



Genetically Engineered Rice: A Summary of the LL Rice 601 Incident¹

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Synopsis: Reports that genetically engineered rice entered the food supply chain surfaced this summer. The unapproved for export varieties, not surprisingly, engendered significant controversy, resulting in the filing of several lawsuits and disruption of the international rice trade. This article summarizes the history of the commingling, compares this incident with the previous StarLink litigation, and analyzes the impact on the rice futures market. Finally, this article suggests risk management strategies for other commodity growers, such as corn and soybeans, to mitigate the impact of potential commingling of their products with similar unapproved varieties.

Riceland Foods, the nation's largest rice cooperative, alerted Bayer CropScience (Bayer) in June 2006 of its discovery of genetically engineered rice in the 2005 rice harvest. Shortly thereafter, Bayer confirmed this finding and reported the results to USDA. At the time of Riceland's discovery, USDA had approved⁴ two varieties of genetically engineered rice for commercial release—LLRice06 and LLRice62. Bayer chose not to market these genetically engineered varieties, however, because growers were not interested in producing rice not yet approved for sale in major importing nations such as Japan and the European Union. Alarming, the variety discovered by Riceland in the 2005 harvest was neither LLRice06 or LLRice62, but LLRice601, a variety that USDA had not previously approved for commercial release and that was last field tested in 2001.⁵ USDA announced Riceland's discovery on August 19, 2006, precipitating an immediate decline in rice futures, the pulling of U.S. rice from European grocery shelves and the filing of at least three lawsuits by disgruntled growers who claim to have lost sales.⁶

The court decision in, *In re StarLink Corn Prods. Liab. Litigation*, 212 F.Supp. 2d 828 (N.D. Ill, 2002), and resolution of the pending appeal in *Hoffman v. Monsanto Canada*, 2005

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⁴ USDA "approval" for commercial release is actually a process of deregulation and jurisdictional waiver based on a finding by the agency that the regulated product is no longer a potential plant pest under the Plant Protection Act, 7 U.S.C. § 7711(c). See also 7 C.F.R. § 340.6. The result of the deregulation process is an "approval" for commercialization of a genetically engineered variety without further USDA oversight. EPA and FDA, however, may place other restrictions on cultivation or food processing of the variety.

⁵ The Financial Times, on October 19, 2006, reported detection in France of the LLRice62 variety, in addition to LLRice601. The article further noted detection of the unapproved Bt63 rice variety in Chinese products on supermarket shelves in Germany.

⁶ *Geeridge Farm, Inc. v. Bayer CropScience L.P.*, Case No. 4-06-CV-01079GH, Eastern District of Arkansas; *Parson v. Bayer CropScience US*, Case No. 4-06-CV-01078JLH, Eastern District of Arkansas; *Shafer v. Riceland Foods, Inc.*, filed in Lonoke County Circuit Court (Arkansas).



SKQB 225, could play a significant role in the LLRice601 cases. Perhaps the more important lesson from the LLRice601 debacle, however, is the potential failure of other commodity coexistence regimes, such as those currently in place to protect soybean export markets⁷ and conventional wheat growers.

This article provides a brief timeline of events related to the LLRice601 discovery constructed from news reports and court filings. Section two compares the LLRice601 and StarLink commingling episodes and examines the potential application of the StarLink case to the LLRice601 lawsuits. A brief impact analysis of the futures price of rice on the Chicago Board of Trade follows. The article concludes with a discussion of the measures taken by industry to minimize the price impact of the LLRice601 event and how these strategies could be employed in a similar crisis.

I. The Emergence of Genetically Engineered Rice

In December of 1998, Aventis CropScience (Aventis) began field testing the LLRice 601 variety at a University of Puerto Rico field station. Aventis conducted subsequent experiments in Louisiana, Mississippi, Arkansas and Texas. It did not seek regulatory approval for the commercial release of LLRice601, but did obtain approval from USDA/APHIS for two nearly-identical genetic modification events, LLRice06 and LLRice62.⁸ All three genetic events created rice resistant to Aventis' glufosinate herbicide, which it marketed under the brand name "Liberty." As field trials were wrapping up, