which together will control 92% of the cottonseed market. Monsanto will consolidate and extend its near-monopoly position in cotton traits, with adverse impacts on U.S. agriculture as a whole (CTA, 2.7 to 2.9, 3.10) as well as anticompetitive impacts resulting in fewer choices and higher seed and cotton production prices for America's cotton farmers.

Therefore, we respectfully request the Court to reject DoJ's proposed final judgement as insufficient and contrary to the public interest.

Respectfully Submitted,

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Cotton Concentration Report

An Assessment of Monsanto's Proposed Acquisition of Delta and Pine Land

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Center for Food Safety is a national non-profit membership organization working to protect human health and the environment by curbing the use of harmful food production technologies

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Executive Summary

On August 15, 2006, Monsanto announced that it would acquire the Delta and Pine Land Company (DPL). DPL is the eleventh largest seed company in the world, sells over half of the cotton seed in the U.S., and holds a pivotal position as the only major cotton seed firm that is not also a biotechnology trait provider. Monsanto dominates the market for biotechnology traits in cotton and other crops, and is also the largest seed firm in the world. The proposed merger deserves close scrutiny, particularly in light of the extraordinarily high degree of concentration already existing in the cotton industry.

Cotton Industry Already Highly Concentrated Pre-Merger

Cotton seed: Just three firms sell 92% of U.S. cotton seed to farmers (Section 2.1.1, Figure 1, Appendix 1), a much higher concentration than other major crops (Appendix 2)

Biotechnology traits: Over 87% of U.S. cotton is biotech. 96% of biotech cotton contains Monsanto traits, and 95% contains only Monsanto traits (Section 21.2, Figure 2)

Research and development: Monsanto has similar dominance in R&D for future cotton traits, accounting for 94% of the experimental biotech cotton planted in the U.S. from the year 2000 to present (Section 3.4.3, Appendix 5)

Cotton farms: The average size of U.S. cotton farms more than doubled from 1987 to 2002. One of every five cotton farms ceased operations in just the five years from 1997 to 2002 (Section 2.1.3, Figure 3).

Market Power and Anticompetitive Effects

High cost of cotton seed: The cost of cotton seed has risen 3.4-fold from 1995 to 2005, due primarily to rising technology fees charged for biotech traits (Section 2.2, Figures 4 & 5, Table 1, Appendix 3). The value added by biotech traits does not justify these steep premiums (Section 2.3), as the trend of increasing cotton yield since 1930 has not accelerated during the biotech era (Appendix 4)

Limited choice: Farmers have fewer choices of quality conventional cotton seed, and fewer choices of cotton varieties with one trait vs. two, as cotton seed firms and trait providers aggressively pursue ''increased technology penetration'' to maximize profits (Sections 2.4 & 2.5, Figures 7 & 8)

Agronomic, Environmental Consequences of Monsanto's Trait Monopoly

Crop failures: Monsanto's biotech cotton has failed numerous farmers since its introduction, often resulting in sharp drops in yield. Near-total reliance on any agricultural technology, including one company's limited set of biotech traits, is unwise (Section 2.6)

Resistant weeds: The dramatically increased use of glyphosate-based herbicides (e.g. Roundup) associated with Roundup Ready cotton and other crops has fostered a rapid and dangerous development of weeds resistant to the herbicide, a threat to the cotton industry compared by one expert to the boll weevil (Section 2.7)

Other impacts: Recent scientific studies suggest that excessive use of glyphosate, which has increased six-fold from 1992–2002, is linked to plant disease, crop mineral deficiencies, reduced yields and (in the case of Roundup) amphibian mortality, and may pose a long-term threat to the productivity of American agriculture (Section 2.8).

Anticompetitive Effects of the Merger

Oligopoly to duopoly? USDA data show that the number of significant cotton seed firms other than the top three has declined by more than half from 2003 to 2006. Bayer's rising market share since 1999 is concentrated in the Southwest, and has not diversified other regional seed markets. A divested Stoneville may well be uncompetitive and ripe for takeover, possibly resulting in a cotton seed duopoly controlling over 90% of the market (Section 3.1).

Reduced choice: Monsanto's commitment to ''increased technology penetration'' would likely lead to accelerated phase-out of DPL's conventional cotton varieties, which comprised 40% of conventional lines planted in 2006, and fewer high-quality ''generation one'' and ''single-trait'' options, reducing choices for farmers (Sections 3.2 & 3.3).

Increasing cotton seed prices: Monsanto's pledge to ''invest in penetration of higher-margin traits in DPL offerings'' would accelerate the steep rise in cotton seed prices (Section 3.3, Table 2).

Consolidation of trait monopoly: DPL is the only seed firm among the top four (Bayer, MonsantoStoneville, Dow-Phytogen) that is not also a trait provider. Acquisition of DPL by Monsanto would likely result in exclusion of non-Monsanto traits in over half of U.S. cotton, extending Monsanto's current trait monopoly in cotton (Section 3.4) and other crops (Section 3.5) well into the future. It would also exacerbate the adverse agronormic and environmental impacts of trait monopoly in all crops. The high failure rate in agricultural biotechnology means that conduct-based solutions, such as compulsory licensing agreements to force Monsanto to deploy competitors' traits in DPL germplasm, are risky and likely to fail to achieve their competitive ends (Section 3.11).

Other Likely Impacts of the Merger

Organic cotton: The booming market in organic cotton is threatened by transgenic contamination, herbicide spray drift damage, and potentially by decreased conventional seed availability. The proposed combination would exacerbate such risks for organic cotton growers in the U.S. and overseas, and potentially reduce U.S. consumers' choice of organic cotton products (Section 3.7).

Seed sterility: DPL holds major patents on seed sterility technology (i.e. Terminator), a biological means to eliminate the millennia-old farmer's practice of saving and replanting seeds. Monsanto is known for aggressive prosecution of farmers who (allegedly) save its patented seeds. The merger would increase the likelihood that internationally-condemned Terminator cotton and other crops will be introduced, to the detriment of the world's farmers (Section 3.8).

International impacts: Monsanto is known for questionable business practices to promote its interests overseas, including illegal actions such as bribery of Indonesian government officials, which resulted in SEC prosecution and a $1.5 million fine in 2002. Acquisition of DPL's substantial international cotton seed business would give Monsanto, already the world's largest seed firm (Appendix 6), additional scope for such activities (Section 3.9).

Conclusion and Recommendations

The proposed combination would negatively impact farmers through reduced seed choices, increased seed prices, rising production costs and increased reliance on one company's technology well into the future. The merger would also increase the cotton industry's already near-total dependence on one company's herbicide-tolerance traits, exacerbating glyphosate-resistant weeds and potentially endangering the productivity of American agriculture through the effects of excessive glyphosate use. Finally, acquisition of DPL would invest Monsanto with more power to pursue questionable business practices overseas, and increase the likelihood of introduction of internationally-condemned sterile seed technology.

The Center for Food Safety and International Center for Technology Assessment call on the Department of Justice (DoJ) to unconditionally oppose the proposed acquisition of Delta and Pine Land by Monsanto, and to oppose future acquisitions leading to increased concentration in the cotton seed industry. We also urge the U.S. Dept. of Agriculture to increase funding for public-sector development of affordable, conventional seed varieties neglected by the private sector and to deny applications by entities seeking to field test any seed sterility technology.

1. Introduction

The Center for Food Safety (CFS) and International Center for Technology Assessment (ICTA) have conducted an independent assessment of the proposed acquisition of Delta and Pine Land Company by the Monsanto Company. CFS and ICTA are sister non-profit public interest groups with more than a decade of experience in the legal, agronomic, environmental and public health issues raised by agricultural biotechnology.

On August 15, 2006, the Monsanto Company announced its intention to acquire the Delta and Pine Land Company (DPL) for $1.5 billion in cash (Monsanto 2006a). Monsanto previously attempted to acquire DPL in 1998, but abandoned its bid in December 1999 (Kilman 2006) due to stiff conditions imposed by antitrust regulators (Kaskey 2006). DPL countered that Monsanto did not try hard enough to win approval, and sued the company for $2 billion in damages. The current agreement requires Monsanto to pay DPL up to $600 million if regulatory approvals are not obtained (Pollack 2006). After the transaction was dropped, a Department of Justice official testified that the Antitrust Division would have opposed the merger because it ''would have significantly reduced competition in cotton seed biotechnology to the detriment of farmers'' (Nannes 2001).

Monsanto has proposed to divest its Stoneville cotton seed business in order to gain approval of the merger (Monsanto 2006a). Monsanto first acquired Stoneville in 1997, divested it in 1999 as part of its prior attempt to acquire DPL (Fernandez-Comejo 2004, Table 20, ft. 4), then re-acquired it from Emergent Genetics, Inc. in 2005 (Monsanto 2005b). Stoneville accounts for about 12 percent of the U.S. cotton seed market.

The proposed merger deserves close scrutiny for many reasons, particularly in light of the extraordinarily high degree of concentration already existing in the cotton industry. Delta and Pine Land is the eleventh largest seed company in the world (ETC 2005), the biggest cotton seed firm in the U.S., and holds a pivotal position as the only major cotton seed seller that is not also a biotechnology trait provider. Monsanto dominates the market for biotechnology traits in cotton and other major crops, and is also the largest seed firm in the world (ETC 2005). Our analysis suggests that the merger would result in:

(1) Increased cotton seed prices;

(2) Reduced choice of conventional and some types of biotech cotton seed;

(3) Consolidation of Monsanto's virtual trait monopoly in cotton and other crops well into the future; and

(4) Adverse agronomic and environmental effects, as well as increased production costs, stemming from Monsanto's near-monopoly in herbicide-tolerance traits.

The merger could also result in:

(5) Increased concentration in the cotton seed market;

(6) Harm to organic cotton growers, and reduced choice of organic cotton products for consumers;

(7) Harm to farmers in the U.S. and elsewhere by facilitating the introduction of sterile seed technology (''Terminator''); and

(8) Increased scope for Monsanto to pursue illegal and questionable business activities overseas, to the detriment of the world's farmers.

We first examine the recent history and current state of the cotton industry (Section 2). This helps inform our analysis of the likely impacts of the proposed combination between Monsanto and Delta and Pine Land (Section 3) The conclusion (Section 4) is followed by recommendations (Section 5).

2. Current Status of the Cotton Industry

2.1 Cotton Industry Already Highly Concentrated

The cotton industry is by most measures the most highly concentrated of any major crop industry. Below, we briefly discuss four major aspects of this concentration: cotton seeds, biotechnology traits in cotton, research and development for biotechnology traits in cotton, and cotton-growing land.

2.1.1 Concentration in Cotton Seeds

Over the past 16 years, the market in cotton seeds has become highly concentrated. Appendix I shows some degree of competition from 1970 to 1989, with the top four private suppliers selling from 46 to 70% of total cotton seeds sold to farmers. The ''top four'' market share rose rapidly in the 1990s, reaching the 90% level in 1996. Concentration increased still further from 2000–2006, with just the top three firms—Delta and Pine Land, Bayer and Stoneville—controlling on average 91% of the market. In 2006, the combined market share of the top three stood at 92% (Figure 1). Based on available data, concentration in cotton seed exceeds that in other major crops, such as corn and soybeans, and by a considerable margin (Appendix 2).[1]

Major factors driving this concentration include (see Appendix I and Fernandez-Cornejo 2004, Table 20)):

(1) The virtual disappearance of public sector (university) breeding efforts, from 12–25% of cotton seed sold to farmers in the 1970s and 1980s, to less than 1% today;

(2) Numerous mergers and acquisitions, such as DPL's acquisition of Lankart and Paymaster brands in 1994 (SEC 1996) and Sure-Grow in 1996; and Stoneville's acquisition of Coker Pedigreed Seed and McNair in 1990, Brownfield Seed and Delinting Co. in 2000, and Germain's Cotton Seeds in 2001 (SEC 1997, Stoneville 2001);

(3) The rise of biotechnology and utility patents on biotech traits and plants, which prompted large chemical biotechnology firms to vertically integrate through acquisition of cotton germplasm, as seen with Monsanto's acquisition and re-acquisition of Stoneville in 1997 and 2005; Bayer's acquisition of Aventies CropScience in 2001 (Bayer 2001), AFD Seed in 2005, and California Planting Cotton Seed Distributors (CPCSD) in 2006 (Bayer 2006); and Dow's joint-venture with J.G. Boswell, Phytogen, in 1998 (DFP 2005).

2.1.2 Concentration in Cotton Traits and Research and Development

Biotechnology traits are specific properties conferred on a crop variety through the process of genetic engineering. As shown in Figure 2, the market in biotechnology traits (hereinafter ''traits'') deployed in cotton seed is even more concentrated than the cotton seed market, with the top three trait providers accounting for the traits in l00% of biotech seed planted in 2006. Yet market share is far from evenly distributed even among these few competitors. In 2006, over 96% of biotech cotton planted in the U.S. contained Monsanto traits, and 95% contained only Monsanto traits. Cotton with only Bayer (3.7%) or only Dow (0.06%) traits accounted for less than 4% of biotech cotton, with roughly one percent stacked with traits from Monsanto and either Bayer or Dow.[2]

A graph appearing here in the comment is illegible upon reprinting. The graph is available at the Department of Justice Antitrust Division, 325 Seventh Street, NW., Room 215, Washington, DC 20530, (202) 514–2481, and at the Office of the Clerk of the United States District Court for the District of Columbia, 333 Constitution Avenue, NW., Washington, DC 20001.

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Interestingly, the market in cotton traits was once at least slightly less concentrated. In 1998 and 1999, Bayer's herbicide-tolerant Buctril cotton (resistant to the herbicide bromoxynil) had a 13% share of biotech cotton (calculated from May *et al.* 2003, Table 1).

Research and development (R&D) efforts are also highly concentrated. Here too, Monsanto has overwhelming dominance, with 94% of experimental biotech cotton acreage since the year 2000 (see Section 3.4.3 and Appendix 5).

2.1.3 Concentration in cotton farms

Finally, the rise of biotechnology in cotton has also been accompanied by accelerating concentration of cotton-producing land in fewer hands. Figure 3 shows a drop in the number of cotton farms from 1987 to 1992, followed by a smaller decline through 1997, the beginning of the biotech era. In just the following five years, the number of cotton farms declined steeply by over 21%, representing a loss of one of every five U.S. cotton farms. Cotton farm size has also risen dramatically, particularly

[1] In this report, we focus on ''upland cotton,'' which accounts for about 97% of U.S. production. The remaining 3% is American Pima or extra-long staple, grown primarily in CaIi[ornia, and used mainly for high-value products such as sewing thread and expensive apparel (USDA ERS 2006a).

[2] Unless otherwise noted, all statistics on conventional and biotech cotton varieties planted from 2003 to 2006 are derived from government data in ''Cotton Varieties Planted'' reports for the relevant year, based on surveys conducted by the U.S. Dept. of Agriculture's Agricultural Marketing Service. See USDA–AMS (2003–2006) in the Bibliography.

since 1997, when the size of the average cotton farm already exceeded that of any other major field crop. In addition, the percentage of cotton farms 500 acres or larger has increased from 12% in 1987 to 29% in 1997 (Meyer and MacDonald 2001).

While, the declining number and increasing size of cotton farms is a long-term historical trend in 1949, 1.1 million presumably mixed crop farms harvested an average of 24 acres of cotton each) (USDA ERS 1996), biotechnology has helped facilitate consolidation over the past decade, as discussed further below.

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2.2 Cotton Seed Price Increase With the Rise of Biotechnology

The increasing use of transgenic cotton since 1995 has been accompanied by a dramatic rise in cotton seed prices paid by farmers. 1-listorical price data from USDA show that the per acre cost of cotton seed has risen 3.4-fold in just the eleven years from the start of the biotech era in 1995 to 2005, when transgenic varieties accounted for 83% of U.S. cotton (Figure 4). The proportion of overall on-farm operating expenses attributable to seed expenditures increased nearly three-fold in the same brief time span (data not shown).

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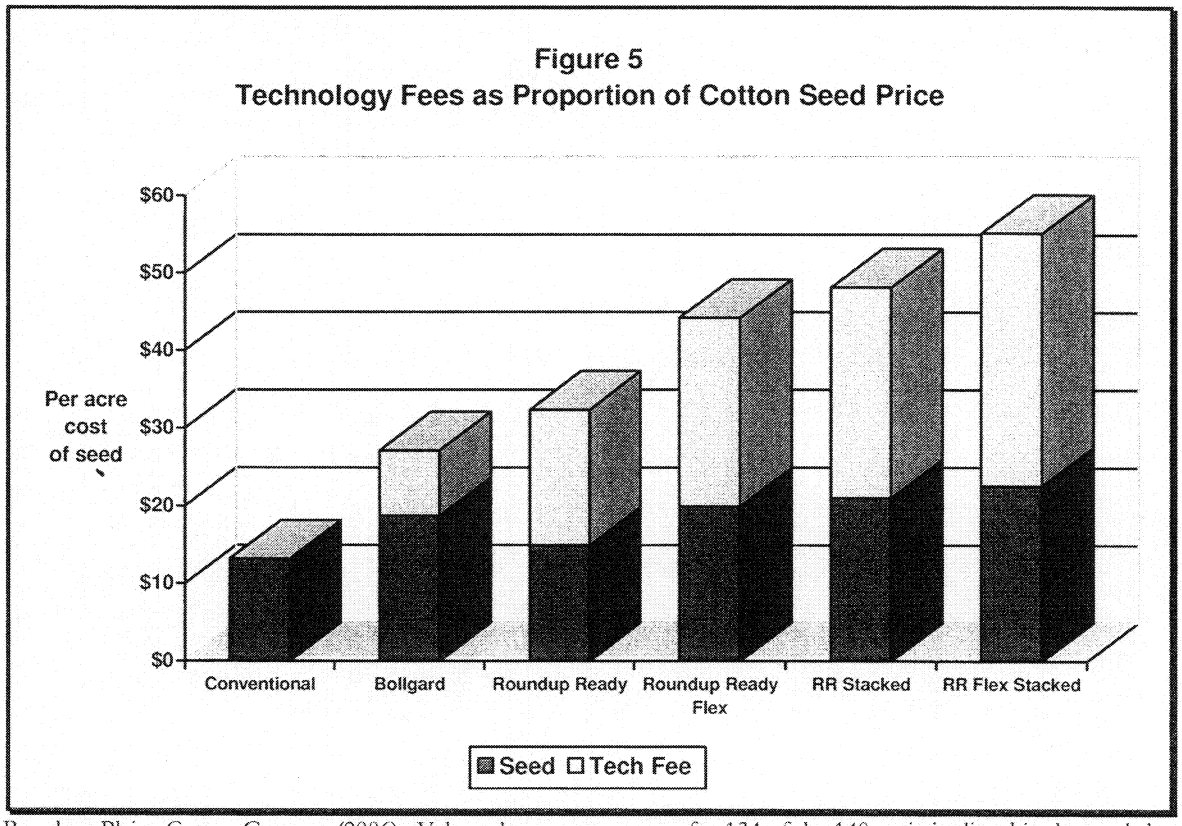
A comparison of present-day prices for conventional and transgenic cotton seed shows that biotech traits are indeed primarily responsible for this rapid price increase. Appendix 3 plots the prices of 140 varieties of cotton seed sold in the Lubbock, Texas area in 2006, broken down by conventional and various biotech trait categories. The data show that the average per acre cost of transgenic cotton seed ranges from two to over four times as much as that of conventional seed. (We will discuss these findings in more detail below.) The price differential is attributable primarily to ''technology fees'' charged by trait providers. Figure 5, based on prices for the same 140 varieties portrayed in Appendix 3, shows that technology fees comprise from 31% to 59% of the overall price paid by farmers for cotton seed. Technology fees increase with a) newer generation traits; and b) number of incorporated traits. Table I shows that the price of cotton seed rises roughly 40% when a second transgenic trait is ''stacked'' with a first and for a variety with second generation versus first generation trait(s).[3] A farmer pays on average nearly twice as much for a second generation variety with two traits as for a first generation variety with one trait.[4] At present, biotech cotton is limited to one or two (stacked) traits, though three or more are possible in the future, as we are starting to see in the corn seed market, with so-called triple-stack corn (Gullickson 2006).

[3] Note that seed prices vary considerably based on numerous factors: Region, time of purchase, package deals with chemicals. etc.

[4] The term ''generation 2'' was originally used to denote promised biotech crops with ''output'' traits desirable to consumers, such as enhanced nutrition, versus ''generation 1'' crops with ''input'' traits of interest to farmers, such as herbicide tolerance (HT) and insect resistance (IR). However, the biotech industry has failed to make a commercial success of any true generation 2 ''output'' trait biotech crop. Monsanto chooses to call its Roundup Ready Flex and Bollgard II traits ''second generation'' even though they are merely variations on the original generation 1 input traits, Roundup Ready and Bollgard.



Based on Plains Cotton Growers (2006). Values shown are averages for 134 of the 140 varieties listed in the worksheet (conventional: 21; Bollgard: 2; RR: 39; RR Flex: 15; RR stacked: 26; RR Flex stacked: 31). The six LibertyLink varieties were excluded because no separate tech fee component was listed for these six varieties.

Cotton seed providers are actively transitioning the cotton varieties they offer from conventional to biotech, from one to two biotech traits, and from first to second generation traits. For instance, the short-term goals cited in a 2004 Delta and Pine Land presentation to investors EDPL 2004, slide 6) are:

*''Increased technology penetration (share, stacked traits vs. single trait);'' and

*''Accelerated transition to MON [Monsanto] second generation traits.''

TABLE 1.—PER ACRE COST OF BIOTECH SEED BY TRAIT AND GENERATION

	One trait (HT)	Two traits (HT/IR)	Price rise → 2 traits (percent)
First Generation	Roundup Ready, $31.91	Roundup Ready/Bollgard I, $45.20	42
Second Generation	Roundup Ready Flex, $44.02	Roundup Ready Flex/Bollgard II, $61.90	41
Price Rise 1st gen. → 2nd	38%	37%	*94

Source: Jones, MA (2006). HT = herbicide tolerance; IR = insect resistance. Per acre seed prices based on 38 inch rows and 4.0 seed/ft. Variety not specified. Prices quoted for Virginia, N. & S. Carolina with 25% discount.
*94% signfies the price rise from 1 trait/first generation to 2 traits/second generation.

What is the nature and magnitude of the value added by biotech traits? Does this added value justify the substantial price premiums of biotech versus conventional cotton seed? Is increased technology penetration being driven solely by farmer demand? These questions are addressed in the following two sections.

2.3 Biotechnology Trait Premiums and Added Value

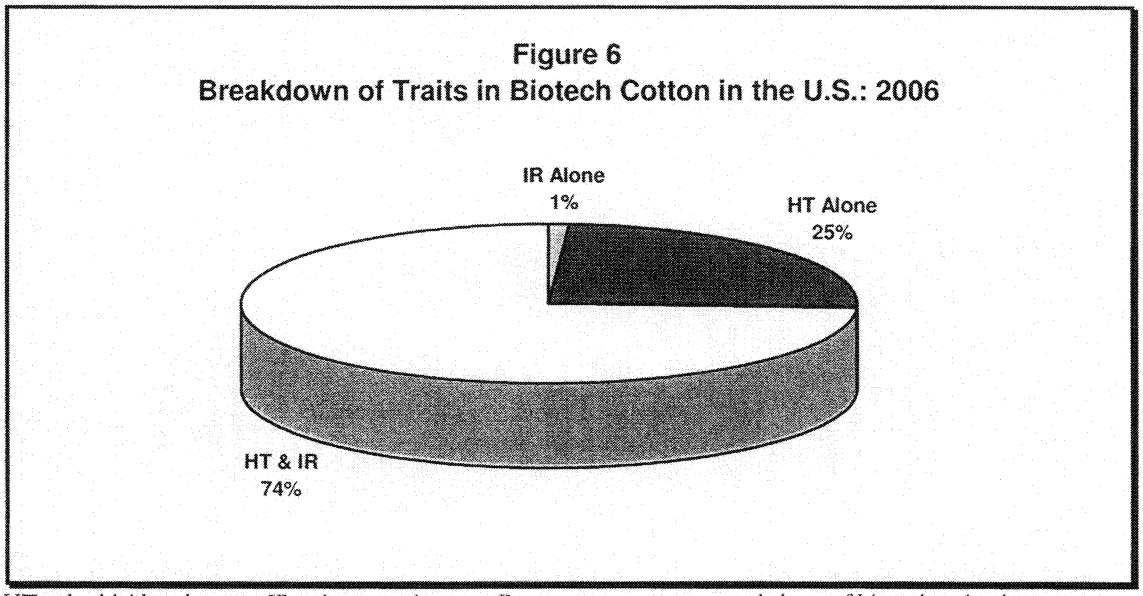
Conventional wisdom has it that the added value of biotech cotton seed fully justifies its two-to four-fold increased price over conventional seed. It is said that farmers wouldn't pay these high premiums if the seeds didn't deliver added value commensurate with their added cost; they would buy conventional seed, instead. However, the extreme concentration in both cotton seeds and traits at least suggests the possibility that market power might be restricting farmers' choice of both conventional and biotech seeds and thus artificially raising prices. An assessment of this possibility, provided in Section 2.4, requires a basic understanding of added value in the context of biotech traits deployed in cotton.

In 2006, almost 88% of U.S. cotton was transgenic (USDA AMS 2006). Nearly three-fourths of transgenic cotton acreage was planted to so-called ''stacked'' varieties modified for both of two traits: Herbicide tolerance (HT) and insect resistance (IR). Varieties with HT alone comprised one-fourth and those with IR alone comprised less than 1%

(Figure 6). HT and IR are the only biotech traits available in cotton.

2.3.1 Herbicide Tolerance

Herbicide tolerance permits the cotton plant to survive application of a single herbicide that would otherwise kill the [non-biotech] plant, thus allowing ''over-the-top'' application of the herbicide to more easily kill nearby weeds without killing or severely injuring the cotton plant itself.[5] HT cotton permits greater flexibility in the timing of herbicide applications, allows for herbicide use over greater time spans, and in general simplifies weed management by reducing the number of different weed killers applied. The chief advantages cited for HT cotton are convenience and ability to cover more acres (i.e. reduced labor inputs per acre) (Duffy 2001), both of which are of particular value to larger farmers (Benbrook 2005, p. 9). Thus, HT cotton has helped facilitate the shift to fewer and larger cotton farms noted above.



HT = herbicide tolerance; IR = insect resistance. Percentages represent total share of biotech upland cotton planted in the U.S. in 2006 to varieties with the given trait(s). Source: USDA AMS (2006).

Monsanto's HT cotton traits, Roundup Ready and Roundup Ready Flex, comprised 96% of HT cotton in 2006. Both Roundup Ready versions are engineered to survive spraying with glyphosate-based herbicides, sold by Monsanto under the name of Roundup.[6] The remaining 4% of HT cotton acreage contained Bayer's LibertyLink trait, which confers tolerance to glufosinate, sold by Bayer under the name of Liberty. Monsanto's dominance in herbicide-tolerant cotton is attributable to three major factors:

(1) The effectiveness of glyphosate, an extremely broad-spectrum herbicide (i.e., it kills a broader range of weed species than most other weed killers), and the popularity of the Roundup Ready system with many farmers;

(2) The low cost of glyphosate, due to Monsanto's ''brilliant strategy of dropping its price years ahead of patent expiration [in 2000] and tying its use to the early growth of genetically modified crops'' (Barboza 2001), as well as subsequent competition from low-cost generic manufacturers of glyphosate;

(3) Aggressive acquisition of high-quality germplasm in which to incorporate its traits, as well as licensing agreements for incorporation of its traits in other firms' germplasm.

The dominance of Roundup Ready cotton has driven a many-fold increase in the use of glyphosate and reductions in the use of other herbicides. The growing reliance on this single herbicide has led to rapid development of glyphosate-resistant weeds, which is beginning to seriously erode the value of this technology (see Section 2.7).

2.3.2 Insect Resistance

Insect resistance involves introduction of a gene encoding an insecticidal protein from a soil bacterium (known as Bt) into the tissues of the cotton plant, and protects cotton from some (but by no means all) cotton pests, thus reducing the use of insecticides. However, the value added by the IR trait is limited by several factors. First, most IR cotton[7] is highly effective only against the tobacco and pink bollworm caterpillars, but only partially effective against ''some of the most damaging insect species,'' such as cotton and American bollworms (May et al. 2003); it provides no protection against other pests such as the boll weevil, stink bugs, plant bugs and mirids (Caldwell 2002). Because farmers continue to spray for these latter pests, IR cotton often provides only a modest reduction in the number of insecticide applications (NAS 1999, p. 114). Secondly, to the extent that insecticide applications are reduced on IR cotton,

[5] ''Over-the-top'' is one form of ''post-emergence'' herbicide application, or spraying after the cotton seed has ''emerged'' or sprouted. The alternative herbicide regime more common with conventional, non-HT varieties is called ''pre-emergence.'' That is, a herbicide that retains its activity for weeks is applied to the soil before the cotton plant actually sprouts so as to suppress ''weed competition'' in the critical early life of the cotton plant. Pre-emergence herbicides are also used, though to a lesser extent, with HT cotton.

[6] Generation I Roundup Ready cotton permits over-the-top application only during the early seedling stage, after which time spray shields are required to direct the herbicide to the base of the plant, so-called ''post-directed'' application. Note that post-directed applications are also used with conventional cotton. Generation 2 Roundup Ready Flex cotton permits over-the-top application of higher doses of glyphosate throughout the growing season (Bennett 2005).

[7] As used here, ''IR cotton'' signifies any cotton with the IR trait; as shown in Figure 6, the IR trait nearly always comes in cotton varieties ''stacked'' with HT.

this ironically often results (over years) in larger populations of the pests not affected by the built-in insecticide, which can then lead to increased chemical applications in later years and erosion or even reversal of the original benefit. For instance, Bt cotton growers in China, who originally benefited through reduced expenditures on insecticides, found themselves applying more (and paying more for) insecticides than non-transgenic cotton growers by year seven due to such secondary pest problems (Connor 2006). Similar problems, though not so severe, have been reported in North Carolina (Caldwell 2002) and Georgia (Hollis 20Q06).

Cotton with Monsanto's Bollgard or Bollgard II cotton traits comprised 99% of IR cotton planted in the U.S. in 2006, with Dow AgroScience's Widestrike accounting for the rest.

2.3.3 Yield

One often hears unqualified assertions that biotechnology increases crop yields. Yet this is simply not the case. As recently noted by a USDA researcher, biotechnology does not increase the plant's genetic yield potential, the only meaningful sense in which such claims could be true:

''Currently available GE [genetically-engineered] crops do not increase the yield potential of a hybrid variety. In fact, yield may even decrease if the varieties used to carry the herbicide-tolerant or insect-resistant genes are not the highest yielding cultivars.'' (Fernandez-Cornejo & Casweli 2006, p. 9)

These higher-yielding cultivars have been developed over decades with conventional breeding. USDA data reveal a nearly four-fold increase in average cotton yield from 1930 to the early years of the biotech era in 1998, due to conventional breeding in combination with the introduction of fertilizers and pesticides (Fernandez-Cornejo 2004, pp. 5–6).[8] Appendix 4 illustrates this trend of increasing yield, and shows that it has not accelerated since 1995, during biotech cotton's rise to dominance, with five years of yield increase offset by six years of yield decline.

Yields of cotton or any crop are influenced by many complex, interacting factors beyond the plant's genetic yield potential. These include soil quality, the amount and timing of rainfall, temperature, severe weather events, insects, weeds and disease. Of great importance, too, is a farmer's management skills and preferences in responding to the particular challenges s/he faces in a given year. Though generalizations are hazardous, studies tend to show that IR cotton has helped farmers reduce yield Losses from damage by bollworms (but not other pests) in some areas and situations where bollworm infestation is heavy (e.g. lower Southern states), but has no yield impact in other areas where bollworms are not so troublesome (e.g. upper Southern states) Likewise, most studies of HT cotton have shown no yield gains, while others suggest lesser yield reductions from weed competition versus conventional varieties (see USDA ERS 2001, pp. 11–12 for a review of studies). Of course, additional income from any increased yield must exceed the additional cost of traits (see Table 1) for biotech seed to be profitable for farmers. This hurdle becomes higher as biotech seed premiums rise with stacked and newer generation traits (Figure 5, Appendix 3).

Farmer preferences are also important. For instance, growers who prefer mechanical tillage and/or pre-emergence herbicides for weed control, or organic methods to control insects or weeds, may find little use for biotech traits, as would growers in areas less plagued by bollworms and weeds. Others who like the traits may still not find them worth the steep premiums, and prefer conventional seeds for cost reasons. Clearly, it is of vital importance for farmers to have access to a wide variety of seeds, including conventional varieties, to meet the particular challenges confronting him/her in any given situation, using the methods s/he prefers.

2.3.4 Pesticide Use

The most comprehensive independent study to date, based on USDA data, demonstrates that adoption of biotech cotton in the U.S. has led to a 3.7% increase in pesticide[9] use on cotton from 1996 to 2004. A decrease in insecticide use attributable to IR traits has been swamped by a bigger increase in herbicide use facilitated by herbicide-tolerance traits (Benbrook 2004, Appendix Table 11). The cost of the increased use of pesticides has been largely offset by the declining price of glyphosate, the chief herbicide used on cotton. The declining cost of glyphosate-based herbicides from 140–45/gallon in the 1990s to 12–16/gallon in 2005–06 (Brown 2006a, slide 46)—is extremely important to keep in mind, as it is largely responsible for steady or declining expenditures on pesticides despite increasing amounts applied as biotech cotton share rises.[10]

Even in the case of IR traits, however, any cost savings from reduced insecticide expenditures must be balanced against the IR trait premium; where bollworm infestation is low, conventional seeds often prove more profitable (Caldwell 2002).

2.3.5 Summary of Added Value

To sum up, biotech cotton has provided added value to many farmers, but this value is highly dependent on the particular region and situation, as well as farmer preference. In general, it can be said that cotton with the HT trait has simplified weed management through greater convenience, lower labor requirements and a decrease in the number of herbicides used. Cotton with the IR trait has slightly reduced insecticide use, and reduced yield losses where bollworm infestation is heavy. Offsetting these advantages are the overall increase in pesticide use, the rise in glyphosate-resistant weeds (Section 2.7), the growing problems with secondary insect pests, and facilitation of the trend to fewer and bigger cotton farms. As discussed further below, the first two problems are exacerbated by near-exclusive reliance on one company's HT traits to the exclusion of other methods of weed control.

These limitations to the value added by biotech traits raise a simple question. Is farmer demand alone responsible for the 88% adoption rate of seeds that cost two to four times as much conventional varieties? Or are other factors at play?

2.4 Biotech Versus Conventional Seed: Farmers' Choice?

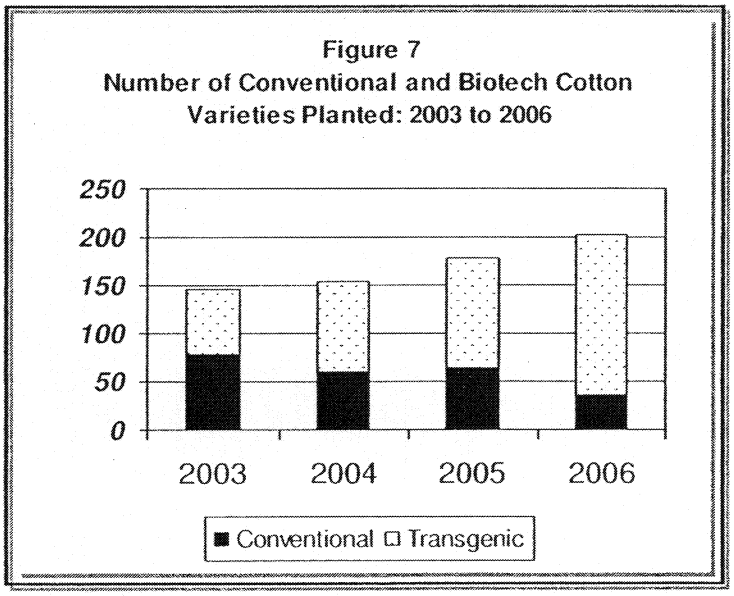
While biotech seeds are popular with many farmers, there is evidence that some growers purchase them for reasons other than added value. For instance, anecdotal reports suggest that some cotton farmers choose Roundup Ready (RR) cotton varieties to protect their cotton from damage due to glyphosate spray drift from an RR cotton-growing neighbor's field (Arax and Brokaw 1997). Given the ubiquity of RR cotton (82% of total U.S. cotton acreage in 2006), this explanation could apply to a large number of RR cotton farmers, who might otherwise choose to grow conventional varieties. Studies simulating glyphosate spray drift

[8] Though it is difficult to disentangle the various factors, by one account 67% of the increased yield of cotton from 1936–1960 was attributable to conventional breeding (see Fuglie et al. 1996, cited in Fernandez-Corneo 2004, pp. 5–6).

[9] The term ''pesticides'' encompasses both herbicides (weed killers) and insecticides.

[10] USDA data show a constant, roughly $60/acre, expenditure on ''chemicals'' applied to cotton from 1997–2005, though these figures appear to be uncorrected for inflation (see USDA ERS 2007b).

confirm that it can damage cotton (Thomas et al. 2005; Lyon & Keeling; Muzzi 2004). Arkansas state officials are considering regulations to minimize glyphosate drift damage to non-RR crops (Bennett 2007). This ''defensive'' reason for purchase of more expensive RR seeds is not added value, but rather a costly consequence of sloppy weed control practices by neighbors. Farmers who buy RR seeds for this reason say they prefer paying the price premium to the time and hassle of paperwork involved in lodging crop insurance claims to obtain reimbursement for spray drift damage to a conventional cotton crop, not to mention the uncertainty of reimbursement.



Source: USDA AMS (2003-2006).

Another explanation given by cotton growers for purchasing biotech cotton is that seed firms are offering fewer and fewer high-quality conventional cotton varieties. This explanation is supported by independent experts. For instance, Donate Miller, associate professor with the Louisiana State University AgCenter, stated that one of the ''bigger problems'' facing cotton growers is that fewer conventional varieties are being developed and released (Bennett 2005). Similarly, Texas cotton consultant Francis Krenek says that some farmers in his area are constrained to use Roundup Ready cotton because in many cases, certain desirable seed varieties are only available in versions that carry the RR trait (PANUPS 2006).

These assessments by farmers and independent cotton experts are confirmed by hard data. First, the number of conventional varieties planted has fallen steeply since just 2003, from 78 to 36. The percentage of planted varieties that are conventional has fallen even more steeply, from 53% in 2003 to just 18% in 2006, reflecting both reduced conventional and increased transgenic cotton seed offerings (Figure 7). This dramatic decline in the availability of conventional seed occurred during a period when the transgenic share of U.S. cotton acreage increased only modestly, from 76% to 88%.

The top three firms (DPL, Bayer and Monsanto's Stoneville) offer a disproportionately small share of the planted conventional cotton varieties, 54% over the past four years, despite seed sales responsible for over 90% of 2006 cotton acreage. For instance, Stoneville's conventional varieties declined from 5 in 2003 to just 2 in 2006, while the number of its planted biotech varieties climbed from 11 to 32 over the same time period. DPL had 21 conventional lines planted in 2003, shrinking to 15 in 2006. The number of planted varieties from Bayer fell from 15 in 2003 to 6 in 2006.[11]

Nearly half the conventional varieties planted from 2003 to 2006 came from smaller suppliers, and the number of smaller cotton seed suppliers (i.e. other than DPL, Bayer and Monsanto's Stoneville) listed in USDA data covering virtually 100% of planted upland cotton has declined from 16 in 2003 to just 6 in 2006. This all portends continuing reductions in the availability of conventional cotton seed.

Equally important is the lower quality of the few conventional varieties that are still being offered. The top firms either do not offer conventional versions of their top-selling transgenic cotton varieties, or only limited supplies of the same. As noted in Section 2.3, biotech traits are limited to herbicide tolerance and insect resistance. All other characteristics—such as boll size, fiber quality, disease resistance, and above all, yield—are properties of the specific germplasm, not biotechnology.[12] This means that farmers who want the desirable, non-biotech attributes of the best varieties (especially high yield) may have no alternative but to purchase costly biotech seed, whether or not they want the HT and/or IR traits at all, or at least at the substantial premium over conventional seeds.

One indication of the lower quality of conventional varieties offered by industry leaders is the steeply falling acreage planted to them. For instance, U.S. cotton acreage planted to all DPL's conventional varieties declined from 6.36% in 2003 to just 1.47% in 2006. Acreage planted to all of Stoneville's

[11] For purposes of comparison, the numbers for Bayer include conventional varieties offered by Bayer (Fibermax) and by AFD Seed in both 2003 and 2006, even though Bayer only acquired AFD Seed in 2005.

[12] This assumes no adverse consequences from the genetic modification process. Actually, there is some suggestive evidence that fiber quality may be lower in certain biotech varieties (Edmisten 2000), but this issue lies beyond the scope of this report and will not be addressed here.

few conventional varieties over the same time period is negligible, roughly 0.3% of U.S. cotton in 2003 to less than 0.1% in 2006. The decline in acreage planted to DPL's and Stoneville's conventional varieties in this four-year period is more than twice as steep as the overall decline in conventional acreage, from 23.78% of U.S. cotton in 2003 to 12.36% in 2006.

Many popular varieties of cotton are offered only in biotech versions. For instance, Stoneville's ST 5599 BR has been a leading variety since at least 2003. ''BR'' designates it as Monsanto's Bollgard/Roundup Ready IR/HT stack; Stoneville does not appear to offer a conventional version of this line (i.e. ''ST 5599'' is absent from USDA data). DPL's enormously popular DP 555 BG/RR (also Bollgard/Roundup Ready) was the top-selling cotton variety from 2003 (8.68% of planted cotton acreage) to 2006 (17.3%). According to University of Georgia cotton expert Steve M. Brown, DP 555 BG/RR is popular chiefly because it outyields other varieties by 100–300 lbs./acre (personal communication). No conventional version of this variety is listed in USDA data, nor is one listed on DPL's Web site. It seems likely that at least some farmers would buy conventional versions of these top-selling cultivars, if only they were made available.

The evidence from other cultivars suggests they would. For instance, in 2006, DPL's conventional lines DP 5415 and DP 5690 were planted on slightly more combined acreage (0.76% of all cotton) than their Roundup Ready counterparts DP 5415 RR and DP 5690 RR (0.67%). Despite this demand, DPL's Web site no longer lists conventional DP 5415 or DP 5690, suggesting they will not be sold in 2007, while the Roundup Ready versions are still being offered.[13] This would be entirely consistent with DPL's goal of ''increased technology penetration.'' A similar comparison is unavailable for Monsanto's Stoneville, because there do not appear to be conventional variants of any of Stoneville's transgenic lines.

Another example comes from Bayer CropScience, the number two supplier of cotton seed with 30% of the U.S. market (Fibermax, AFD Seed and CPCSD brands). Bayer does not feature a single conventional cotton variety in its ''2006 Fibermax Variety Guide,'' merely noting in fine print that three conventional Fibermax lines ''are available for 2006 in limited supply. Please contact your local seed dealer for additional information'' (Bayer Fibermax 2006). It is surprising that Bayer would have limited supplies of these varieties, since two of them were the top-selling conventional varieties offered by any company, planted on 7.14% of U.S. cotton, or over 1 million acres, in 2006.

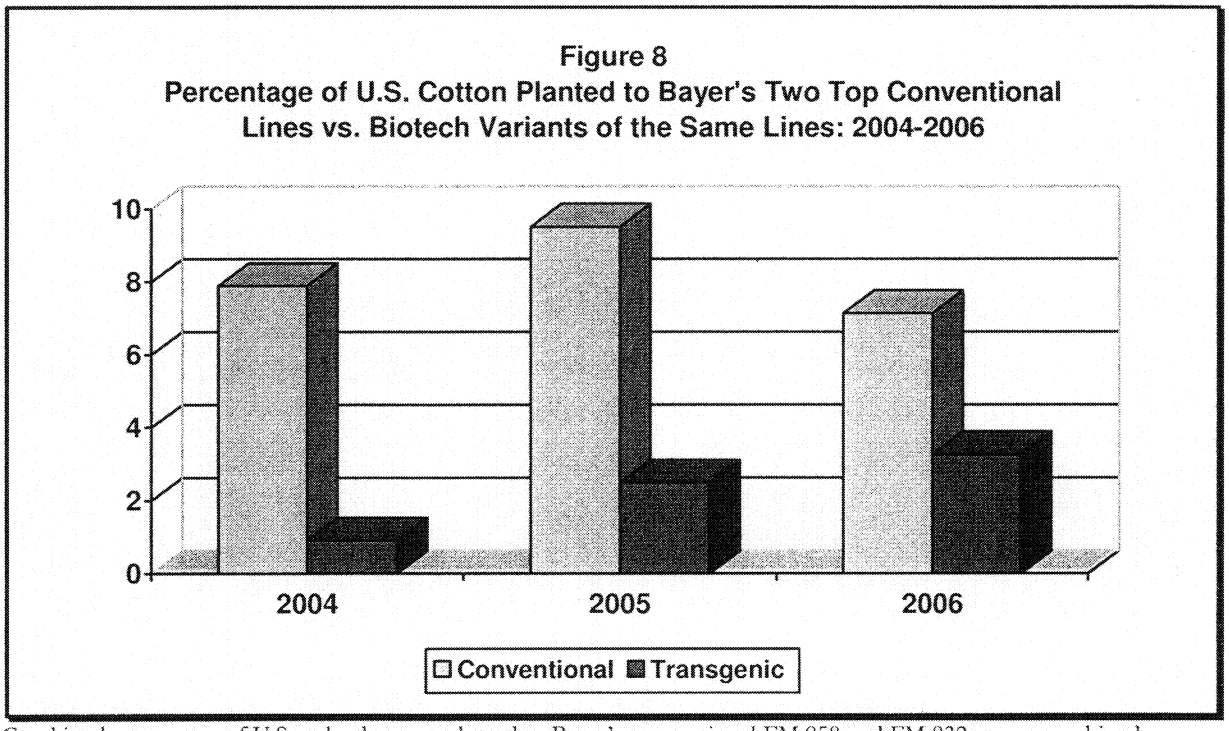
Why would Bayer have limited supplies of these two popular conventional varieties, designated FM 958 and FM 832? One possible explanation is that Bayer did not produce enough seed because it did not expect them to be so popular. Yet this seems unlikely, given the fact that FM 958 and FM 832 represented an even greater share of cotton planted in 2004 and 2005, as shown in Figure 8. Figure 8 also demonstrates that farmers prefer the conventional versions of each line to their biotech variants (FM 958B and FM 832B with the IR trait; FM 958LL and FM 832LL with HT). This strongly suggests that the increasing acreage planted to the biotech variants is attributable to Bayer's intentional limitation of conventional supplies. In other words, farmers who want the desirable properties of FM 958 and FM 832, but cannot obtain the conventional versions due to limited supplies, have no recourse but to purchase the more expensive biotech variants.

Per acre price data show that the herbicide-tolerant biotech variants are nearly twice as expensive as the corresponding conventional versions: $33.26 versus $18.09 for FM 958, and $31.48 versus $17.45 for FM 832 (Plains Cotton Growers 2006).[14]

Together, Bayer (73%) and DPL (13%) account for 86% of conventional cotton acreage. The remaining 14% of conventional cotton seed planted in 2006 was supplied by regional cotton suppliers: Phytogen, mainly in California (7.2%); and All-Tex (2.6%), Americot (2.5%) and Beitwide Cotton Genetics (1.4%), mainly in Texas. These smaller firms, with limited seed varieties adapted to the growing environments of their regional markets, are unlikely to be able to meet farmer demand for high-quality conventional varieties in most areas of the country. The public sector, which once might have met this lower profit margin-market, virtually disappeared in 1992 (see Appendix 1).

[13] For availability, see *http://www.deltaandpine.com* (last accessed 12/28/06). Select ''Cotton Varieties'' tab at the top, then ''conventional'' for each of the given regions to confirm the absence of DP 5415/5690; select ''Roundup Ready'' to confirm that DP 5415/5690 RR are still being offered. For percentages of DP 5415 & 5690 varieties, see USDA AMS (2004.2006). Note that the 0.76% figure for conventional DP 5415/5690 represents over 113,000 of the 14.95 million acres of upland Cotton planted in the U.S. in 2006 (USDA NASS 2007).

[14] Per acre price data were not available for the insect-resistant versions of the two lines.



Combined percentage of U.S. upland cotton planted to Bayer's conventional FM 958 and FM 832 versus combined percentage planted to 2 biotech versions of each line from 2004-2006. Despite the popularity of these two top-selling conventional varieties with farmers, Bayer announced "limited supplies" of both for 2006. Based on data from USDA AMS (2004-2006).

Conventional upland cotton seed was planted on 1.85 million acres in 2006, representing nearly one-eighth of the 14.95 million upland cotton acres planted.[15] Thanks to oligopolistic market power, many farmers may soon have little choice but to plant biotech cotton, whether or not they want biotech traits at all, or at least at the prices at which they are offered. Indeed, it appears this is already happening. The elimination of more affordable conventional cotton seed is not only unfair to farmers, it has troubling implications for the future of the U.S. cotton industry.

2.5 Single-Trait Versus Stacked Cotton

Nearly three-fourths of biotech cotton planted in 2006 was stacked with two traits, HT and IR (Section 23, Figure 6). According to some experts, many farmers are being constrained to purchase cotton with two traits when they want only one. Keith Edmisten, associate professor and cotton specialist at North Carolina State University, explains that some of his state's growers would prefer to purchase HT-only cotton,[16] but end up buying HT/IR varieties because the better quality (e.g. higher-yielding) cultivars come only in stacked, not HT-only, versions. University of Georgia cotton expert Steve M. Brown agrees that the available cotton varieties with the Roundup Ready (Flex) trait alone tend to be lower-yielding than stacked Monsanto varieties (personal communications).

DPL and Monsanto are committed to "increased technology penetration" (DPL 2004) and "accelerate[d] biotech trait penetration" (Monsanto 2006b) for "increased returns from technology to the business" (DPL 2004) in other words, higher profit margins. We have discussed several tactics employed by companies to implement this strategy: Phasing out or limiting supplies of desirable conventional varieties, and offering the best cultivars only in biotech versions, or only in stacked versus single-trait versions. As a result, farmers often purchase, and pay more for, technology they do not need or want.

2.6 Biotech Cotton Failures

While many farmers have been satisfied with biotech cotton, others have experienced erratic performance. Cotton bearing the traits of market-leader Monsanto has been plagued by numerous failures since the introduction of insect-resistant Bollgard cotton in 1996 and glyphosate-tolerant Roundup Ready cotton in 1997.

For example, farmers in Texas, Oklahoma, Louisiana and Mississippi who planted Bollgard cotton in 1996 were surprised to find that cotton bollworms thrived in up to 50% of their fields, even though the cotton was supposed to be immune to these pests (Lambrecht 1998; Consumers Union 1999). As a result, farmers who had already paid a premium for "bollworm-resistant" cotton had to purchase and spray insecticides, or risk losing their crop (Benson *et al.* 1997). These first Bollgard cotton varieties also exhibited poor germination, late maturity, lower yield, and other defects. The failures were so severe that the cotton growers filed a class action suit against Monsanto; according to the plaintiffs' attorney, Monsanto paid the farmers a substantial sum in an out-of-court settlement (Consumers Union 1999). A

[15] 12.36% of planted upland cotton acreage was conventional (USDA AMS 2006). 14.95 million acres of upland cotton were planted in 2007 (USDA NASS 2007).

[16] The chief reason is that North Carolina farmers must usually spray for stink bugs whether or not their cotton has the JR trait (see Section 2.32), and so would prefer not to waste money on the IR trait premium. In addition, some growers wish to avoid planting "refuges" of non-IR cotton, a requirement for growers of IR cotton imposed by the Environmental Protection Agency to slow development of insects resistant to the built-in insecticide(s).

second generation of Bt cotton (Bollgard II) with better resistance to bollworms was introduced in 2003. Yet Bollgard II cotton varieties are predicted to facilitate increased infestations of pests unaffected by the built-in insecticides, such as stink bugs (Yancy 2004).

Roundup Ready (RR) cotton has also failed farmers repeatedly. In 1997, growers in Mississippi, Arkansas, Tennessee, Louisiana, Texas and Missouri reported that the cotton-bearing boils on their RR cotton simply dropped off, or were deformed, causing substantial yield losses (Lambrecht 1998; Chattanooga Times 1997; Kerby Voth 1998). The director of Mississippi's Bureau of Plant Industry, Robert McCarty, stated that only Monsanto varieties seemed to fail, over an area totaling 30,000 acres (Meyerson 1997). While Monsanto blamed cold, wet weather for the cotton failures, arbitrators at the Mississippi Seed Arbitration Council decided otherwise, issuing a non-binding resolution calling on Monsanto to reimburse three farmers $194 million for their damages (NYU 1998), which Monsanto refused to do (Steyer 1998). Monsanto and Delta and Pine Land eventually pulled five varieties of Roundup Ready seed due to substandard quality (Lambrecht 1998), and Monsanto paid 55 Mississippi growers an estimated $5 million in compensation (NYU 1998).

In 1998, 190 growers in Georgia, Florida and North Carolina reported similar problems with Roundup Ready cotton (Augusta Chronicle 1999, Edmisten 1998). Andrew Thompson of Georgia reported losing nearly a quarter of his crop, costing him 250,000.

Farmers and cotton experts say Monsanto rushed its RR cotton to market, without giving university researchers (May *et al.* 2003, p. 1596) or even a USDA scientist opportunity to test it. USDA geneticist William Meredith was denied seeds to test at a government lab, because in order to obtain the seeds, he would have had to sign an agreement with Monsanto not to test them. ''You need a good referee in the ball game, which is what I am,'' he reportedly said. ''But some of the Monsanto people thought they knew all they needed to know about cotton'' (as quoted in Lambrecht 1998).

In 2005, there were once again widespread yield losses with Roundup Ready cotton, this time in Texas (PANUPS 2006). Many of the cotton bolls fell off, others were misshapen, still others didn't open before harvest, and so could not be picked by machine. These are all symptoms of Roundup damage, and scientists have confirmed that under certain conditions RR cotton is not immune to glyphosate (Cerdeira & Duke 2006). As with the failures of Bollgard cotton cited above, farmers experienced double losses: From payment of large premiums for a non-performing trait, and lost income from large drops in yield. These farmers also filed suit against Monsanto to recover their losses; at this writing, the outcome is still pending.

There are likely many more incidents of this sort that have gone unreported by farmers. Defective RR cotton that is damaged by Roundup early in the season may recover later, and in some cases yield may not be affected (Jones & Snipes 1999). Monsanto also has a program to reimburse farmers for defective cotton, but only when stringent conditions are met. While these conditions vary by region and seed supplier, they can include having planted at least 70% of one's total acreage with cotton bearing Monsanto's trait(s); near total loss of the crop (yield < 150 lbs./acre, or less than one-fifth the 2006 national average yield of 798 lbs./acre), and exclusive use of Monsanto's more expensive Roundup brand of glyphosate (Smith 2004). Many farmers who do not meet these conditions have likely suffered losses without compensation. Substandard performance and outright failure of Monsanto biotech cotton has been frequently reported in India and Indonesia as well (see Section 3.9).

Other Roundup Ready crops have exhibited similar problems. For instance, RR soybeans have been observed to perform poorly during hot, dry conditions, and are more subject to ''stem-splitting'' (Coghlan 1999), which can result in higher yield losses relative to conventional soy. In both Brazil and Paraguay, RR soy was reported to suffer greater yield losses than conventional soy during drought conditions over the past two years (FoE International 2007). Benbrook (2001) discusses a number of additional agronomic problems with RR soybeans.

The sometimes erratic performance of biotech cotton and other biotech crops underscores the need to maintain vigorous breeding programs for continued production of high-quality conventional seed, which as described above is on the decline.

2.7 Glyphosate-Resistant Weeds

Monsanto provides the traits deployed in 95–96% of U.S. transgenic cotton (Figure 2), representing 82–83% of U.S. cotton overall. Such extreme market power is undesirable in any industry, as it tends to hamper innovation, restrict choice and raise prices. In agriculture, however, this high degree of concentration can also have grave agronomic consequences. In this and the following section, we discuss the adverse effects of increasing reliance on use of a single herbicide, glyphosate, fostered by Monsanto's virtual monopoly in transgenic cotton traits.

Farmer adoption of glyphosate-tolerant, ''Roundup Ready'' cotton has led directly to a 753% increase in glyphosate use on cotton in the U.S. from 1997 to 2003 (Steckel et al 2006) Just as overuse of an antibiotic breeds resistant bacteria, so overuse of glyphosate has spawned rapidly growing populations of weeds the chemical is no longer able to kill, except perhaps at greatly increased rates of application.

North Carolina weed scientist Alan York has called it ''potentially the worst threat (to cotton) since the boll weevil,'' the devastating pest that virtually ended cotton-growing in the U.S. until an intensive spraying program eradicated it in some states in the late 1970s and early 1980s (Minor 2006). And York isn't alone. University of Georgia weed scientist Stanley Culpepper has found over 100,000 acres of Georgia cotton infested with glyphosate-resistant pigweed that survives up to twelve times the normal rate of Roundup (Laws 2006c).

Glyphosate resistance in weeds has developed with incredible rapidity over just six years, corresponding with the period of widespread introduction of Roundup Ready cotton and soybeans. In contrast, there was only one confirmed glyphosate-resistant weed in the U.S. in the 22 years from 1976, when Monsanto first introduced the chemical in the U.S. (Monsanto 2007), through 1998.[17] Concern began building in 2001, when a farm journal reported:

> ''Resistance to glyphosate (Roundup) is emerging all around the world, potentially jeopardizing the 25 billion dollar market for genetically modified herbicide tolerant crops'' (Farmers Weekly 2001).

According to a joint statement by ten prominent weed scientists (Boerboom *et al.* 2004):

> ''It is well known that glyphosate-resistant horseweed (also known as marestail) populations have been selected in Roundup Ready soybean and cotton cropping systems. Resistance was first reported in Delaware in 2000, a mere 5 years after the introduction of Roundup Ready soybean. Since that initial report, glyphosate-resistant horseweed is now reported in 12 States and is estimated

[17] The sole resistant weed by 1998 was rigid ryegrass in California. See Web site of The Weed Science Society of America. *http://www.weedscience.org/Summary/UspeciesMOA.asp?lstMOAID=12&FmHRACGroup=Go*

to affect 1.5 million acres in Tennessee alone.''

The list of confirmed glyphosate-resistant weeds in the U.S. now stands at seven, with the latest addition (giant ragweed) reported in January 2007 (Ohio Farm Bureau 2007). A number of additional weed species are under investigation for resistance (Roberson 2006), and the acreage affected is growing rapidly. An online farm journal recently devoted an extensive special edition, with contributions from leading weed scientists across the country, to glyphosate-resistant weeds (Crop News Weekly 2006).

Farmers have several options to deal with such weeds They can:

(1) Apply more glyphosate (resistance is not an all-or-nothing phenomenon, and is defined as the ability to survive the normal rate of herbicide application, not absolute immunity).

(2) Switch to an herbicide with a different ''mode of action''.

(3) Stop planting Roundup Ready crops and applying glyphosate every year in order to lessen the ''selection pressure'' that accelerates development of glyphosate-resistance.

(4) Switch [from no-till or conservation tillage to conventional tillage.

Option 1—using more glyphosate—is probably the most common response. While this can be effective in the short-term, it leads to a vicious cycle of escalating resistance, followed by still more glyphosate use. Monsanto's introduction in 2006 of a ''second generation'' Roundup Ready cotton known as Roundup Ready (RR) Flex may well facilitate this misguided approach. RR Flex is engineered to withstand higher application rates of Roundup than first generation RR cotton, and to permit application throughout the growing season, rather than only in the early growth stages as with original RR (Bennett 2005). Producers who adopt RR Flex cotton in the hopes of better controlling resistant weeds will not only pay for more glyphosate, but also spend roughly 40% more for RR Flex (see Table 1).

Weed scientists recommend use of different herbicides (option 2) to stem development of resistant weeds, but often in combination with heavier applications of glyphosate (Yancy 2005). An Arkansas weed scientist estimated that the state's growers would have to spend as much as $9 million to combat glyphosate-resistant horseweed in 2004 (AP 2003). The alternative is even more expensive. Left unchecked, horseweed can reduce cotton yields by 40–70%. Larry Steckel, weed scientist at the University of Tennessee, estimates that on average, glyphosate-resistant pigweed will cost cotton growers in the South an extra $40 or more per acre to control (Laws 2006a). This represents a substantial burden, as cotton farmers' average expenditure on all pesticides (insecticides and herbicides) was $61 per acre in 2005 (USDA ERS 2007b).

Option 3—reducing glyphosate use through growing non-RR cotton or non-RR crops in rotation with RR cotton—is also recommended (Yancy 2005), but is becoming progressively more difficult with the declining availability of quality conventional seed,[18] and the continuing paucity of non-RR biotech varieties. The only non-RR HT trait planted commercially is Bayer's LibertyLink (LL).[19] Only nine varieties of LL cotton were planted in 2006, representing only 4% of cotton acreage, versus a total of 149 varieties with RR or RR Flex, comprising 82% of U.S. cotton.

Option 4 is to physically remove the weeds through mechanical tillage or hand weeding. Mechanical tillage, once common, has been on the decline for years as farmers switch to ''no-till'' or conservation (minimal) tillage practices in order to reduce labor costs and fuel expenditures, as well as decrease the soil erosion that often accompanies plowing. The rise of glyphosate-resistant weeds is beginning to reverse this trend.[20] For instance, acreage under conservation tillage in Tennessee dropped by 18% in 2004, as farmers turned back to the plow to control glyphosate-resistant horseweed; Tennessee counties with the largest cotton acreage experienced the largest decline in conservation tillage, from 80% to just 40% (Steckel et al. 2006). It is estimated that resistant horseweed has reduced the area under conservation tillage in Arkansas by 15%, with similar trends reported in Missouri and Mississippi (Ibid). In particularly bad cases of glyphosate-resistant pigweed in Georgia, the necessity of hand-weeding can cost growers $92 an acre (Laws 2006a).

The over-reliance on a single herbicide fostered by Monsanto's near-monopoly in cotton traits is confronting cotton and other growers with an extremely serious agronomic problem. Aside from non-chemical weed control methods used in organic cotton production, the only real solution is use of herbicides other than glyphosate. But this is unlikely as long as glyphosate-tolerant, Roundup Ready cotton comprises over 80% of U.S. cotton. In fact, over-reliance on Roundup Ready crops and glyphosate has dampened research into new herbicides, meaning none are on the horizon (Mueller et al. 2005, p. 925; Yancy 2005). Meanwhile, growers will increasingly turn to older, more toxic herbicides, such as paraquat and 2,4–D, to control glyphosate-resistant weeds (Roberson 2006).

A growing body of research suggests other serious consequences of farmers' growing dependence on glyphosate and Roundup Ready crops.

2.8 Glyphosate Use Linked to Plant Disease, Mineral Deficiencies and Reduced Yield; Roundup Toxic to Amphibians

Overall glyphosate use in the U.S. increased six-fold from 1992 to 2002, due largely to the widespread introduction of Roundup Ready soybeans and cotton (Cerdeira & Duke 2006, p. 1633); area planted to Roundup Ready corn is growing as well (Monsanto 2006c). RR versions of these crops are increasingly grown in rotation, meaning that each year, more prime cropland is sprayed more frequently with glyphosate, with increasing rates applied in many areas to control resistant weeds. While glyphosate is generally regarded as less toxic than many weed killers, a growing body of research suggests that continual use of this chemical may make RR plants more susceptible to disease and prone to mineral deficiencies than conventional crops, as well as reducing their yields. In addition, recent studies suggest that Roundup is much more toxic to amphibians than previously thought.

When Roundup is sprayed on RR crops, much of the herbicide ends up on the surface of the soil, where it is degraded by microorganisms. However, some is absorbed by the plant and distributed throughout its tissues. Small amounts of glyphosate ''leak'' from the roots of RR plants and spread throughout the surrounding soil (Motavalli et al. 2004; Krerner et al. 2005; Neumann et al. 2006). This root zone is home to diverse soil organisms, such as bacteria and fungi, that play

[18] While farmers of course could grow RR cotton without using glyphosate, it would represent wasted expenditure on the premium (technology fee) paid for the trait. In other words, payment of the premium is a strong inducement to make use of the trait through application of glyphosate.

[19] USDA data list two varieties of bromoxynil-tolerant cotton in 2006, one from Stoneville and one from Bayer, but their aggregate acreage amounted to less than 0.05% of U.S. cotton. Stoneville reportedly retired all of its bromoxynil-tolerant cotton seed offerings after the 2004 season (Robinson 2004).

[20] Some attribute the rise of conservation tillage to adoption of RR crops, yet a USDA expert notes that the steep rise in conservation tillage (at least in soybeans) came from 1990–1996, before their introduction, and that the share of soybean acres grown with conservation tillage stagnated after 1996 (Fernandez-Cornejo & McBride 2002, p. 29).

critical roles in plant health and disease; and it is also where the roots absorb essential nutrients from the soil, often with the help of microorganisms.

The presence of glyphosate in the root zone of RR crops can have several effects. First, it promotes the growth of certain plant disease organisms that reside in the soil, such as Fusarium fungi (Kremer et al. 2005). Even non-RR crops planted in fields previously treated with glyphosate are more likely to be damaged by fungal diseases such as Fusarium head blight, as has been demonstrated with wheat in Canada (Fernandez et al. 2005). This research suggests that glyphosate has long-term effects that persist even after its use has been discontinued. Second, glyphosate can alter the community of soil microorganisms, interfering with the plant's absorption of important nutrients. For instance, glyphosate's toxicity to nitrogen-fixing bacteria in the soil can depress the absorption of nitrogen by RR soybeans under certain conditions, such as water deficiency, and thereby reduce yield (King et al. 2001). Some scientists believe that this and other nutrient-robbing effects may account for the roughly 6% lower yields of RR versus conventional soybeans (Benbrook 2001).

Other research shows that Roundup Ready crops themselves are less efficient at taking up essential minerals such as manganese through their roots (Gordon 2006), and that glyphosate inside plant tissues can make such minerals unavailable to the plant (Bernards et al. 2005). The resultant mineral deficiencies have been implicated in various problems, from increased disease susceptibility to inhibition of photosynthesis.

While much of this research involves RR crops other than cotton, similar impacts are likely with cotton, given the heavy use of glyphosate common to all RR crops. In addition, it should be recalled that many farmers rotate RR cotton with RR soy and to a lesser extent with RR corn.

Finally, recent studies (Relyea 2005a, 2005b) demonstrate that common versions of Roundup herbicide that contain a surfactant (i.e. POEA, or polyethoxylated tallowamine) to aid penetration of the active ingredient (glyphosate) into plant tissue are extremely toxic to the tadpoles and juvenile stages of certain species of frogs, killing 96–100% of tadpoles after three weeks exposure and 68–86% of the juveniles after just one day.

2.9 Inadequate Regulatory Oversight

While the U.S. Dept. of Agriculture's Animal and Plant Health Inspection Service (APHIS) is primarily responsible for assessing the potential environmental impacts of biotech crops, it has by many accounts failed to do its job. A National Academy of Sciences committee identified numerous regulatory deficiencies in 2002 (NAS 2002), and since then several federal courts have ruled against APHIS for failure to adhere to U.S. environmental laws with respect to biotech crops (e.g. *CFS et al.* vs. *Johanns et al.* 2006; *CTA et al.* vs. *Johanns et al.* 2007). In February 2007, the U.S. District Court for Northern California ruled that APHIS must perform an environmental impact statement on Roundup Ready alfalfa, which APHIS de-regulated in 2005 despite having failed to prepare one. Among the Court's concerns was the potential for RR alfalfa to increase the prevalence of glyphosate-resistant weeds, a concern that APHIS ignored:

> ''The Court notes, however, that it is unclear from the record whether any federal agency is considering the cumulative impact of the introduction of so many glyphosate resistant crops; one would expect that some federal agency is considering whether there is some risk to engineering all of America's crops to include the gene that confers resistance to glyphosate'' (*Geertson Seed Farms et al.* v. *Johanns et al.* 2007, pp. 16–17).

The growing dependence of American farmers on the use of glyphosate poses long-term risks to the productivity of U.S. agriculture and the environment, risks which U.S. regulators are largely ignoring. There is little hope of breaking this dangerous dependence as long as Monsanto maintains a near-monopoly in transgenic HT traits with its Roundup Ready crops.

3. Assessment of the Proposed Merger

To assess the impacts of the merger, one must compare the likely effects on the cotton seed and traits industry of DPL as a subsidiary of Monsanto versus as an independent entity, informed by an analysis of existing trends, as described above.

In our view, the merger must be evaluated in terms of its potential impacts on: (1) Concentration in cotton germplasm; (2) Availability of quality conventional seed; (3) Cotton seed prices; (4) Concentration in biotech traits; (5) Production costs and the productivity of American cropland; (6) Growers of other major crops; (7) Grower and consumer choice for organic cotton seeds and products; and (8) Introduction of DPL's seed sterility technology, known as Terminator. We also believe that potential international impacts of the merger deserve consideration. Finally, we will discuss the feasibility of conduct-based solutions to address anti-competitive effects of the merger.

3.1 Further Concentration in Cotton Seed

As discussed in Section 2.1.1 and portrayed in Appendix 1, concentration in the cotton seed market has increased dramatically since 1970, and especially since the early 1990s. Top four market share reached 90% by 1996, while top three market share has averaged 91% since the year 2000. Despite these facts, some still try to argue that there are more competitors in the cotton seed market today than in 1998, when Monsanto first attempted to acquire DPL, and imply that the merger should be permitted for this reason (e.g. Leonard 2006). This argument is without merit for several reasons. First, it seems to rest exclusively on Bayer's rising market share since 1999. Yet competitiveness is not ensured by having three rather than two firms controlling 90% or more of the national market. More relevant is that the number of smaller suppliers (i.e. other than DPL, Bayer and Stoneville) with sales appreciable enough for listing in USDA data fell by more than half in just the last four years, from 16 in 2003 to 6 in 2006.[21] Second, Bayer's seed sales are concentrated heavily in the Southwest, particularly Texas, and thus the company's rising market share has done little or nothing to increase competition in other regions. Indeed, DPL's market share in the importation Southeastern (SE) and South Central (SC) markets[22] has actually increased during the years of Bayer's rise, from 81% (SE) and 61% (SC) of acreage planted in 2003 to 86% (SE) and 73% (SC) in 2006.

Another argument presented by proponents of the proposed acquisition is that it would not change overall market concentration, provided

[21] Based on USDA AMS reports, 2003–2006, which lists market share by brand rather than supplier. The number of suppliers is arrived at by subtracting brands known to be owned by another supplier. Of 21 brands listed in 2003, Paymaster and Sure-Grow are owned by DPL, leaving 19 suppliers, or 16 other than the top three. Of the 13 listed brands in 2006, we subtract Paymaster and Sure-Grow as well as AFD Seed and California Planting Cotton Seed Distributors (the latter two purchased by Bayer in 2005 and 2006, respectively) to arrive at 9 suppliers, or 6 suppliers other than the top three. Note also that USDA AMS figures show generally declining market share for the ''Miscellaneous'' category comprising all suppliers too small for listing in its reports: From 1.36% of upland cotton acreage planted in 2003 to just 0.68% in 2006.

[22] The Southeastern market comprises Alabama, Florida, Georgia, N. & S. Carolina and Virginia. The South Central market comprises Arkansas, Louisiana, Mississippi, Missouri and Tennessee.

Monsanto divests Stoneville (Leonard 2006). This assumes, however, the viability of Stoneville as an independent entity. Sandy Stewart, Associate Professor and Extension Cotton Specialist with the Louisiana State University AgCenter, has questioned whether a divested Stoneville would be competitive in 2008 (Laws 2006b). Without the advantage of affiliation with the world's largest seed and traits firm, Stoneville might well be ripe for takeover. The history of the cotton seed industry is rife with takeovers (Appendix 1). Stoneville could succumb to the fate of Lankart, Paymaster, Sure-Grow, AFD Seed and others. For instance, in 1993, Paymaster's 29% market share in cotton seed was more than double Stoneville's current 12%. DPL acquired the company the following year. If the merger goes through, Stoneville might well become an attractive target for Bayer, which has acquired at least two cotton seed firms in the past two years. If Bayer were to acquire a divested Stoneville, the virtual oligopoly of three in cotton germplasm would become a duopoly: Monsarito-DPL would control 51%, and Bayer-Stoneville 42%, of the cotton seed market, for a top two market share of 93%. This enhanced market power would likely hasten the already precipitous exit of smaller cotton seed firms from the market.

3.2 Declining Availability of Conventional Cotton Seed

The discussion above clearly shows a decline in the number and quality of conventional cotton seed varieties planted, despite continued demand from farmers. Among the top three, Monsanto's Stoneville has gone furthest in purging conventional cotton lines from its offerings, with only two varieties planted to negligible acreage in 2006. These two unpopular varieties represent only 6% of 34 planted Stoneville varieties, whereas conventional varieties comprise a more than 3-fold larger share of planted varieties from other cotton seed firms. Judging by its conduct with Stoneville, it seems reasonable to assume that post-merger, Monsanto would similarly reduce the number of conventional seed varieties offered by DPL. This assumption is strengthened by Monsanto's announced strategy, in a presentation to investors on the DPL acquisition, to ''accelerate biotech trait penetration'' (Monsanto 2006b). Increased trait penetration would come at the expense of conventional seed offerings. Given the fact that DPL's 15 non-transgenic lines comprise over 40% of conventional cotton varieties planted in 2006, the merger would likely further restrict farmers' ability to choose quality conventional cotton seed.

3.3 Accelerated Rise in Cotton Seed Prices

As discussed above, cotton seed prices have risen dramatically with the advent of biotechnology. Relative to industry-wide figures for 2006, Stoneville offers slightly higher percentages of the highest price seed categories—stacked varieties and varieties with 2nd generation traits (data not shown)—both of which increase the average price of its seed (see Figure 5 and Table 1). In its presentation to investors, Monsanto announced its intention to ''invest in penetration of higher-margin traits in Delta and Pine Land offerings'' (Monsanto 2006b). Since DPL currently sells more than four times as much cotton seed as Stoneville, Monsanto's pursuit of this policy with an acquired DPL would lead to an acceleration of the already steep rise in cotton seed prices.

Table 2: Potential for Further Trait Penetration in Cotton Seed

	Type of Cotton Seed						
	Conventional (no traits)	One trait	Two traits	Only generation 1 trait(s)	Only generation 2 trait(s)	Mixed generation 1 and 2 traits	Non-Monsanto single trait
% of 2006 acreage	12.36						
% of 2006 biotech acreage		25.90	74.09	78.17	8.13	9.94	3.76
TOTALS		100%		100%			

Calculated from data in USDA AMS (2006).

The potential for seed price increases can be gauged by breaking down the composition of 2006 cotton acreage by: (a) Conventional versus biotech; (b) one versus two traits; and (c) generation 1 versus generation 2 traits (Table 2). First, replacement of conventional varieties with biotech cultivars offers the greatest per unit potential for increasing profit margins/prices, since no tech fees at all are collected on these seeds. As shown in Appendix 3 and Figure 5, single-trait cotton seed is on average twice the price, and stacked cotton roughly four times the price, of conventional seed. Second, the potential for increasing prices through trait stacking is limited, but still substantial, with 26% of 2006 biotech cotton acreage from seeds bearing just one trait. As shown in Table 1, companies charge roughly 40% more for seed with two traits versus just one. The greatest potential for increasing the price of cotton seed, however, lies in replacement of popular first-generation traits with their second-generation counterparts (this applies only to Monsanto), which also entails a price increase of roughly 40% (Table 1). Bollgard II was introduced in cotton in 2003, Roundup Ready Flex in 2006 (Monsanto 2007). 78% of 2006 biotech cotton acreage was planted to varieties containing only generation I trait(s), 8% to those with only second-generation trait(s), and 10% to stacked varieties with mixed generation 1 and 2 traits. Replacement of first generation with higher-margin second-generation traits in seeds planted to upwards of 78% of biotech cotton acreage represents a large profit potential, which as indicated above Monsanto intends to exploit postmerger in DPL cotton seed offerings.

Another portent of increased seed prices is provided by University of Georgia cotton expert, Steve Brown, who already predicts cotton seed prices rising from $44 to a range of $80–$120 per acre (Brown 2006a, slide 46). It is unclear whether or not this $80–$120 figure accounts for the price-increasing effects of the proposed combination.

3.4 Reduced Availability of Cotton With Non-Monsanto Traits

As a subsidiary of Monsanto, only one (3%) of Stoneville's 32 biotech cotton varieties planted in 2006 carried a non-Monsanto trait, versus 17 of 135 (13%) biotech varieties with non-Monsanto traits for the rest of the industry. This one variety—bromoxynil-tolerant cotton BXN 47—was planted to negligible (<0.05%) acreage.[23] In other words, biotech varieties with non-Monsanto traits are more than four times more common in cotton seed sold by Stoneville's competitors (chiefly Bayer and Phytogen). If Monsanto were allowed to acquire DPL, one would expect it to pursue the same policy (exclusion of competitors' traits) with its new subsidiary's germplasm. In 2006, all 46 of DPL's biotech cotton varieties carried Monsanto traits. Yet over the past few years, DPL has taken significant steps to diversify its future biotech trait offerings, steps which could easily be undone in the event of a merger. Below, we examine DPL's diversification efforts and the broader field of experimental biotech traits being developed in cotton.

3.4.1 Cotton With Syngenta's VipCot Insecticidal Protein

In 2004, DPL acquired global licenses to incorporate VipCot insecticidal proteins developed by Syngenta in its cotton varieties, in return for $47 million to be paid over three years (DPL-Syngenta 2004). Though DPL expected to market limited quantities of VipCot-containing seed in 2006, this did not come to pass. In 2006, DPL acquired Syngenta's global cotton seed business, including cotton germplasm in the U.S. In the company's 2006 press release, commercial introduction of VipCot-containing cotton varieties was pushed back 2–3 years, to 2008–09, ''subject to receiving regulatory approvals'' (DPL-Syngenta 2006). Syngenta received USDA clearance for VipCot in 2005 (USDA APHIS 2005), but since 2004 has obtained only a series of time-limited provisional approvals from the Environmental Protection Agency (EPA) for the VipCot insecticidal protein VIP3A (for the first, see EPA 2004).[24] The latest provisional approval expires on May 1, 2007 (EPA 2006), at which point Syngenta might seek a renewal of the temporary exemption from EPA, or apply for final clearance. Marketing of VipCot is unlikely to proceed without final clearance from EPA.

The merger could only reduce DPL's incentive to market cotton containing VipCot, given the fact that VipCot (assuming final EPA clearance) would compete with its new owner's latest IR trait, Bollgard II, or other new IR traits Monsanto develops to complement or succeed Bollgard II.

3.4.2 Cotton With DuPont's GAT Herbicide Tolerance

In 2006, DPL obtained licenses from DuPont to deploy an experimental dual herbicide-tolerance trait known as Optimum GAT in cotton and soybeans (DPL-DuPont 2006). The GAT trait is being developed in cotton by a DPL-DuPont joint venture known as DeltaMax Cotton LLC. The GAT trait provides tolerance to two herbicides rather than one, as with all previous HT traits. GAT crops, if successfully developed, will be tolerant to both glyphosate and ALS inhibitors, a popular class of herbicides used on cotton, soybeans and corn. GAT is being advertised by DuPont as a means for farmers to continue using the popular herbicide glyphosate, while at the same time permitting application of a second herbicide to deal with the growing problem of glyphosate-resistant weeds (DuPont-Pioneer 2006a).

The merger would present Monsanto with an interesting dilemma—whether to allow its new subsidiary to market DPL cotton varieties with a competitor's glyphosate-tolerance trait. Monsanto's glyphosate-tolerance traits (Roundup Ready & RR Flex) are the pillar of the company's biotech crop empire. Not only is Roundup Ready by far the dominant trait in cotton, it represents the only trait deployed in biotech soybeans (and 89% of U.S. soybeans were transgenic in 2006 (USDA ERS 2006b)), and the dominant HT trait in both corn and canola. Monsanto might well be reluctant to allow DPL to market cotton varieties with a competitor's glyphosate-tolerance trait. This reluctance can only be increased by the plans of DuPont and Syngenta to jointly incorporate GAT in soybeans, corn and perhaps other crops, further challenging Monsanto's dominance in HT technology (Greenleaf Genetics 2006; StLPD 2006).

Growers in the Southeast, where DPL's market share exceeds 86% (USDA AMS 2006), are concerned that the proposed merger would reinforce DPL's ''inordinate control'' of their seed market and deny them needed new varieties. According to University of Georgia cotton agronomist Steve Brown:

> The collective technology pool of the merged company would conceivably include not only Monsanto's Bollgard, Bollgard II, Roundup Ready, and Roundup Ready Flex traits but also the Verdia GAT gene, the DuPont ALS-tolerant gene, and Syngenta's VIP system. These latter technologies could be developed * * * or shelved. The fact that they are not in another company's laboratory or greenhouse prevents the introduction of products that could effectively compete with Monsanto's current portfolio. Shelving such technology—or even physically eliminating existing transgenic lines in which these new genes have successfully been introduced—establishes serious, lengthy hurdles for other would-be competitors.
>
> Growers in Georgia are already frustrated with the inordinate control exercised by one company. Unless issues of traits are adequately addressed in the proposed merger, things could get worse. The real answer to the overwhelming control of varieties and technology by a single provider is legitimate competition (Brown 2006b).

3.4.3 Other Biotech Cotton Trait R&D

Companies wishing to conduct outdoor field trials of experimental biotech crops (i.e. environmental releases) must submit ''notifications'' to USDA's Animal and Plant Health Inspection Service (APHIS). Notifications give basic information about the proposed field trials, such as the type of crop and genetic modification, containment measures, and overall acreage. APHIS normally responds by issuing ''acknowledgements,'' allowing the trials to proceed. APHIS makes some of the notification information available to the public in a searchable database. The following analysis is based on these data for biotech cotton field trials from the year 2000 through the end of 2006.

Monsanto has received over half (53%) of the 449 USDA permits for transgenic cotton field trials since the year 2000, three times more than its closest competitor, Bayer, at 17%. These two companies, plus Syngenta and Dow, received 91% of all permits, with the remainder divided among DPL and six other institutions. While these data show Monsanto's clear dominance in cotton trait R&D, they greatly overestimate the degree of competition in transgenic cotton trait research and development. Aggregate field trial acreage is a better measure of R&D efforts than number of permits.

This is because new biotech crops require extensive field testing that can take 5–10 years, and the majority fail early on. Stage of development correlates roughly with size of field trials. Permits for small trials from

[23] In 2004, Emergent Genetics, Inc., then owner of Stoneville, announced a phase-out of bromoxynil-tolerant cotton varities (Robinson 2004).

[24] While most genetically engineered crops require only USDA approval for commercial introduction, those like VipCot that produce pesticides require additional approval of the pesticide by the EPA. Companies normally seek time-limited approvals for GM crop pesticidal proteins from EPA while the pertinent crop is undergoing field trials.

fractions to dozens of acres indicate early-phase development, and high likelihood of failure. Permits for larger field trials in the hundreds to thousands of acres, especially if conducted in multiple locations over consecutive years, indicate a greater likelihood of eventual USDA clearance. The significance of field trial acreage as a measure of R&D progress is indicated by the fact that companies sometimes claim permit acreage as confidential business information (CBI) so as to prevent competitors from learning the R&D status of a given experimental crop (personal communication, James White, APHIS).[25]

When one compares acreage figures (see Appendix 5), Monsanto's dominant position as measured by number of permits becomes overwhelming. Monsanto was responsible for nearly 94% of experimental biotech cotton acreage (80,956 acres) over the past seven years—26 times more than Bayer (3.6% or 3073 acres) and 47 times more than Syngenta (2.3% or 1943 acres), its closest competitors. By the more accurate measure of acreage, then, Monsanto has roughly the same predominant position in R&D for future cotton traits as it does for currently marketed cotton traits.

In the event of a merger, Monsanto would have a natural incentive to exclude competitors' traits from DPL seeds. Its overwhelming dominance in cotton trait R&D demonstrates that it would have no need to license traits from Syngenta, Bayer or other firms.

3.5 Production Costs and Productivity of Cotton Cropland

Glyphosate-resistant weeds are on the rise, and they are already increasing growers' production costs, in some cases dramatically. Continued increases in the use of glyphosate promise an accelerated development of glyphosate-resistant weeds, with concomitant rise in production costs to control them and adverse agronomic impacts, such as increased erosion from reduction in conservation tillage and a return to the use of more toxic herbicides (Section 2.7). The negative effects of rising Roundup use on soil microorganisms and plant nutrition may pose an increased long-term risk of plant disease and yield losses, both in cotton and other crops, and potential threats to amphibian populations (Section 2.8). Finally, the sometimes erratic performance of Monsanto's cotton—problems such as deformed bolls and dramatic yield losses first noted in the 1990s, but still occurring today (Section 2.6)—makes near-total dependence on cotton with Monsanto technology unwise.

All of these adverse impacts are direct consequences of the growing dominance of Monsanto's traits, particularly its Roundup Ready (Flex) traits, in cotton. The merger would exacerbate these problems by enhancing Monsanto's ability to incorporate its traits in a large portion of U.S. cotton seeds well into the future.

3.6 Impacts on Growers of Other Crops

While the cotton industry is the most relevant context for assessment of the proposed combination, the merger would likely contribute to further increasing Monsanto's seed and trait dominance in other crops as well. This is because Monsanto has extensive germplasm holdings and/or trait penetration in corn, soybeans, canola, vegetables, fruits and other major crops, while DPL is a major presence in soybeans as well as cotton; and essentially the same traits are often deployed, or deployable, in multiple crops. One effect of this increased dominance in seeds and traits is that growers of other crops will experience an exacerbation of the adverse agronomic and environmental impacts discussed above with respect to Monsanto's technology, particularly Roundup Ready (Flex), in cotton. Indeed, in many cases cotton growers are also growers of other crops, such as soybeans and corn.

3.6.1 Concentration in Seeds and Traits Other Than Cotton

In 2005, Monsanto became the largest seed firm in the world, with seed sales of $2.8 billion, to surpass the traditional leader, DuPont Pioneer (ETC 2005).

Appendix 6 illustrates the company's dramatic rise to dominance. Monsanto undertook two major ''shopping sprees'' [26] in the mid-90s and the middle of this decade. Here, we will treat only the North American acquisitions (see Section 3.9 for international deals).

From 1996–1998, Monsanto's aggregate multi-billion dollar acquisitions of DeKalb Genetics, Asgrow, Agracetus, Holden's Foundation Seeds, Calgene and smaller firms catapulted it to number one in U.S. soybean and number two in U.S. corn seed sales (Fernandez-Cornejo 2004, Tables 16 & 19). In 2005, Monsanto reportedly had 41% and 25% market shares in global corn and soybean seed sales, respectively (ETC 2005). The second, and ongoing, wave of acquisitions in this decade has focused on regional U.S. seed firms, which Monsanto is purchasing through its holding company, American Seeds, Inc. (ASI). In the two years from ASI's formation in November 2004 to December 2006, Monsanto spent $350 million to acquire 15 firms, giving it an additional share in U.S. corn and soybean seed sales of more than 6.5% and 2.0%, respectively (Table 3). [27] Monsanto's $1.4 billion acquisition of the world's largest fruit and vegetable seed firm, Seminis (Monsanto 2005a), in 2005 reportedly gave the company from 23% to 38% shares of the global seed markets for tomatoes, onions, peppers, cucumbers and beans (ETC 2005). The $300 million buyout of Emergent Genetics, also in 2005, included 12% of U.S. cotton seed sales represented by the Stoneville and NexGen brands (Monsanto 2005b). Monsanto also acquired significant canola germplasm with buyouts of Limagrain Canada (Monsanto 2001) and the Advanta and Interstate canola brands (Monsanto 2004a). In addition, Delta and Pine Land is fast becoming a major player in soybeans as well as cotton (DPL 2004).

[25] Alternately or additionally, the company will claim the trait or gene being field tested as confidential business information.

[26] Sec *http://www.americanseedsinc.com/news/2005-03-01.htm.*

[27] Compiled from information in news releases at *http://www.americanseedsinc.com/news.htm.*

Table 3
Monsanto's Acquisitions Through American Seeds, Inc.: 2004 to 2006*

Company / Brands	State	Amount ($)	% of U.S. Market	Date acquired
Channel Bio Corp: * Crow's Hybrid Corn Co. * Midwest Seed Genetics * Wilson Seeds	Indiana	120 million	2% of corn	Nov. 2004 (American Seeds, Inc. formed)
NC+ Hybrids	Nebraska	40 million	1% of corn	March 2005
Fontanelle Hybrids	Nebraska	52 million	1% of corn	Sept. 2005
Stewart Seeds	Indiana			
Trelay Seeds	Wisconsin			
Stone Seeds	Illinois			
Specialty Hybrids	Eastern Corn Belt			
Gold Country Seed, Inc.	Minnesota	8.7 million	0.4% of corn and soy	March 2006
Heritage Seeds	Indiana			
Diener Seeds	Indiana	77 million	1.4% corn 2.0% soy	July 2006
Sieben Hybrids	Illinois			
Kruger Seed Company	Iowa			
Trisler Seed Farms	Illinois			
Campbell Seed	Indiana			
Landec Corp.: * Fielder's Choice * Heartland Hybrids	Indiana	50-55 million	Slightly more than 1% of corn	Dec. 2006
15 companies	**6 states**	**$348 - $353 Million**	**> 6.5% corn > 2.0% soy**	

* Source: Compiled from information in news releases at http://www.americanseedsinc.com/news.htm.

3.6.2 Cross-Crop Trait Deployment

A given trait, or slightly differing versions thereof, is deployable in multiple crops. The pre-eminent example of cross-crop trait deployment and dominance is Monsanto's Roundup Ready. According to Monsanto's figures, 102.6 million acres of Roundup Ready soybeans (66.4), corn (24.8), cotton (10.8) and canola (0.6) were planted in 2005. Monsanto's corresponding estimate for 2006 is 113–117 million acres (Monsanto 2006c). Monsanto has also received commercial clearance for Roundup Ready versions of beets and alfalfa, though neither of these are grown to a significant extent due to rejection by consumers and the food industry. Monsanto dropped efforts to gain USDA approval for Roundup Ready wheat in 2004 for similar reasons, though it could re-apply in the future. USDA is currently considering de-regulation of Roundup Ready turfgrass for lawns and golf courses. Monsanto is field-testing a number of other Roundup Ready crops, including onions, peas and Kentucky bluegrass (Cerdeira & Duke 2006).

The majority of commercialized Roundup Ready crops utilize the same mechanism, a modified version of a bacterial enzyme that is immune to glyphosate, CP4 EPSPS, from soil bacteria of the genus Agrobacterium (Cerdeira & Duke 2006).[28]

The only other significant transgenic HT trait is Bayer's LibertyLink (glufosinate tolerance). LibertyLink (LL) versions of canola, corn, cotton, soybeans, beets and rice have received USDA approval,[29] though only LL canola, cotton and corn are being grown commercially.[30] Though we have not found precise figures, commercial acreage of LL crops in the U.S. is estimated at roughly 1 million acres,[31] or about one percent of Roundup Ready crop acreage. LibertyLink crops utilize the glufosinate-inactivating enzyme phosphinothricin acetyl transferase

[28] Roundup Ready canola contains 2 mechanisms of glyphosate resistance: EPSPS and glyphosate oxidase (GOX), an enzyme that degrades glyphosate.

[29] See "phosphinothricin-tolerant" listings for Bayer CropScience and two companies it has since acquired, AgrEvo and Aventis, at *http://www.aphis.usda.gov/brs/not_reg.html*. Phosphinothricin is another name for glufosinate, the active ingredient in Bayer's Liberty-brand herbicides.

[30] LL soybeans received USDA approval in 1996, but were never marketed due to concerns over export market rejection (Illinois Extension 1999), though Bayer reportedly plans to introduce them in 2008 (Gullickson 2006). Three LL rice varieties have also received USDA approval, but have not been marketed for similar reasons (Weiss 2006).

[31] USDA AMS data for 2006 show that 3.64% of 14.95 million acres of upland cotton, or 550,000 acres, were planted to LL cotton; Monsanto's estimate that 3% of transgenic HT corn was LibertyLink in 2003 suggests roughly 350,000 acres of LL corn in that year (Monsanto 2004b); since 75% of the 1.08 million acres of canola in 2003 were Roundup Ready (Cerdeira & Duke 2006, p. 1635), LL canola represents some fraction of the remaining 270,000 acres.

(PAT) generated from either one of two closely related genes (bar and pat) derived from soil bacteria of the genus Streptomyces (USDA APHIS 2006, p. 29).

One finds similar cross-crop deployment in the smaller market for IR traits, although only in corn and cotton. Monsanto's Bollgard and Bollgard II IR traits are found in 99% of IR cotton acreage. While we have not found figures for IR trait market shares in corn, Monsanto is likely dominant here as well, though Syngenta, Dow, and Dow-Pioneer all have competing traits. IR traits in corn include a handful of slightly differing versions of insecticidal proteins that kill differing insect pests; the most notable difference is found in corn, where differing IR traits kill pests of grains and leaves (e.g. corn-borers) and root pests (corn rootworm).

3.6.3 Fewer Trait Choices and Adverse Impacts on Other Crops

With DPL's additional germplasm in cotton and soybeans, a post-merger Monsanto-DPL would have secure access to more seed varieties in which to incorporate its traits. Since essentially the same trait can be deployed in multiple crops, an investment in development of a single trait brings returns roughly commensurate with the number of trait-bearing seeds, of whatever crop, that are sold.[32] For instance, Monsanto's recent acquisition of Seminis gives it broad new opportunities for introduction of its current and future traits in a number of new vegetable crops. Conversely, a trait provider with lesser germplasm has fewer opportunities to recoup its investment in the development of a given trait, and is thus at a competitive disadvantage in all crops. This vertical integration effect is clearly at play in the proposed combination with respect to Monsanto's industry-leading Roundup Ready (Flex) traits. Thus, the merger would consolidate Monsanto's current overwhelming dominance in traits and seeds for all major crops, and help extend its trait dominance to minor crops such as vegetables in the future. Vertical integration efficiencies are generally adduced in support of mergers. Yet in this case, the additional vertical integration of traits and germplasm in a combined Monsanto-DPL will only increase market power and discourage competition. Monsanto-DPL's near monopoly in traits and predominance in (cotton) seeds means that vertical integration would not bring lower seed prices for farmers.

Less competition in traits will mean fewer choices for growers of other crops. In addition, the adverse agronomic and environmental impacts discussed above for cotton will be exacerbated in other crops, particularly for cotton growers who also grow other crops.

Government research would seem to support this assessment of fewer seed choices. Researchers with the USDA's Economic Research Service have found that ''consolidation in the private seed industry over the past decade may have dampened the intensity of private research undertaken on crop biotechnology relative to what would have occurred without consolidation, at least for corn, cotton and soybeans.'' They add: ''Also, fewer companies developing crops and marketing seeds may translate into fewer varieties offered'' (Fernandez-Cornejo & Schimmelpfennig 2004).

3.7 Organic Cotton

Organic cotton production by definition excludes use of genetically engineered seeds, chemical fertilizers and pesticides under USDA organic standards (OCA 2004). Though it still represents a very small market, organically grown cotton has enjoyed tremendous growth recently at the retail, manufacturing and farm levels. Global retail sales of organic cotton products increased from $245 million in 2001 to $583 million in 2005, an annual average growth rate of 35%. Global organic cotton fiber sales increased nearly six-fold, from 5,720 metric tonnes in 2000 to 32,326 metric tonnes in 2005 (Organic Exchange 2006).

Major retailers are largely responsible for this booming market. For instance, Patagonia converted its entire line of sportswear to 100% organic cotton in the 1990s, and 2.5% of Nike's total cotton use in 2003 was organic,[33] making it the largest user of organic cotton in that year (Organic Exchange undated). In 2004, Wal-Mart and Sam's Club began marketing an organic cotton line of yoga outfits, and since then have introduced organic cotton baby clothes, bed sheets, towels, and ladies apparel. The popularity of these products spurred Wal-Mart to become the largest single purchaser of organic cotton in 2006. Other retailers with organic cotton lines include Eileen Fisher and Timberland (Gunther 2006). This strong growth is expected to accelerate in the coming years (Organic Exchange 2006).

Conventional and biotech cotton production is extremely chemical-intensive, accounting for approximately 25% of global insecticide use, and 10% of overall pesticide use (Organic Exchange undated). Thus, organic cotton production means significantly less chemical pollution of the environment, avoidance of chemical-related threats to the health of growers,[34] and no contribution to the rapidly growing problem of herbicide-resistant weeds. Equally important is the increased revenue from organic cotton, which offers smaller growers an opportunity to survive in a ruthless cotton industry marked by fewer and ever-bigger farms (see Figure 3). By one estimate, organic cotton producers can increase their income by 50%: They receive a 20% premium over the price paid for conventional/biotech cotton, and spend less on inputs (which includes seeds and fertilizers as well as pesticides) (Fashion United).

Organic cotton is grown in the U.S. (primarily Texas, but also Arizona, Missouri and New Mexico),[35] but increasingly in a number of African nations as well as India, China, Turkey, Peru and Paraguay.[36] An in-depth, two-year study in India showed that organic cotton producers spent 40% less on inputs, and had slightly higher yields, than conventional cotton producers (Ramakrishnan 2006). Low input costs are particularly important for resource-poor farmers in developing countries, who frequently incur debt at high interest rates to purchase seeds and chemicals. The high price of biotech cotton seed has been a major complaint of developing country farmers induced to buy it in expectation of better performance (see Section 39.1).

Biotech cotton poses a number of potential threats to organic producers. First, biotech cotton could contaminate organic cotton and render in unsaleable. Contamination can occur when pollen from transgenic plants blows or is carried by insect pollinators to fertilize neighboring conventional/organic fields, through admixture of transgenic seeds in conventional/organic seeds, by the sprouting of transgenic ''volunteer'' plants from unharvested seeds in a subsequently grown field of conventional/organic crops, and by other means (UCS 2004). There are numerous examples of inadvertent

[32] This applies to early-stage research and development of the trait. Incorporation of the trait requires later-stage development expenditures specific to the individual crop.

[33] The common practice of blending organic and conventional cotton accounts for the greater increase in global organic cotton fiber sales vs. retail sales, since products must contain over 95% organic cotton to be labeled ''organic cotton.''

[34] See *http://www.organicexchange.org/Farm/cotton_facts_intro.htm.*

[35] See *http://www.aboutorganiccotton.org/stewards.html.*

[36] See *http://www.organicexchange.org/Map/oce.html.*

transgenic contamination mining markets for conventional/organic producers in other crops. For example, as reported in Nature Biotechnology, ''[t]he introduction of transgenic, herbicide-tolerant canola in western Canada destroyed the growing, albeit limited, market for organic canola,'' which commands a 100% premium over conventional canola (Smyth et al. 2002). The extremely widespread contamination of grain supplies and food products with transgenic StarLink corn in 2000/2001 resulted in extremely costly recalls of over 300 corn products, sharp drops in exports as contaminated corn shipments were rejected, and lower prices for corn farmers (Freese 2001). Both canola and corn are considered ''outcrossing'' crops, while cotton is generally ''self-pollinated'' [37] But even self-pollinating transgenic crops like rice can pose a threat, as seen in the recent episode in which an unapproved variety of transgenic rice (LLRICE6OI) widely contaminated commercial rice supplies, wreaking havoc with rice markets and causing losses to rice farmers projected at up to $150 million (Weiss 2006). CFS (2006) gives additional examples of transgenic contamination.

Contamination episodes are seldom adequately explained, but are generally blamed on slipshod management practices on the part of the biotech company or farmers growing the crop, or on deficient regulatory oversight by governmental authorities. For instance, the USDA's Inspector General recently issued a scathing audit lambasting the USDA's Animal and Plant Health Inspection Service for numerous fundamental flaws in its oversight of genetically engineered crop field trials (USDA IG 2005). A less charitable interpretation was suggested by Don Westfall, of the biotech consultancy firm Promar International, who reportedly stated in connection with the StarLink corn episode noted above: ''The hope of the industry is that over time the market is so flooded [with GMOs] that there's nothing you can do about it. You just sort of surrender'' (Laidlaw 2001).

The production practices associated with biotech cotton may also reduce yields of nearby organic cotton producers through spray drift damage. Herbicides are sprayed liberally to kill weeds in virtually all non-organic cotton production. Sprayed herbicides can drift several miles, especially when applied via airplane, as is common with cotton, and damage other farmers' crops (Bennett 2007, see also Section 2.4). The potential for spray drift damage has increased with the introduction of Roundup Ready cotton, since it permits application of glyphosate over a wider time window than conventional cotton. Roundup Ready Flex cotton widens the application window still further, since it withstands glyphosate throughout the growing season, and moreover survives higher application rates than original RR cotton (see Section 2.7).

A third potential risk to organic cotton producers is the rapidly declining availability of high-quality conventional seeds, since organic standards prohibit use of transgenic seeds.

Acquisition of DPL would give Monsanto the world's largest cotton seed holdings, with substantial presence in both U.S. and many foreign markets (see Section 3.9). Monsanto has explicitly stated that important goals of its acquisition of DPL are ''to create a new global platform in cotton'' and ''to accelerate biotech trait penetration'' (Monsanto 2006b, emphasis added). Therefore, the merger would likely lead to increased acreage of Monsanto biotech cotton planted overseas, posing the significant threats outlined above to organic cotton producers in African and other developing country nations, where governmental oversight of biotech crops is often even weaker than in the U.S. Since organic cotton products sold in the United States increasingly come from organic fiber grown overseas, the merger could have the effect of restricting the choice of organic cotton products for American consumers.

3.8 Seed Sterility Technology (Terminator)

DPL and USDA jointly hold at least three major patents on a transgenic method for genetic sterilization of seeds (ETC 2003). Known as the Technology Protection System, or Terminator, it involves genetically manipulating seeds such that, upon application of a chemical trigger, mature plants arising from the treated seeds themselves produce seeds that are sterile (UCS 1998). The purpose of Terminator technology is to prevent farmers from saving seeds from their harvest for the purpose of replanting. The USDA and DPL regard Terminator as a way to provide U.S. seed and trait firms with a biological means to prevent ''unauthorized'' reproduction of seeds bearing their patented biotech or other traits (USDA ARS 2001). This is regarded as particularly important in developing countries, home to most of the world's 1.4 billion people who depend on farm-saved seed and seeds exchanged with their neighbors as their primary seed source (Shand 1999).[38]

Terminator proponents often argue that poor farmers would continue to be free to save and replant their own varieties. Yet if a farmer's neighbor plants a Terminator crop, cross-pollination could render a portion of the first farmer's seed sterile (CGIAR 1998). And if shipments of Terminator seed-containing grain are sent to developing countries, the common practice of planting seed from grain ostensibly meant for consumption (e.g. food aid) could also lead to farmers unknowingly planting their fields with sterile seeds, resulting in significant drops in yield (FAO 2002, p. 5; ETC 2003, pp. 3–4). The growing number of often unexplained episodes in which biotech crops inadvertently contaminate conventional crops demonstrates that these are real possibilities (CFS 2006).

Proponents also argue that resource-poor farmers would continue to have access to non-Terminator seeds developed by the public sector. Yet this is by no means assured. After all, it is a public agency (the USDA) that helped develop sterile seed technology in the first place, and stands to earn an estimated 5% royalties on net sales (RAFI 1998). And public sector plant breeding has declined dramatically in the past two decades, both in the U.S. and around the world, increasingly supplanted by private sector seed (Femandez-Cornejo 2004; Shand 1999). We have already discussed how university-bred cotton varieties virtually disappeared in the U.S. in the early 1990s (Section 2.1.1, Appendix 1), and how farmers' choice of both conventional and biotech cotton seeds is being restricted due to oligopolistic market power (Sections 2.4 and 2.5).

These developments help explain the international outcry against Monsanto's proposed acquisition of DPL in 1998. Critics feared that Monsanto would deploy seed sterility technology in its growing stocks of the world's germplasm (see Sections 3.6 & 3.9 and Appendix 6). Criticism of Terminator came from many sources, including Jacques Diouf, Director General of the

[37] ''Self-pollinated'' means that a particular plant's (male) pollen fertilizes primarily its own (female) ova, while the pollen of ''outcrossing'' plants normally fertilizes other plants of the same species. But the terms are relative. For instance, insect pollinators like honeybees can carry cotton pollen for hundreds of feet to fertilize other cotton plants, see: *http://www.aphis.usda.gov/brs/cotton.html.*

[38] Seed saving is also practiced in developed countries, however. As recently as 1997 in the US., it is estimated that 63% of wheat, 22% of cotton, and 19% of soybeans came from saved seeds (Fernandez-Cornejo 2004, Table 5). However, the dramatic rise of patented biotech cotton and soybeans varieties that cannot be legally saved has almost certainly reduced these figures.

United Nations' Food and Agriculture Organization; the Consultative Group on International Agricultural Research (CGIAR), the world's largest international agricultural research network (RAFI 2000); and Gordon Conway, former President of the pro-biotech Rockefeller Foundation, a major funder of the Green Revolution (Rockefeller 1999). Opposition to Terminator is strong in developed countries and near universal in the developing world (RAFI 2000).[39] World Food Prize winner M.S. Swaminathan of India warned that deployment of Terminator technology would erode the right of farmers to save and breed seed varieties appropriate to their areas, as well as foster genetic uniformity, increasing the vulnerability of crops to pests and disease (Swaminathan 1998).

Such criticism impelled Monsanto, before the merger fell through, to make ''a public commitment not to commercialize sterile seed technologies'' (Shapiro 1999). In its 2005 Pledge Report, however, Monsanto initially restricted its pledge to read ''nor to commercialize sterile seed technologies in food crops.'' When challenged over this apparent change of policy, Monsanto apologized and eventually restored the original language (ETC 2006). Nevertheless, the company left the door open to future deployment of Terminator in food or non-food crops with the proviso: ''* * * but Monsanto people constantly reevaluate this stance as technology develops'' (Monsanto 2005c, p. 29).

Should the proposed combination take place, there are several reasons to be concerned about an imminent ''reevaluation'' leading to possible deployment of Terminator technology in cotton.

(1) DPL has always been a zealous proponent of Terminator. In 2000, DPL's Harry Collins declared: ''We've continued right on with work on the Technology Protection System. We never really slowed down. We're on target, moving ahead to commercialize it. We never really backed off'' (as quoted in RAFI 2000). DPL and USDA have reportedly tested Terminator cotton and tobacco in greenhouses (ETC 2003).

(2) Despite its pledge, at least one Monsanto officer has reportedly been promoting genetic use restriction technologies (a category that includes Terminator) at numerous international meetings (Dr. Roger Krueger, see ETC 2006).

(3) Monsanto's restriction of its ''no-Terminator'' pledge to ''food crops'' (altered only after a public challenge), coming just one year before its renewed attempt to acquire DPL, holder of Terminator patents and the dominant player in non-food cotton, is at the very least suspicious.

(4) Since objections to Terminator have focused heavily on its threat to the food security of developing countries, initial deployment in a fiber crop like cotton may be regarded as less likely to provoke the same level of opposition.

(5) In 2001, USDA confirmed that commercial introduction of Terminator would likely be in cotton: ''Delta and Pine Land Co. researchers are further developing the technology to ready it for commercial use. However, even the most optimistic predictions estimate that commercial cotton with built-in TPS technology may not be available until 2004'' (USDA ARS 2001).

(6) Monsanto's aggressive investigations and/or prosecution of thousands of U.S. farmers for (allegedly) saving the company's patented Roundup Ready soybeans demonstrate the lengths to which the company will go to discourage the practice of seed-saving (CFS 2005).[40] Terminator would provide it with a more effective, biological means to the same end. As former DPL president Murray Robinson put it: ''We expect [the new technology] to have global implications, especially in markets or countries where patent laws are weak or non-existent'' (as quoted in Shand 1999).

(7) Monsanto could profit substantially from deployment of Terminator. In 1998, DPL projected that Terminator could generate revenues in excess of $1 billion (Shand 1999).

Should Monsanto choose to ''reevaluate'' its current ''pledge'' not to deploy Terminator, its acquisition of DPL would give it a much expanded germplasm base in which to roll out sterile seed technology in a fiber crop less likely to arouse public opposition, thereby threatening the millennia-old tradition of farmer-led seed-saving and breeding.

3.9 International Perspective

The potential international impacts of the merger also deserve consideration, for at least two reasons. First, a combined Monsanto-DPL would have large market shares of cotton and other crops in a number of countries, raising anti-competitive concerns. Second, Monsanto is known for questionable and in some cases illegal business practices in foreign countries, practices that may raise red flags with government regulators outside of the U.S.

DPL is the eleventh largest seed company in the world, with 2004 seed sales of $315 million (ETC 2005). An unknown portion of these sales occur overseas. According to a 2004 presentation to investors, DPL controls 86% of the Mexican cotton seed market, and has an 85% share in South Africa, 70% (estimated) in Colombia, 30% (estimated) in Brazil, 30% in Greece, 27% in Spain, 25% (estimated) in Australia, 14% in Argentina, and 5% in Turkey and China (DPL 2004). In May 2006, DPL announced acquisition of Syngenta's global cotton seed business, comprised of operations and assets in India, Brazil, Europe, and certain cotton germplasm in the United States. The Indian acquisitions included a research facility and ''cotton seed germplasm and distribution assets in each of the three primary growing regions of India'' (DPL-Syngenta 2006).

In addition to its international cotton operations in India (see next section), Monsanto has also gained a substantial international presence in other crops (Appendix 6). For instance, its purchase of at least four Brazilian seed firms in the 1990s gave it a 63% market share in Brazilian corn seed in 1998–99 (Pardey *et al.* 2004, p. 19) and a substantial stake in Brazil's soybean market as well. Other notable international deals in the 1990s include acquisition of Cargill's international seed division ($1.4 billion), and two major South African seed firms (mainly corn).

The large international marker presence of a combined Monsanto-DPL in cotton seed and other major crop markets would be of great concern, particularly in light of Monsanto's history of questionable and illegal business practices overseas.

3.9.1 Monsanto in India

Monsanto has undertaken a major effort to introduce GM cotton internationally, notably in India and Indonesia (for the following discussion, see FoEI 2007, pp. 42–55). For instance, Monsanto acquired a 26% share of India's largest seed firm, Maharashtra Hybrid Seed Company (Mahyco), in the 1990s, and established a 50:50 joint venture with Mahyco known as Mahyco Monsanto Biotech to market Bt cotton there (Cyber India 2004). India plants more cotton (over 20 million acres) than any country in the world, making it a

[39] See also *http://www.banterminator.org/news_updates/news_updates.*

[40] Monsanto budgets $10 million annually for a department of 75 employees to investigate and prosecute farmers. Through 2004, Monsanto had won over $15 million in damages from U.S. farmers in cases that went to court, and likely much more in confidential out-of-court settlements (CFS 2005, pp. 23, 33–34).

lucrative market. Controversy over the commercial introduction of Mahyco-Monsanto Bt cotton in India from 2002 to 2005 has centered on allegedly deceptive advertising campaigns portraying the Bt cotton as endowed with magical qualities, the more than three-fold higher price of biotech cotton seed,[41] and numerous crop failures. Many Indian farmers went into debt to purchase the high-priced seed, based on promises of greatly increased yields and reduced insecticide expenditures. However, reports from Indian state government officials arid farm organizations document that the Bt cotton often yielded less than conventional cotton, and did not resist pests as promised by Mahyco-Monsanto. In consequence, Indian government officials in various states, most recently in Tamil Nadu (Sharma 2007), have demanded compensation for farmers who have suffered Bt cotton failures.

As reported in Nature Biotechnology, a study by the Nagpur-based Central Institute of Cotton Research revealed a constellation of problems with Mahyco-Monsanto's Bt cotton varieties, which were developed for U.S. farmers but often proved unsuitable to Indian conditions (for the following discussion, see Jayaraman 2005). First, the built-in insecticide was not produced at sufficient levels in cotton bolls to adequately control the cotton bollworm, India's chief cotton pest, especially late in the growing season, which is longer than in the U.S. This meant both greater-than-expected insect damage for some farmers, and in the longer term, increased probability of development of pests resistant to the Bt insecticide. Second, an estimated one-quarter of the hybrid Bt cotton seeds didn't produce any insecticide at all, a problem not seen in the U.S., where true-breeding varieties are planted. Suman Sahai, president of the Indian civil society group, Gene Campaign, reportedly charged Monsanto with promoting the use of hybrids in India to force farmers to buy fresh seeds every year even though it is aware that true-breeding varieties (whose seeds can be saved for subsequent crops) perform better. The deficient insect-resistance of Bt cotton in India has meant that Indian cotton growers purchase and spray more chemical insecticides than Bt cotton growers in other parts of the world. Due to such agronomic problems, the Indian government refused to renew the licenses for three Bt cotton varieties in many states. The recent spate of farmer suicides in Indian cotton-growing regions has many causes, including drought-related crop failures and low cotton prices, but indebtedness arising from purchase of high-priced biotech cotton seeds that sometimes failed to perform was by many accounts a significant factor (FoEI 2007, p. 50).

3.9.2 Monsanto's Bribery in Indonesia

Monsanto's abortive bid to introduce biotech cotton to the Indonesian market involved bribery of and illicit payments to Indonesian government officials. According to a U.S. Securities and Exchange Commission (SEC) complaint (SEC 2005a), in 2002 a senior Monsanto manager based in the U.S. authorized payment of a $50,000 bribe to a senior Indonesian Ministry of Environment official to repeal a decree requiring environmental impact assessments of biotech crops prior to their introduction, a decree applying to Monsanto's Bt cotton (the decree was never repealed). In addition, Monsanto's Indonesian affiliates made at least $700,000 in illicit payments to 140 Indonesian government officials and their family members from 1997 to 2002. Monsanto was fined $1 million by the U.S. Department of Justice for violation of the U.S. Foreign Corrupt Practices Act and an additional $500,000 by the SEC (SEC 2005b). As in India, many Indonesian farmers were extremely disappointed with the performance of Monsanto's cotton, which was sold at a substantial premium to conventional seed but in many cases failed to deliver the promised added value (FoEI 2007, pp. 52–53).

3.9.3 Monsanto's Questionable Soya Lawsuits in Europe

A third example of questionable business practices involves Monsanto's lawsuits against eight European importers of Argentine soy meal, which is largely derived from Roundup Ready soybeans. Monsanto is demanding that the importers pay royalties on these imports based on the company's European patents on Roundup Ready (RR) soybeans (MarketWatch 2006).

Monsanto's attempts to collect royalties from Argentine soybean farmers have failed, chiefly because the company does not have a patent on RR soy in Argentina (FoEI 2007, p. 24), and the country's 1973 seed law allows farmers to legally save and replant RR soy from their harvests (Valente 2004). Monsanto chose to introduce RR soy in Argentina despite the lack of patent protection (Benbrook 2005, p. 14). Measures ostensibly introduced to penalize the illegal practice of selling saved RR seed also affect farmers who legally save their own seed for replanting. For instance, an ''extended royalty'' scheme introduced in 1999 requires farmers to sign a contract obligating them, upon purchase of RR soybean seeds, to pay a surcharge of $2 for each 50 kg of saved seed, and is associated with lengthy interrogations of farmers and intrusive inspections of farmers' field by seed dealers (Nellen-Stucky & Meienberg 2006 Valente 2006). Argentine farmers are generally opposed to such schemes, which recall Monsanto's practices in the U.S. Monsanto's U.S. patents on RR soybeans have allowed the company to aggressively investigate and/or prosecute thousands of American farmers for (allegedly) replanting saved RR soy, resulting in decisions awarding the company over $15 million through 2004 (CFS 2005).

Monsanto's lawsuits against European importers of Argentine soy meal are widely regarded as having little chance of success, because they illegitimately assert a right to collect royalties on a processed derivative (soy meal) of the patented RR soy based on the mere presence of the RR gene, whereas the European patents at issue confer protection only to seeds in which the RR gene performs its function of conferring resistance to glyphosate, which is only true of planted seeds, not seeds or seed derivatives meant for (animal) consumption (Nellen-Stucky & Meienberg 2006). Argentina has reportedly obtained a legal opinion to this effect from the European Commission's Internal Market and Services Directorate-General (MarketWatch 2006). Some regard Monsanto's lawsuits as a stratagem to impose costly delays on Argentine soy meal exports to Europe, and thereby pressure the Argentine government to change its seed laws to suit the company (Nellen-Stucky & Meienberg 2006).

3.10 Monsanto-DPL a Virtually Unchallengeable Competitor

DPL's cotton seeds are generally considered the highest-quality germplasm in the industry, as suggested by its 51% share of the cotton seed market and the fact that it has the two top-selling cotton varieties sold by any company (USDA AMS 2006). Monsanto is the undisputed leader in cotton traits, with an over 95% market share, and has a similarly dominant position in R&D, with 94% of experimental transgenic cotton acreage since the year 2000

[41] Acting on a complaint from the government of Andhra Pradesh, India's Monopolies and Restrictive Trade Practices Commission issued notices to Monsanto and its Indian affiliates for taking undue advantage of its monopoly in Bt cotton seed by charging a royalty of 1,250 rupees on a 450 gm packet of seed, raising its price to 1,800 rupees (Mitta 2006).

(Appendix 5). On this basis alone, a merger of these two giants can only exacerbate concentration in an already highly concentrated industry.

But the merger's impacts look still more dire when one considers the strong linkage between quality germplasm and trait dominance. Access to limited high-quality germplasm—regarded as the ''delivery mechanism'' for traits—is absolutely crucial to effectively marketing biotech cotton.

> Seed proved to be the delivery mechanism of choice for agrobiotechnology, and, because high quality proprietary germplasm was in short supply, the strategic value of certain seed companies rose quickly (Kalaitzandonakes 1998).

At present, in the U.S., Monsanto has sure access only to its Stoneville subsidiary's germplasm, representing 12% of U.S. cotton. While its traits are currently offered widely in other firms' seeds via licensing agreements, these agreements are limited in duration and subject to expiration or cancellation. Acquisition of DPL would give Monsanto control of the highest-quality seeds, planted on more than four times as much acreage as Stoneville's, in which to incorporate its traits. The acquisition could also lead to cancellation of DPL's plans to diversify its trait offerings, as described in Section 3.4.

If Monsanto's competitors are prevented from deploying their traits in DPL's germplasm, they will be forced to seek access to a much smaller pool of mostly lower-quality germplasm in which to incorporate their traits via licensing agreements or acquisition. They would thus face two, likely insurmountable, obstacles: First, marketing new and unfamiliar traits to farmers committed from long experience and habit to Monsanto's industry-leading traits and doing so in germplasm whose quality in terms of yield and other desirable (non-biotech) attributes is unlikely to match Monsanto-DPL's. The extremely high concentration in seeds post-merger would make acquisition of quality germplasm by Monsanto's competitors effectively impossible. High-quality cotton germplasm is a naturally limited form of capital that accrues slowly over many years of patient breeding efforts. Unlike brick and mortar factories or other capital equipment, it cannot be fabricated, given only sufficient funds. This limitation makes entry considerably more difficult for a would-be innovative competitor than would be the case in a nuts-and-bolts or information technology industry.

Perhaps the single, most important factor to consider in assessing the merger is Monsanto's extraordinary success in deploying its traits in the seeds of its competitors, even competitors that are also trait providers themselves, via licensing agreements. In other words, Monsanto has come to overwhelmingly dominate traits in cotton (and other crops) even without the substantial additional vertical integration represented by acquisition of DPL. Since at present there is little room left for Monsanto traits in cotton, the proposed acquisition could only act to extend Monsanto's already unacceptably high level of trait dominance into the indefinite future.

Despite the undeniable attractiveness of the Roundup Ready system, however, there are also clear signs that transgenic trait ''adoption'' is a push as well as a pull affair, a product of oligopolistic market power as well as farmer demand. As demonstrated above, even popular conventional seed varieties are being eliminated or restricted in supply, while conventional versions of leading transgenic lines popular mainly for their yield (or other non-biotech attributes) are simply not available (Section 2.4). Thus, an accelerated decline in the availability of high-quality conventional seed is another likely outcome of the merger.

3.11 Conduct-Based Solutions in Light of the High Failure Rate in Agricultural Biotechnology

One might imagine that the anticompetitive effects of the merger could be adequately addressed by requiring Monsanto-DPL to incorporate competitors' traits-for instance, Syngenta's VipCot IR and DuPont's Optimum GAT HT traits (Section 3.4). However, this sort of solution runs a high risk of failure due to the high failure rate associated with this relatively new technology, a factor easily overlooked by those inexperienced in the world of biotech crops.

In brief, the overwhelming majority of biotech traits developed in the laboratory are never effectively commercialized. Failure occurs at several stages in the research, development, regulatory review and commercialization process. A trait developed in the laboratory may well not reach the stage of outdoor field trials due to unexpected technical difficulties. The great majority of biotech plant varieties that do undergo outdoor field testing never receive government clearance for commercial cultivation, most often because the company drops development because of trait instability, poor agronomic performance in certain environments, and/or unforeseen health or environmental risks. And even the majority of those few biotech crops that do receive government clearance fail in the marketplace.

This high failure rate is often obscured by overly optimistic public relations material from biotech companies, which are understandably optimistic about future prospects for their traits and loathe to air their failures.

An approximate measure of the failure rate is provided by USDA data, which show that 976 genes,[42] and thus nearly as many biotech traits,[43] have been tested in roughly 50,000 outdoor field trials (Caplan 2005) involving more than 100 different plant species[44] since the late 1980s. Yet only 71 biotech ''events,'' or particular crop-trait combinations, have received commercial clearance.[45] Of these 71, only four crops with HT and/or IR traits have succeeded commercially, representing virtually 100% of the world's biotech acreage (see Appendix 7 and ISAAA 2006).[46]

While Syngenta's VipCot cotton has received USDA clearance, the EPA has not given final approval to VipCot's VIP3A insecticidal protein, perhaps due to concerns that it will kill non-target organisms as well as insect pests by virtue of its broad-spectrum activity. As noted in Section 3.4.1, DPL has already pushed back the introduction date of VipCot from 2006 to 2008–09, and there is no guarantee it will be released then, even assuming that a compulsory licensing agreement is imposed on Monsanto as a condition of the merger.

DuPont's Optimum GAT trait is even less certain to succeed. DuPont optimistically projects commercial introduction of GAT in soybeans in 2009 (StLPD 2006), to be followed by introduction in corn and cotton some years later, by one account 2012 (Polaris 2005). DuPont's Web site indicates that GAT cotton is at the early phase 1 (proof

[42] See *http://www.tsb.vt.edu/cfdocs/isblists2.cfm/opt=16,* last accessed Feb. 12, 2007.

[43] In the great majority of cases, a biotech trait is conferred by a single gene. A limited number of the 976 genes noted above are marker genes employed to facilitate the crop development process and do not themselves express a trait. USDA also lists alternative designations for some genes separately. On the other hand, an unknown but substantial number of genes claimed as ''confidential business information'' (CBI) of the biotech crop developer do not appear in this list (see Caplan 2005 on the growing number of CBI claims for genes), so the true number of biotech traits tested in field trials surely exceeds 1,000.

[44] *http://www.tsb.vt.edu/cfdocs/isblists2.cfm/opt=3,* last accessed Feb. 12, 2007.

[45] *http://www.aphis.usda.gov/brs/not_reg.html*, last accessed Feb. 12, 2007.

[46] Approved biotech crops other than HT and/or IR soybeans, corn, cotton and canola account for well under 1% of global biotech crop acreage.

of concept) of 4 phases of development (DuPont-Pioneer 2006b). USDA field trial data show that to date, DeltaMax Cotton LLC has received only two permits to conduct small field trials of GAT cotton, on 5 and 10 acres, both in 2006.[47] The small scale of these field trials confirms that GAT cotton is at an early stage of development.

Interestingly, DuPont received commercial clearance for a transgenic cotton resistant to ALS-inhibitor herbicides in 1996, but either did not try or was unable to market it.[48] (We find no record that this HT trait was ever incorporated into a commercial cotton cultivar.) Tolerance to ALS-inhibitors is the trait paired with glyphosate-tolerance in Optimum GAT. One limitation of ALS-inhibitor tolerance is the prevalence of weeds already resistant to this class of herbicides.[49] This, combined with rapidly increasing glyphosate-resistance in weeds, may limit the usefulness and marketability of Optimum GAT.

History clearly demonstrates that any given experimental biotech crop is very unlikely to become commercialized. Conduct-based solutions to correct the anticompetitive effects of a merger naturally rely on ''picking a winner.'' Given the high failure rate in agricultural biotechnology, this is a risky strategy that is very likely to fail.

4. Conclusion

Based on our analysis, the Center for Food Safety and International Center for Technology Assessment believe that the proposed merger would have a number of anticompetitive effects, including increased cotton seed prices; restricted choice of cotton seed varieties with no traits (i.e. conventional seed) or one trait; and increased obstacles to entry of and/or greater market penetration by Monsanto's cotton trait competitors. Other possible effects include an accelerated exit of smaller cotton seed firms from the market; acquisition of a uncompetitive, divested Stoneville, leading to a duopoly in seeds; harm to organic cotton growers, particularly overseas, and potentially reduced choice of organic cotton products for U.S. consumers.

However, agriculture is not software. Production of food and fiber to meet basic needs is a far more serious affair than computer operating systems. Agriculture requires competition in seeds and traits for all the reasons that apply to other industries, but also to ensure the diversity that is essential to sustain the health and productivity of American agriculture. As discussed in Sections 2.6 to 2.8, the near-monopoly in biotech traits promises a future of unprecedented reliance on a single herbicide, glyphosate. Excessive use of glyphosate leads to increasingly stubborn weeds, a threat to the cotton industry compared by one expert to the boll weevil; disease-prone, mineral deficient crops; and heightened risks of widespread yield reductions and failures. Increased use of Roundup may also endanger amphibian populations.

From an international perspective, the merger will give Monsanto, a company known for questionable and illegal activities overseas, increased access to foreign markets, particularly in cotton. Monsanto's acquisition of DPL's seed sterility technology increases the potential for eventual introduction of Terminator cotton and other crops, with adverse equity impacts on resource-poor farmers.

5. Recommendations

I. We call on the Department of justice to unconditionally oppose the acquisition of Delta and Pine Land Company by Monsanto to protect farmers from higher seed prices, reduced seed choices and other adverse impacts as outlined in this report.

II. We call on the Department of Justice to oppose future acquisitions of cotton seed firms by the oligopolists—Delta and Pine Land, Bayer and Monsanto—to avert the negative effects of increased concentration in the cotton seed industry.

III. We urge the US Department of Agriculture to resume its historical role of promoting the interests of American farmers, through:

A. Increased funding of public sector breeding efforts to supply American farmers with affordable, high-quality seed varieties in cotton and other crops, in particular conventional seed varieties neglected by the private seed industry;

B. Denial of any and all permits to entities applying to field test any crop incorporating Delta and Pine Land's Technology Protection System, or any other other genetic use restriction technologies that render the seeds of harvested plants sterile (popularly known as ''Terminator'' technology); and

C. Otherwise following the recommendations of eleven members of the USDA's Advisory Committee on Agricultural Biotechnology (ACAB) with respect to Terminator technology, as set out in a joint letter to ACAB's chair of August 25, 2000 (USDA ACAB 2000).

[47] At *http://www.tsb.vt.edu/cfdocs/fieldtests1.cfm*, search on ''Institution,'' then ''DeltaMax Cotton LLC.''

[48] Go to USDA's list of GM crops cleared for commercial use (i.e. petitions for non-regulated status granted) at *http://www.aphis.usda.gov/brs/not_reg.html*. Petition 95–256–01, for sulfonylurea tolerant cotton, line 19–51a, was cleared on Feb. 21, 1996 Sulfonylurea is an ALS-inhibitor type herbicide.

[49] The Weed Science Society of America lists 95 weeds resistant to ALS inhibitors worldwide. *http://www.weedscience.org/Summary/UspeciesMOA.asp?1stMOAlD=3&FmHRACGroup=Go.*

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Appendix 1: Cotton Seed Market Share of Selected Companies in U.S.: 1970 to 2006

A graph appearing here in the comment is illegible upon reprinting. The graph is available at the Department of Justice Antitrust Division, 325 Seventh Street, NW., Room 215, Washington, DC 20530, (202) 514–2481, and at the Office of the Clerk of the United States District Court for the District of Columbia, 333 Constitution Avenue, NW., Washington, DC 20001.

Appendix 2

Market Share of Four Largest Private Seed Firms: Cotton, Corn and Soybeans

A graph appearing here in the comment is illegible upon reprinting. The graph is available at the Department of Justice Antitrust Division, 325 Seventh Street, NW., Room 215, Washington, DC 20530, (202) 514–2481, and at the Office of the Clerk of the United States District Court for the District of Columbia, 333 Constitution Avenue, NW., Washington, DC 20001.

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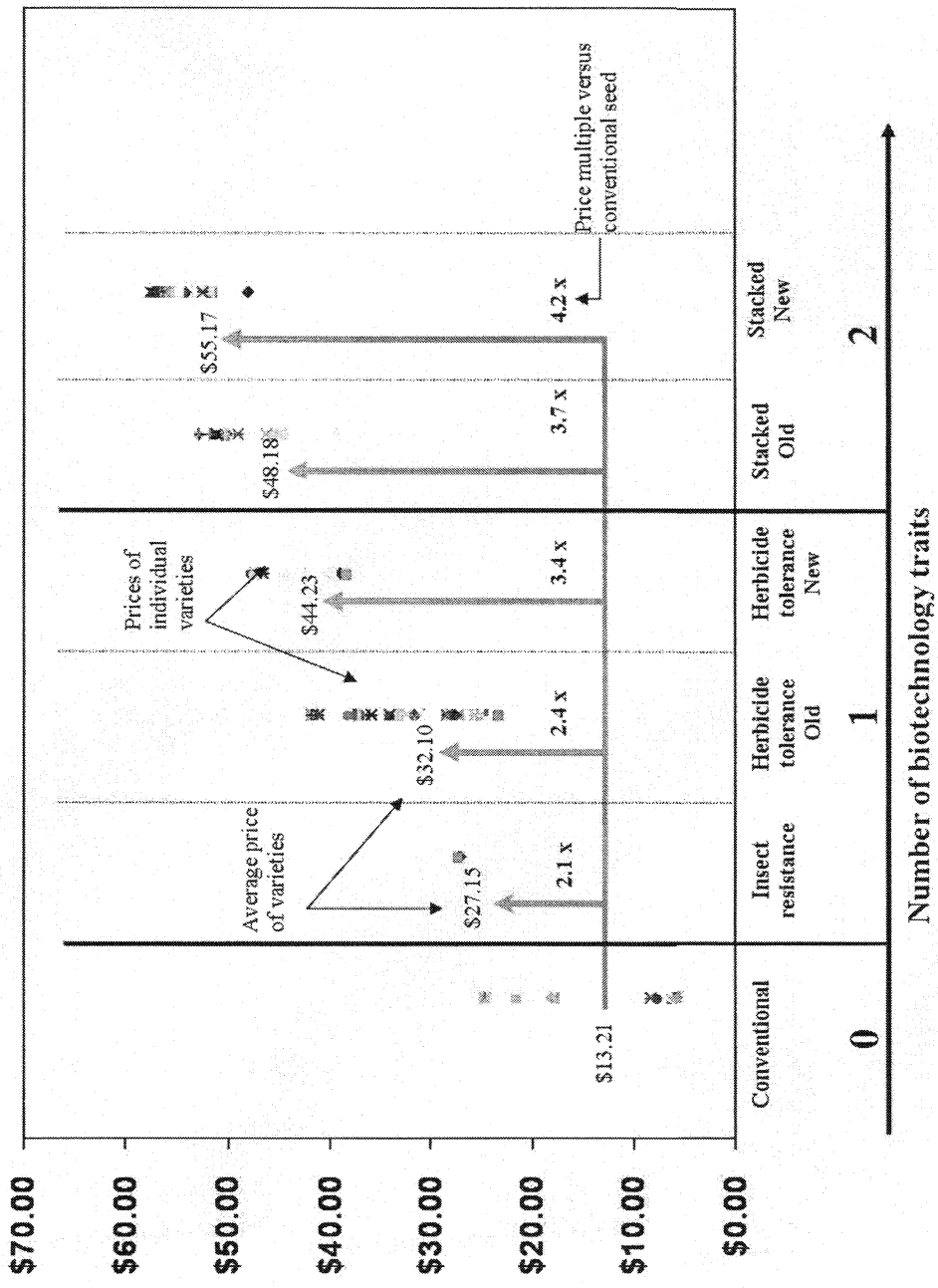
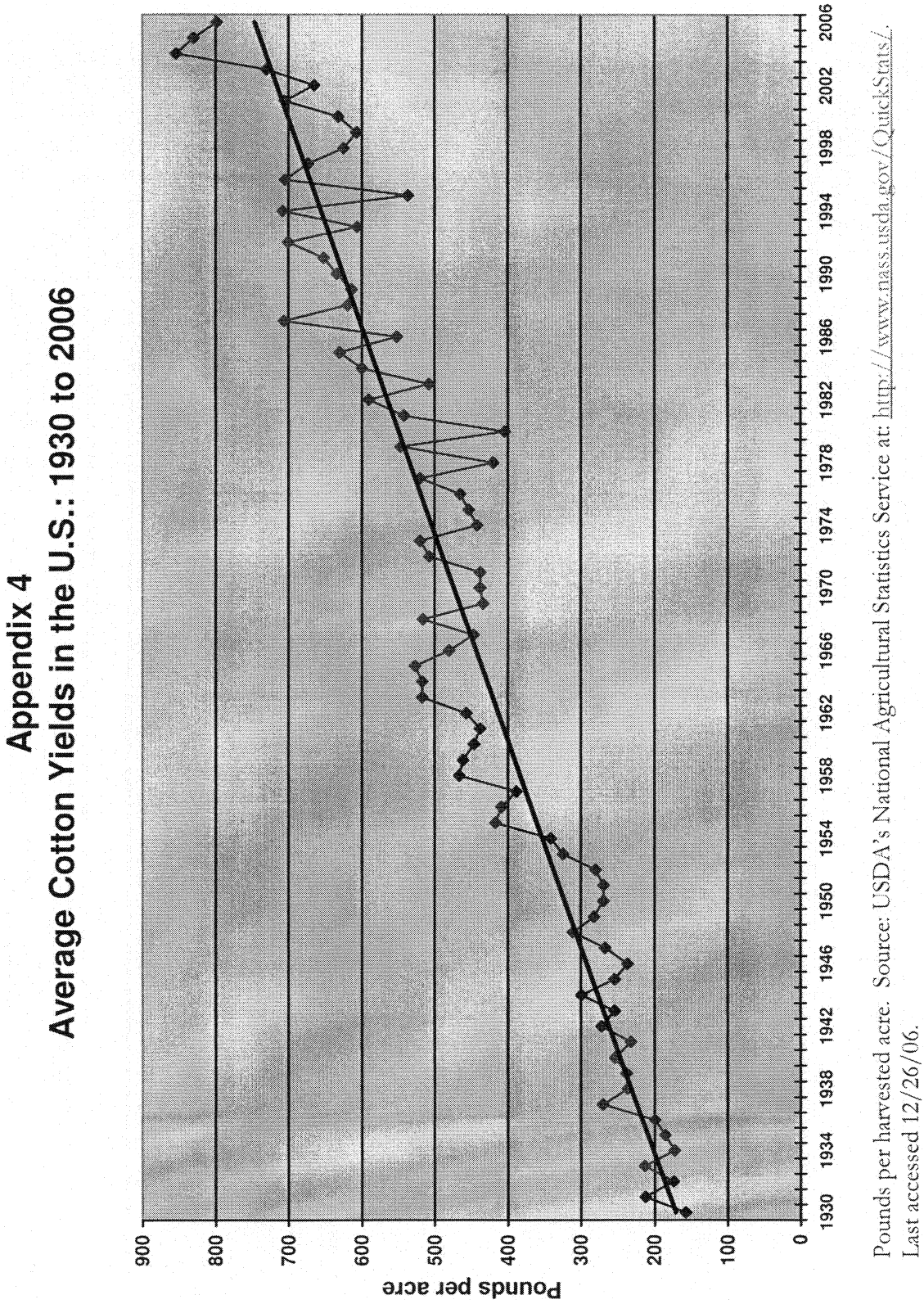
Appendix 3

Cost of Cotton Seed: Conventional vs. Biotech



Based on Plains Cotton Growers (2006). Prices of 140 cottonseed varieties are plotted—conventional (21), IR (2), HT Old (45), HT New (15), Stacked Old (26), Stacked New (31) — together with the average price of the varieties in each category and the increased cost versus the conventional average. Per acre price based on 40 inch crop rows and 4.0 seed/feet. See www.plainscotton.org/seed/seedindex.html.

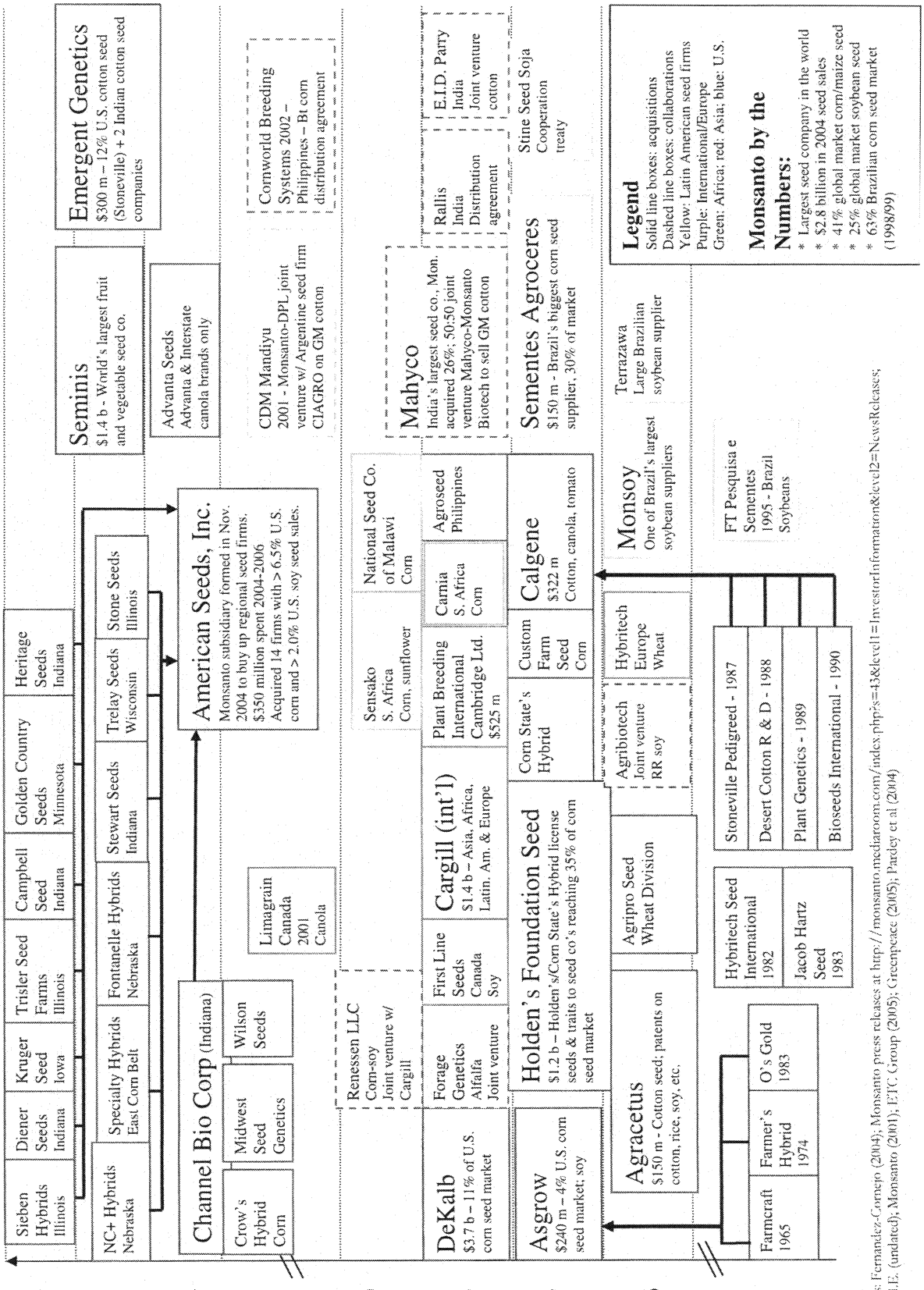


Appendix 5

Acreage of Biotech Cotton Field Trials in the U.S.: 2000 to 2006

A graph appearing here in the comment is illegible upon reprinting. The graph is available at the Department of Justice Antitrust Division, 325 Seventh Street, NW., Room 215, Washington, DC 20530, (202) 514–2481, and at the Office of the Clerk of the United States District Court for the District of Columbia, 333 Constitution Avenue, NW., Washington, DC 20001.

Appendix 6 - Monsanto Acquisitions and Collaborations



Sources: Fernandez-Cornejo (2004); Monsanto press release at http://monsanto.mediaroom.com/index.php?s=43&level1=InvestorInformation&level2=NewsReleases; Hart, N.E. (undated); Monsanto (2001); ETC Group (2005); Greenpeace (2005); Pardey et al (2004)

BILLING CODE 4410–11–C

Appendix 7—Approved Versus Commercially Grown Genetically Engineered Crops

A graph appearing here in the comment is illegible upon reprinting. The graph is available at the Department of Justice Antitrust Division, 325 Seventh Street, NW., Room 215, Washington, DC 20530, (202) 514–2481, and at the Office of the Clerk of the United States District Court for the District of Columbia, 333 Constitution Avenue, NW., Washington, DC 20001.

August 8, 2007.

Donna N. Kooperstein, Chief, Transportation, Energy & Agriculture Section, Antitrust Division, United States Department of Justice, 325 Seventh Street, NW., Suite 500, Washington, DC 20530.

Re: *United States* v. *Monsanto Company et al.* Case No. 1:07–cv–00992.

Dear Ms. Kooperstein:

Ohio Farmers Union submits this letter to object to the DOJ's Proposed Final Judgment (''PFJ''), which allows Monsanto to acquire Delta and Pine Land Company (''Delta and Pine Land''). Monsanto's acquisition of Delta and Pine Land will have serious implications for independent family farmers throughout the state of Ohio.

Cotton seed is important to Ohio's livestock producers as a high-quality, alternative feed source. Monsanto's acquisition of Delta and Pine Land, the largest cotton seed company in the country, will give Monsanto a profound measure of control over the supply of cotton seed, especially over the transgenic cotton seed market. Competing seed trait developers will have great difficulty gaining acccess to the market. With fewer alternatives, the cost of seed to farmers is very likely to increase, adding additional economic stress to Ohio's livestock producers.

Also, Monsanto's growing dominance in the cotton markets could magnify their impact on the soybean and corn markets. Soybean and corn farmers in Ohio rely on an affordable, competitive seed market when they plant in the spring allowing them to grow food and fuels. The soybean and corn transgenic seed markets are already concentrated. This acquisition could easily drive costs up for Ohio's grain farmers and lead to increased prices for consumers. Innovation will also suffer, as competing transgenic trait developers are pushed out of the markets.

The DOJ's PFJ does not remedy the harms that will occur from Monsanto's acquisition. The divestiture of Stoneville plus 20 lines of germplasm will not take the place of an independent Delta and Pine Land with its breeding expertise and resources. The PFJ does not restore competition and is not in the public interest.

Sincerely,

Joe Logan.
Ohio Farmer's Union.

August 7, 2007.

Donna N. Kooperstein, Chief, Transportation, Energy & Agriculture Section, Antitrust Division, United States Department of Justice, 325 Seventh Street, NW., Suite 500, Washington, DC 20530, Via fax (202–307–2784) and U.S. Mail.

RE: *United States* v. *Monsanto Company, et al.*, Case No. 1:07–cv–00992 (D.D.C., filed May 31, 2007) (Urbina, J.)

Dear Ms. Kooperstein:

The Organization for Competitive Markets (''OCM'') is an independent, nonpartisan, and nonprofit group comprised of farmers, ranchers, academics, attorneys, and policymakers dedicated to preserving and protecting competitive markets in agriculture. The OCM submits these comments pursuant to the Antitrust Procedures and Penalties Act, 15 U.S.C. 16, to register its objections to the Department of Justice's (''DOJ'') proposed final judgment (''PFJ'') regarding the acquisition by Monsanto Company (''Monsanto'') of Delta and Pine Land Company (''Delta and Pine''), the largest cotton seed company in the United States. With agricultural, consolidation and concentation occurring at an unprecedented rate, OCM is disappointed that the DOJ has once again failed to preserve competition and protect American farmers and consumers.

Monsanto's acquisition of Delta and Pine promises to substantially damage transgenic seed trait competition in cotton. Farmers throughout this country are being harmed by Monsanto's aggressive tactics aimed at denying them competitive alternatives. As the DOJ acknowledged in its complaint, Monsanto is the largest producer and supplier of cotton transgenic seed traits in the United States. Monsanto controls over 96% of the market for herbicide-tolerant cotton traits and approximately 99% of the market for insect-resistant cotton traits. Monsanto has used its monopoly power to impose significant price increases on cotton farmers, including a 229% increase in Monsanto's Roundup Ready® herbicide-tolerant trait over the past four years. The technology fees Monsanto charges farmers for its traits accounts for more than 50%, and sometimes even as much as 70%, of the cost of a bag of seed. These statistics illustrate the extent to which greater competition is needed in the cotton transgenic seed trait market where farmers are struggling under the weight of Monsanto's dominance.

Together with its separate joint development partners, Delta and Pine offers the best hope of breaking Monsanto's monopoly in cotton transgenic seed traits. As the DOJ indicated in its complaint, Delta and Pine is an attractive joint development partner because of its extensive germplasm library, personnel and facilities, and superior track record of breeding success. Also, Delta and Pine's high market shares make it an indispensable vehicle for competing trait developers to distribute their competing cotton biotech traits to farmers.

By acquiring Delta. and Pine, Monsanto will be positioned to undermine these joint development efforts, close the distribution channel for competing traits, and thereby solidify its monopoly position. The DOJ's own complaint and PFJ clearly acknowledge the very significant anticompetitive effect of Monsanto's acquisition of Delta and Pine on the future development of competing cotton traits. Yet the DOJ's proposed remedy to cure these anticompetitive effects—divestiture of Stoneville plus providing Stoneville nonexclusive access to 20 lines of germplasm and certain Monsanto cotton germplasm lines—is woefully inadequate and does not restore competition.

First, Stoneville simply lacks the required infrastructure and expertise to challenge Delta and Pine. Second, the ''divestiture'' to Stoneville of 20 lines of Delta and Pine germplasm does little to enhance Stoneville's capabilities. Putting aside that it is not even a true divestiture, these 20 lines are either in development and not commercially viable or account for only about 1% of the cotton acres planted in the Southeast and MidSouth. Plus, ongoing germplasm line improvements mean that old lines quickly become obsolete. Even if Stoneville is eventually capable of bringing competing biotech traits to market, the DOJ acknowledges that it will take 815 years for them to be commercially viable. By then, it will simply be too late and Monsanto's hegemony in transgenic seed traits will have been cemented permanently. Third, because Monsanto will have more than a 50% post-acquisition share of the highly concentrated cotton-seed market, competing trait developers may well lack the incentive to continue their efforts due to a lack of non-Delta and Pine outlets through which to license their traits.

Monsanto's acquisition of Delta and Pine also promises to have harmful spillover applications to other agricultural crops vital to our national economy. With Delta and Pine under Monsanto's control, competing trait developers will be foreclosed from market opportunities that would provide them with necessary revenue to justify the significant research and development costs associated with the development of competing traits in cotton and other crops. Encouraging and promoting alternative, competing transgenic seed traits is especially critical in key crops like corn and soy, where Monsanto already controls more than 95% of the market for herbicide-tolerant corn traits, more than 80% of the market for insect-resistant corn traits, and over 98% of the market for herbicide-tolerant soybean traits. Unless competition is preserved, Monsanto will soon be able to eliminate competition in the trait markets, to the detriment of farmers and consumers everywhere.

Promoting and preserving competition and choice in transgenic seed traits is critical to ensuring the success of the vitally important agriculture sector of the national economy. If the PFJ is approved, the opposite will occur—Monsanto's acquisition of Delta & Pine will lead to diminished competition, fewer choices, and higher prices for farmers and consumers.

Respectfully,

Keith Mudd,
President.

August 16, 2007.

Donna N. Kooperstein, Chief, Transportation, Energy & Agriculture Section Antitrust Division, United States Department of Justice, 325 Seventh Street, NW., Suite 500, Washington, DC 20530.

Re: *United States* v. *Monsanto Company, et al.*, Case No. 1:07–cv–00992 (D.D.C.,

filed May 31, 2007) (Urbina, J.)

Dear Ms. Kooperstein:

We submit this letter pursuant to the Antitrust Procedures and Penalties Act, 15 U.S.C. 16, to voice our objections to the DOJ's Proposed Final Judgment (''PFJ'') which permits Monsanto to acquire Delta and Pine Land Company (''Delta and Pine Land''). The interests of Iowa's farmers, rural communities, and consumers will be harmed by Monsanto's acquisition of Delta and Pine Land.

Agriculture is a vital part of Iowa's history, environment, and economy. In 2006 and 2007, Iowa was ranked #1 in the United States in acres of corn and soybeans planted. See ''Acreage,'' National Agricultural Statistics Service, USDA (June 30, 2006, and June 29, 2007). While Monsanto's acquisition of Delta and Pine Land directly impacts the cotton markets, Monsanto's stronghold in the cotton markets will have serious effects on the corn and soybean markets as well.

Farmers and consumers benefit from competition in the marketplace. Monsanto's acquisition of Delta and Pine will end competition in cotton biotech seed traits, by cutting off competing trait developers from access to Delta and Pine's superlative breeding and distribution programs. These competing trait developers will have no incentive to invest in R&D for cotton seed traits, and they will not have the needed resources to invest in trait development for other crops, such as the key crops of corn and soybeans. With no alternatives, the cost of seed to farmers will continue to climb through the roof, and the end costs to consumers will likewise rise dramatically. Further, innovation will be stifled and seed quality will suffer.

The DOJ's PFJ does not remedy the harms that will occur from Monsanto's monopoly position. The divestiture of Stoneville plus a sell-off of a few lines of germplasm, will not take the place of an independent Delta and Pine. The PFJ does not restore competition and is not in the public interest.

Sincerely,

Carrie La Seur,
Founder & President, Plains Justice.

Denise O'Brien,
President, Women, Food & Agriculture Network.

Chris Peterson,
President, Iowa Farmers Union.

August 24, 2007.

Donna N. Kooperstein, Chief, Transportation, Energy & Agriculture Section, Antitrust Division, United States Department of Justice, 325 Seventh Street, NW., Suite 500, Washington, DC 20530.

Re: *United States* v. *Monsanto Company et al.*, No 1:07–cv–00992 (D.D.C. filed May 31, 2007) (Urbina, J.)

Dear Ms. Kooperstein:

Pursuant to 15 U.S.C. 16(b), the Attorneys General of Virginia, Arkansas, Delaware, Kentucky, Maryland, New Mexico, North Carolina, Ohio, Oklahoma, Rhode Island, Tennessee, Utah, and West Virginia hereby submit the attached comments related to the Proposed Final Judgment pending in the above-referenced matter. Please contact me at (804) 786–6557 if you have any questions.

Sincerely,

Sarah Oxenharn Allen,
Assistant Attorney General, Antitrust and Consumer Litigation Section, Office of the Virginia Attorney General.

Attachment

Comments of the Attorneys General of Virginia, Arkansas, Delaware, Kentucky, Maryland, New Mexico, North Carolina, Ohio, Oklahoma, Rhode Island, Tennessee, Utah, and West Virginia on the Proposed Final Judgment in United States v. Monsanto Company, et al.

Pursuant to ¶ 2(b) of the Antitrust Procedures and Penalties Act, 15 U.S.C. 16, the Attorneys General of Virginia, Arkansas, Delaware, Kentucky, Maryland, New Mexico, North Carolina, Ohio, Oklahoma, Rhode Island, Tennessee, Utah, and West Virginia (hereinafter, ''the Attorneys General''), submit the following comments on the Proposed Final Judgment (''PFJ'') produced to the court by the United States Department of Justice (''the United States'' or ''DOJ'') in the above-referenced matter.

I. Introduction

As the chief law enforcement officers of their respective states, the Attorneys General are charged with enforcing state and federal antitrust laws. The Attorneys General often are called upon to evaluate and gauge the competitive benefit or harm of proposed business acquisitions to the citizens and economies of their respective states. The Attorneys General strive to preserve fair competition, protect their citizens from unlawful restraints, and promote the development, production and distribution of alternative product choices in the marketplace. As a result, the Attorneys General have a strong interest in antitrust enforcement actions by the United States that will impact their states.

Agriculture is an important industry affecting local and state economies, as well as the Gross National Product. Its gross outputs account for more than $250 billion of the gross domestic product and more than $68 billion in exports. See ''Gross Domestic Product by Industry Accounts,'' U.S. Department of Commerce, Bureau of Economic Analysis, available at *http://www.bea.gov/industry/gpotables/gpo_action.cfm?anon=52440&table&_id=19025&format&_type=0*; ''Foreign Agricultural Trade of the United States,'' U.S. Department of Agriculture (''USDA''), available at *http://www.ers.usda.gov/Data/FATUS/monthlysummary.htm*. Cotton, together with corn and soybeans, accounts for nearly 60% of the value of all U.S. crops. See ''Crop Values—2003 Summary,'' USDA, National Agricultural Statistics Service. These three crops have a combined annual value of more than $58 billion. See ''Crops & Plants—National Statistics,'' USDA, National Agricultural Statistics Service. In 2006, the cotton market alone generated more than $5 billion in annual revenues for U.S. farmers. See DOJ Complaint (''Complaint''), at ¶ 1.

Biotechnology (alternatively, ''biotech'') has revolutionized U.S. agriculture by enabling farmers to protect crops from certain insects, the effects of herbicides, and other soil and plant conditions that evolve over time. By altering the genetic makeup of seeds to produce crops with desirable traits, such as insect resistance and herbicide tolerance, biotechnology has made it possible for farmers to increase production yields and decrease costs, particularly the costs of pesticides sprayed on crops after planting. Today, approximately 87% of cotton, 91% of soybeans, and 73% of corn grown in the United States is from genetically modified seeds. See ''U.S. Farmers Plant Largest Corn Crop in 63 Years,'' USDA, available at *http://www.nass.usda.gov/Newsroom/2007/06_29_2007.asp*.

Despite the increasingly important role of biotech seeds in U.S. agriculture, barriers to entry in the market are extremely high. Successful entry requires long lead times, large capital expenditures, highly trained and experienced personnel, retail distribution outlets, and access to a broad collection of elite germplasm (the genetic material required for the development of traits that gives the plants their characteristics. See Complaint, at ¶ 5.). Desirable traits have to be developed in laboratories, successfully crossed with varieties of elite germplasm to produce seeds that have the proven desirable qualities, and field-tested in conditions farmers actually confront. See generally Jane Dever and E. Margaret Hamill, ''Breeding: Approaches to Fiber Quality Improvement,'' 2005 EFS Systems Conference Presentations, available at *http://www.cottoninc.com/2005/ConferencePresentations*; and Monsanto.com, ''The DNA of Our Business,'' available at *http://www.monsanto.com/Monsanto/content/media/pubs/2005/MON_2005_DNA_of_our_business.pdf*. The process often requires thousands of attempts before a trait can be developed and used to breed commercial seed varieties. See Complaint, at ¶ 28. Once a trait is successfully developed, it must receive regulatory approval by multiple agencies, in both the United States and abroad, which can cost millions of dollars. Id. Market acceptance of new biotech traits also takes time. Farmers tend to be conservative in adopting new biotech seed varieties, and therefore these seed varieties often take several seasons to attain maximum penetration and market share in various regions. As the United States acknowledges in its Complaint, the development of a single trait ''typically takes eight to twelve years and costs over $40 million.'' Id. at ¶ 28. See also id. at ¶ 43. Because of these extraordinarily high barriers to entry, there are a limited number of companies in the world capable of successfully developing biotech traits.

Monsanto Company (''Monsanto'') is the dominant biotech trait company in the United States. Delta and Pine Land Company (''DPL'') is the largest cotton seed company in the United States. The Attorneys General are concerned that Monsanto's acquisition of DPL will eliminate competition in the market for cotton biotech traits and seeds, stifle innovation and product choice, and result in supra-competitive prices to U.S. farmers and consumers. Monsanto will be able to eliminate competition in cotton biotech trait development and commercialization by foreclosing other companies from developing

cotton biotech traits with DPL or from incorporating competing traits into DPL seeds. The Attorneys General also are concerned that the acquisition will have ripple effects that will stall or eliminate the development of competing biotech traits for other crops, such as corn and soybeans, allowing Monsanto to maintain a degree of control over U.S. agriculture that has never before been possessed by a single company. The acquisition also may allow Monsanto to engage in exclusionary business practices in cotton. Such exclusionary business practices could include long-term, highly restrictive licensing agreements, ''loyalty'' programs, bundling requirements, and other restrictions that effectively could prevent competing cotton traits from coming to market.

While DOJ recognizes the serious anticompetitive effects of the acquisition, its PFJ fails to sufficiently remedy those effects and, therefore is not in the public interest.

II. The Acquisition Cements Monsanto's Current Monopoly Position in Biotech Traits and Will Give the Company Market Power in Cotton Seeds

No other company has experienced Monsanto's level of success in the development, production and distribution of biotech traits. It is undisputed that Monsanto enjoys large monopoly shares with respect to every commercially important trait in cotton, corn and soybean seeds. In 2006, over 96% of all cotton planted with biotech traits contained Monsanto traits, while 95% contained only Monsanto traits—the 1% difference is attributable to Monsanto traits that were combined with either Bayer CropScience or Dow's Phytogen traits. See Complaint, at ¶ 3. See also Bill Frecse, ''Cotton Concentration Report: An Assessment of Monsanto's Proposed Acquisition of Delta and Pine Land,'' International Center for Technology Assessment, February 2007, at 8–9.

DPL also has had unparalleled success, with a 50% national share of the U.S. cotton seed market. See Evren Ergin, ''DPL-Monsanto: Antitrust/Merger Analysis,'' Lehman Brothers, September 12, 2006, at 3. In the cotton-growing states of the South, where biotech traits are especially valued, DPL's dominance is even greater. It holds an 86% market share in the Southeast region, which includes the states of Florida, Georgia, Alabama, South Carolina, North Carolina, and Virginia, and a 73% market share in the MidSouth region, which includes the states of Louisiana, Arkansas, Mississippi, Tennessee, and Missouri. See ''Cotton Varieties Planted, 2006 Crop,'' USDA, Agricultural Marketing Service Cotton Program, September 22, 2006, available at *http://www.ams.usda.gov/cottonrpts/MNPDF/mp_cn833.PDF*. These market shares are slightly higher for DPL seeds that include biotech traits—an 87% share of traited cottonseeds in the Southeast and a 79% share in the MidSouth. See Complaint, at ¶ 4.

DPL's success reflects the high quality of its germplasm library and its proven ability to develop and commercialize new cotton biotech seed varieties. See id. at ¶ 26. As a result, DPL is the primary and most important vehicle for biotech trait developers to get competing cotton biotech traits to market. No other seed company can match DPL as a development partner because of DPL's extensive and unique library of elite germplasm—which is suitable across a full range of geographic regions—brand name loyalty, and industry-leading technical personnel with unmatched breeding expertise and capabilities. See Competitive Impact Statement, at ¶ II(B)(2). In fact, DPL claims to have three times the breeding capabilities of any other seed company in the world. See Tom Jagodinski, ''Delta and Pine Land'' (presentation, 2006 Merrill Lynch Agricultural Chemicals Conference, June 14, 2006 (Slide #3)). In 2006 alone, DPL spent almost $25 million, or 6% of revenues, on research and development. See Delta & Pine Land Co., Annual Report (Form 10–K)(November 14, 2006), at 42.

The Attorneys General are concerned that, if approved, the PFJ will enhance Monsanto's monopoly power in cotton biotech trait markets. Requiring Monsanto to divest itself of its current cotton seed company, Stoneville [1], as a condition to approve the acquisition, the United States only strengthens Monsanto's monopoly position by permitting Stoneville's 12% market share to be traded for DPL's market shares of 50–86%. Further, Monsanto secures complete control of DPL's breeding programs and seed sales. As a result, Monsanto could, and likely will, undermine DPL's collaborations with Monsanto's competitors to the detriment of U.S. cotton farmers and consumers.

III. The Acquisition Has Serious Anticompetitive Effects

The acquisition threatens to substantially reduce competition in the development, production and distribution of cotton biotech traits and seeds. DPL, in partnership with other companies, is a significant trait development competitor of Monsanto, which now will have the ability and incentive to eliminate, or at least significantly delay, DPL's trait development partnerships with competitors. See Competitive Impact Statement, at ¶ 11(A). As the United States acknowledges in its Complaint, DPL ''is an attractive partner that is well suited to quickly introduce new trait technologies due to the strength and breadth of its germplasm base and breeding programs as well as its technical service capabilities, know-how, brand recognition and market position.'' Complaint, at ¶ 26. No other seed company has the combination of assets and experience to foster trait development collaborations and bring to market competing cotton biotech traits and seeds.

Monsanto's acquisition of DPL likely will end DPL's development partnerships, eliminating the only near-term challenges to Monsanto's monopoly position in cotton biotech. DeltaMax, DPL's joint venture with E.I du Pont de Nemours and Company (''DuPont'') and Pioneer Hi-Bred International, Inc. (''Pioneer'') to develop a trait known as OptimumTM GATM, would provide cotton farmers a competitive herbicide-tolerant trait alternative for the first time. However, the Attorneys General understand that DuPont and Pioneer have exercised their right to terminate DeltaMax as a result of DOJ's decision to allow their competitor, Monsanto, to consummate its merger agreement with DPL during the pendency of the Tunney Act proceeding. DeltaMax's demise is a serious loss of potential competition that threatened Monsanto's dominance in herbicide-tolerant traits. Herbicide tolerance is considered the most important biotech trait by farmers in most states. See ''2007 Acreage Report,'' USDA, National Agricultural Statistics Service, at 25, available at *http://usda.mannlib.cornell.edu/usda/current/Acre/Acre-06-29-2007.pdf* (report generally shows that market penetration for herbicide-tolerant seeds is higher in most states than that of insect-resistant seeds). Because of DeltaMax's termination, Monsanto's cotton herbicide-tolerant trait dominance is assured for the foreseeable future. The Attorneys General are not aware of the current status of DPL's collaboration with Syngenta AG to develop an insect-resistant cotton biotech trait called VipCotTM, which would pose a competitive threat to Monsanto's almost complete monopoly of insect-resistant traits in cotton.

The acquisition also harms competition by eliminating DPL as the vehicle for biotech trait developers to commercialize and distribute competing cotton biotech traits. Once under Monsanto's control, DPL will lack the incentive to sell competing traits at the expense of Monsanto's monopoly biotech traits. With its 50–86% shares of the highly concentrated cotton seed market, DPL is the primary engine of biotech trait developers to bring competing new traits to market through finished seeds. Without an independent DPL, competing cotton biotech trait developers may not have sufficient non-DPL outlets to license their traits.

In addition, as DOJ acknowledged in its Complaint at ¶ 27, certain aspects of Monsanto's current license provisions to seed companies harm competitors by prohibiting combining, or ''stacking,'' of non-Monsanto biotech traits with Monsanto traits. The Attorneys General understand that Monsanto's licenses with regional corn and soybean seed companies, which, like DPL, are known as independent seed companies, contain similar restrictions. These restraints severely limit the ability of Monsanto licensees to deal with Monsanto competitors and appear to lack any legitimate business purpose. The PFJ addresses this competitive concern by requiring Monsanto to modify its biotech trait licenses with cotton seed companies to remove the stacking prohibitions. See Competitive Impact Statement, at ¶ 111(C). The Attorneys General applaud this remedy. Unfortunately, as discussed below, this remedy, along with the divestiture of Stoneville to Bayer

[1] With only four significant seed companies prior to the PFJ (DPL, Bayer CropScience, Stoneville and Dow's Phytogen Seed Company) and a handful of smaller seed companies, the cotton seed market is highly concentrated. Stoneville, which was recently acquired by Bayer CropScience in connection with the PFJ, has a 12% share of the cotton seed market, making it the third largest cotton seed company. See Evren Ergin, ''DPL-Monsanto: Antitrust/Merger Analysis,'' Lehman Brothers, September 12, 2006, at 3.

CropScience (''Bayer'') and the nonexclusive licensing of a small number of germplasm lines, will not restore the competition that will be lost as a result of Monsanto's acquisition of DPL.

If biotech trait developers are unable to commercialize and distribute to farmers the competing traits they develop, they will not be able to justify their significant research and development expenditures and will be deterred from entering the cotton biotech market. The lack of opportunities in cotton biotech may spill over to other important cash crops where Monsanto also enjoys a dominant position in biotech traits. The cottonseed traits that DPL is developing in partnership with Monsanto's competitors have numerous cross-crop applications. Denying biotech trait developers market opportunities in cotton will deprive them of the revenues required to sustain expensive research and development programs in other important crops, such as corn and soybeans. Knowledge that otherwise would have been transferable to other crops will be lost, putting other trait developers at a competitive disadvantage. Monsanto's domination in cotton also may increase its leverage over retailers, particularly national retailers who sell DPL cotton seed in the South, possibly making it even more difficult to compete effectively with the bundles Monsanto packages that include crop protection chemicals and seeds across multiple crops.

These anticompetitive effects are more significant today than in 1999, when DOJ blocked Monsanto's first attempt to acquire DPL. Biotech traits are more important and valued today than in 1999. DPL's market shares, particularly in the cotton-growing regions of the South, are even higher today. Compare ''Cotton Varieties Planted, 1999 Crop'' and ''Cotton Varieties Planted, 2006 Crop,'' USDA, Agricultural Marketing Service—Cotton Program. Unlike 1999, however, Monsanto's monopoly traits were about to face real and meaningful competition in the near future as a result of joint development partnerships that did not exist then. The harm to competition today is real and immediate, and regrettably, the PFJ does not remedy it.

IV. The PFJ Does Not Remedy the Anticompetitive Effects

In its Complaint, the United States acknowledges the significant anticompetitive effects that the acquisition will have on the development, production and distribution of cotton biotech traits and seeds. Complaint, at ¶¶ 37–42. The United States concludes that the acquisition violates the antitrust laws because it ''will eliminate competition between DPL and Monsanto for the development, breeding, and sale of traited cottonseed.'' Id. at ¶ 41. Nonetheless, the United States has agreed to settle its action against Monsanto and DPL by requiring Monsanto to (1) divest Stoneville to an approved buyer, which DOJ has subsequently approved to be Bayer, and (2) provide nonexclusive access to Stoneville of (a) twenty lines of elite DPL germplasm and (b) certain Monsanto cotton germplasm lines. See Competitive Impact Statement, at ¶ 111(A). The settlement fails to remedy the likely anticompetitive effects of the acquisition.

A. The Divestiture of Stoneville Fails To Preserve Meaningful Competition in Cotton

A divested Stoneville falls far short of replicating the assets and expertise that DPL offers. The United States has recognized that ''[a] company with a large collection of high quality, or elite, germplasm has a competitive advantage because the company has the ability to identify the best genetic material and use it in a wide variety of possible crossing combinations, resulting in a greater likelihood of developing a successful variety.'' Complaint, at ¶ 16. As DOJ acknowledges, DPL has ''over ninety years of germplasm development.'' Id. at ¶ 17. DPL also has ''the largest cotton germplasm collection, with by far the greatest track record of success in the important MidSouth and Southeast regions, and an extensive breeding program,'' and ''more breeding capabilities than any competitor.'' Id.

The new Bayer-Stoneville entity will have access to only 20 lines from DPL's extensive germplasm library, the largest collection of cotton germplasm in the United States. Complaint, at ¶ 17. Stoneville was first acquired by Monsanto in 1996, see Competitive Impact Statement, at ¶ II (B)(3), but then sold in 1999 and reacquired in 2005 as part of Monsanto's efforts to develop a cotton seed unit. See Complaint, at ¶ 32. The divestiture of Stoneville appears to conflict with DOJ's own Antitrust Division Policy Guide To Merger Remedies (''Policy Guide'') (Oct. 2004). Those guidelines make clear that ''[t]he Division favors the divestiture of an existing business entity that already has demonstrated its ability to compete in the relevant market.'' See id. at 12. As Monsanto's cotton seed unit, Stoneville has only a limited track record in demonstrating its ''ability to compete in the relevant market.'' In fact, the divested ''parts'' that the PFJ pieces together have never been operated as a unit and would require substantial reconfiguration. Even if Stoneville could operate as a single unit with the licensed parts, it necessarily will have to start from scratch to duplicate DPL's success in the breeding of commercial varieties—a process DOJ acknowledges takes at least eight to ten years. See Complaint, at ¶ 15. The time and expense required to establish the Bayer-Stoneville combination as a viable and effective partner for competing biotech trait developers necessarily precludes any real competition with Monsanto for a period of time that is well outside of the two-year window typically used by the federal competition authorities to define effective new entry under ¶ 12 of the 1992 Horizontal Merger Guidelines, jointly issued by DOJ and the Federal Trade Commission. In the meantime, Monsanto will use its head start in the development and distribution of cotton biotech traits to its competitive advantage.

Furthermore, it is clear that DPL's technology, infrastructure, breeding capabilities and expertise are significantly superior to Stoneville's. The PFJ does not remedy the disparity by providing the divested Stoneville with any of DPL's breeding expertise, personnel, facilities or development assets that the United States acknowledged made DPL an attractive development partner. See Complaint, at ¶ 26. In this respect, the PFJ is inconsistent with DOJ's Policy Guide, which provides that ''[a]n existing business entity should possess not only all the physical assets, but also the personnel, customer lists, information systems, intangible assets, and management infrastructure necessary for the efficient production and distribution of the relevant product.'' See Policy Guide, at 12. Without the breeding assets and personnel that have made DPL the partner of choice for biotech trait developers, a divested Stoneville cannot replace DPL's ability to bring to market biotech traits that can compete with Monsanto's monopoly varieties.

In addition, Stoneville has been divested to Bayer, a trait development competitor of Monsanto. Because of this, Stoneville can never duplicate DPL's unique position as an independent cotton seed company that can use its successful and high-quality germplasm to partner with several different biotech companies to develop viable competitive alternatives to Monsanto's monopolies in traits. Even if it were technically possible for a rival trait company to successfully develop a biotech trait that could compete against a Monsanto trait, it must have a seed vehicle with which to partner to commercialize the trait and bring it to market so that farmers could actually benefit from having the choice of which trait to buy. Stoneville will not have the motivation, as DPL did, to partner with outside trait developers since it is owned by a trait development company, so there will no longer be a feasible alternative to DPL's independence as a cottonseed company and a trait development partner.

Even apart from the loss of an independent cottonseed company, DOJ also implicitly recognizes that a divested Stoneville is not the equivalent of DPL by requiring Monsanto to provide Stoneville access to 20 lines of DPL germplasm. However, the availability of 20 lines of DPL germplasm does not ''restore competitive conditions the merger would remove.'' Policy Guide, at 4. The PFJ makes clear that Stoneville's access to those germplasm lines is non-exclusive. See Competitive Impact Statement, at ¶ III(A)(2). Thus, even post-acquisition, Monsanto retains the right to sell the most popular seeds from those lines and even preclude their use with non-Monsanto cotton biotech traits. This also is inconsistent with DOJ's Policy Guide, which recognizes that permitting a merged firm ''to retain access to the critical intangible assets may present a significant competitive risk.'' Policy Guide, at 16. Because the PFJ fails to enhance Stoneville's breeding capabilities, access to such lines will not challenge Monsanto's monopoly position, even with respect to any of those 20 lines.

B. Access to Identified Cotton Germplasm Ignores the Evolving Nature of Biotech Traits and Seeds

The PFJ's requirement that Monsanto provide access to certain lines of cotton germplasm lines does not remedy the

anticompetitive effects of the acquisition for yet another reason. The PFJ ignores the reality that elite germplasm is constantly being improved upon to enhance the effectiveness of the underlying traits to address evolving plant, soil, and other conditions that change over time. As a result, the best germplasm today becomes obsolete in a relatively short period of time. See generally declining market shares of existing germplasm lines as newer lines are introduced in ''Cotton Varieties Planted, 1999 Crop'' through ''Cotton Varieties Planted, 2006 Crop,'' USDA, Agricultural Marketing Service—Cotton Program. Thus, to stay competitive, cotton biotech trait developers must have access to new and improved lines of germplasm.

The availability of certain existing lines of cotton germplasm cannot replace the need for Monsanto's competitors to have ongoing access to improved germplasm. One of DPL's strengths has been its ability to continually develop new lines of elite germplasm. Once DPL falls captive to Monsanto's control, access by Monsanto's competitors to DPL's next generation of germplasm will terminate. With an overwhelming monopoly in biotech traits, Monsanto will have no incentive or obligation to make DPL's next generation of germplasm available to competitors. See Complaint, at ¶¶ 16–17.

In addition, the 20 lines of cotton germplasm that the PFJ licenses to Stoneville constitute only a very small subset of DPL's extensive germplasm library. Some of those lines are merely under development, and there is no guarantee that they will be commercially successful in the future. Further, the PFJ does not provide the divested Stoneville with any of DPL's facilities or personnel with expertise handling those lines. Instead, it allows Monsanto to retain access to those lines, as well as the facilities and expertise DPL has employed to develop them. Consequently, the availability of a limited number of cotton germplasm lines does not guarantee or enhance Stoneville's ability to effectively compete against Monsanto.

V. The Acquisition Potentially Allows Monsanto To Engage in Exclusionary Business Practices

The acquisition potentially allows Monsanto to engage in exclusionary behavior, which could include a series of acquisitions of independent seed companies and germplasm providers to enhance its monopoly position in both seeds and traits; long-term, highly restrictive licensing agreements that encourage the sale of Monsanto's biotech traits exclusively; licensing restrictions that prevent independent seed companies from combining Monsanto biotech traits with non-Monsanto traits; and bundling rebates on seeds, traits and chemicals to exclude competitors from retail distribution channels. These restrictions potentially could stymie innovation, limit product choices and result in higher prices. With DPL under its control, Monsanto will have the ability to foreclose competing cotton biotech traits from entering the cotton seed markets. Monsanto's monopolization of the cotton biotech trait market also may create an incentive to impose supra-competitive technology fees for seeds containing Monsanto's traits, which would eliminate any efficiencies farmers otherwise would realize from the merger or in a competitive cotton biotech trait market.

The Attorneys General are concerned that the acquisition of DPL may permit Monsanto to maintain and consolidate its monopoly position in biotech traits. The lack of viable competition in cotton traits, coupled with Monsanto's market power in the other seed trait markets, compels a closer examination of the potential anticompetitive effects of Monsanto's business practices in all markets.

VI. Conclusion

The PFJ fails to remedy the anticompetitive effects of the acquisition in the markets for cotton biotech traits. If approved in its present form, the acquisition will further cement Monsanto's monopoly in those markets with severe and unwarranted consequences for farmers and consumers. With Monsanto's huge head start, biotech trait developers will have no incentive to expend the necessary research and development costs that are required for the successful entry of competing traits and seeds. Current joint development efforts with DPL will terminate or stagnate—eliminating the only near-term opportunities for meaningful competition in cotton—innovation will be stifled, and cotton farmers and consumers will suffer from the lack of market choices and the imposition of supra-competitive product prices.

The adverse consequences of the acquisition also will extend beyond cotton. The loss of revenue that the acquisition will cause in cotton will impact the ability of trait developers to bring to market biotech traits in other crops, such as corn and soybeans. Research and development efforts investigating traits in cotton that could be developed and incorporated into other crops now will be lost.

The PFJ fails to effectively restore competition in the market for cotton biotech traits, and should be rejected.

Respectfully Submitted,

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Comments of the Attorneys General on Proposed Final Judgment in United States v. Monsanto Company, et al.

Respectfully submitted,

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Comments of the Attorneys General on Proposed Final Judgment in United States v. Monsanto Company, et al.

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Comments of the Attorneys General on Proposed Final Judgment in United States v. Monsanto Company, et al.

On Behalf of the Commonwealth of Kentucky

Respectfully submitted,

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Comments of the Attorneys General on Proposed Final Judgment in United States v. Monsanto Company, et al.

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Comments of the Attorneys General on Proposed Final Judgment in United States v. Monsanto Company, et al.

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Comments of the Attorneys General on Proposed Final Judgment in United States v. Monsanto Company, et al.

Sincerely,

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Comments of the Attorneys General on Proposed Final Judgment in United States v. Monsanto Company, et al.

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Comments of the Attorneys General on Proposed Final Judgment in United States v. Monsanto Company, et al.

Respectfully submitted,

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Comments of the Attorneys General on Proposed Final Judgment in United States v. Monsanto Company, et al.

Respectfully submitted,

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Comments of the Attorneys General on Proposed Final Judgment in United States v. Monsanto Company, et al.

Respectfully submitted,

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Comments of the Attorneys General on Proposed Final Judgment in United States v. Monsanto Company, et al.

Respectfully submitted,

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Attorney General of West Virginia, Office of the Attorney General, State Capitol, Charleston, WV 25305.

August 20, 2007.

Ms. Donna N. Kooperstein, Chief, Transportation, Energy & Agriculture Section, Antitrust Division, United States Department of Justice, 325 Seventh Street, NW., Suite 500, Washington, DC 20530.

Re: *United States* v. *Monsanto Company, et al., Case No. 1:07-cv.00992.*

Dear Ms. Kooperstein:

Preserving competition in agriculture biotechnology markets is essential for greater choice and lower costs to Texas farmers and consumers. The lack of competition in these markets hurts farmers and consumers, who wind up paying higher prices. Today, Texas farmers and consumers are already struggling in the face of rapid agricultural consolidation and concentration. The latest example of this dangerous trend is Monsanto's acquisition of Delta & Pine Land, which promises to strike a crushing blow to the Texas cotton industry. It is for this reason that we submit this letter and urge the court to reject the Department of Justice's ''Proposed Final Judgment'' regarding this acquisition.

Cotton is a critical thread in the fabric of the Texas and national economy. Texas is the #1 producer of cotton in the United States. Each year Texas farmers plant over 6 million acres of cotton seed—the 2006 crop had a value of over $1.4 billion. Cotton growers in Texas and throughout the country are increasingly reliant on biotechnology, which allows farmers to grow cotton resistant to certain insects and tolerant of certain herbicides. In 2007, 87% of cotton acreage in the U.S. was planted with biotech seed varieties. See United States Department of Agriculture, U.S. Farmers Plant Largest Corn Crop in 63 Years (*http://www.nass.usda.gov/Newsroom/2007/06_29_2007.asp*).

Monsanto currently enjoys monopolies in cotton traits. Monsanto controls approximately 96% of herbicide tolerant cotton traits and approximately 99% of insect resistant cotton traits. Monsanto has already used its dominant position to dramatically increase the prices farmers are paying for these traits. This ultimately leads to consumers paying higher prices for products containing cotton.

If Monsanto is permitted to acquire Delta & Pine Land, the largest cotton seed company in the world, there will be even more anticompetitive consequences for Texas cotton farmers and consumers throughout the country. First, Monsanto will shut out all competition in cotton traits because all of the competing cotton traits are being developed with Delta & Pine Land, which Monsanto will now control. Second, once it acquires Delta & Pine Land, Monsanto will control over 50% of the national cotton seed market and even higher percentages in key cotton growing areas such as the South Central and Southeast regions of the U.S. Given its dominance in cotton traits and cotton seeds, Monsanto will be able to effectively kill competition in cotton and leave farmers and consumers with no choice except the monopolist Monsanto's products.

The remedy devised by the Department of Justice to remedy the clear anticompetitive effects of acquisition will do little to protect farmers and consumers. Requiring Monsanto to divest a weak cotton seed company and approximately 20 lines of germplasm is entirely inadequate to replace the loss of an independent, thriving competitor to Monsanto in the development of biotechnology traits and a critical distribution channel for those traits.

With its acquisition of Delta & Pine Land, Monsanto is poised to enhance its position as an agricultural titan. This deal will significantly diminish competition and stifle innovation in the cotton biotech seed trait markets and cotton seed market, leading to higher prices for farmers and consumers. Because the Department of Justice's proposed final judgment will not restore much needed competition in cotton, it should be rejected.

Sincerely,

Heethe Burleson, On Behalf of the Associated Cotton Growers, Crosbyton, Texas.

Arvil Campbell, For the Texas Farmers Union.

Jeff Turner, On Behalf of the Willacy Co-op Gin, Raymondville, Texas.

Chris Breedlove, For Olton Co-Op Gin, Olton, Texas.

Glen Campbell, On Behalf of Lorenzo Co-Operative Gins, Inc., Lorenzo, Texas.

Johnny Shepard, On Behalf of Citizens Co-Op Gin, Shallowater, Texas.

Randy Arnold, Founder, High Plains Cotton Growers Association, Crosbyton, Texas.

Jonathan Hernandez, For the Texas Oaks Neighborhood Association, Austin, Texas.

Lynda Rodriguez, For the South San Antonio Chamber of Commerce, San Antonio, Texas.

Benny Robertson, Seed and Feed Supplier, Star Feed and Seed Supply, Spur, Texas.

Larry Thornbough, On Behalf of Trans-Pecos Cotton Association, Coyanosa, Texas.

Sid Brough, On Behalf of EdCot Co-Op Gin, Odem, Texas.

Glen Ivens, On Behalf of Cotton Center Farmers Co-Op Gin, Cotton Center, Texas.

Tom Byars, On Behalf of the Lockney Co-Op Gin, Lockney, Texas.

Bobby Moss, For the Fiber-Tex Co-Op Gin, Brownfield, Texas.

Charles Macha, United Cotton Growers, Levelland, Texas.

Glenn Klesel, On Behalf of Posey Gin, Slaton, Texas.

Scott LaRue, For the Blackland Prairie Gin, Deport, Texas.

August 27, 2007

Ms. Donna N. Kooperstein, Chief, Transportation, Energy & Agriculture Section, Antitrust Division, United States Department of Justice, 325 Seventh Street, NW., Suite 500, Washington, DC 20530.

Re: *United States* v. *Monsanto Company, et al, Case No. 1:07–cv–00992.*

Dear Ms. Kooperstein:

Monsanto's acquisition of Delta & Pine Laud promises to stifle innovation, limit choice for Wisconsin farmers and consumers, and ultimately drive prices higher.

The agricultural sector is already highly concentrated, including biotechnology traits where one company—Monsanto—controls monopoly trait shares in cotton, corn, and soybeans. By acquiring Delta & Pine Land, Monsanto is effectively removing its principal cotton trait competitor and positioning itself to limit farmer choice to Monsanto branded traits.

In addition, by acquiring Delta & Pine Land and its 50% market share of the cotton seed market, Monsanto will control not only cotton traits but cotton seeds. Permitting one company to be the dominant company in cotton traits and cotton seeds is just bad policy and increases the vulnerability of farmers and consumers by subjecting them to the whims of one company.

The Department of Justice's proposed consent decree regarding this acquisition offers little hope in terms of greater competition and increased choice for Wisconsin farmers and consumers. The consent decree, which requires Monsanto to divest Stoneville (with its limited market share) and a few lines of germplasm, does not even come close to replacing an independent Delta & Pine Land, and is inadequate to restore competition. Wisconsin Farmers Union therefore urges the Department of Justice to withdraw its consent decree or, if it does not do so, for the court to reject it.

Sincerely,

Susan Beitlich,
President.

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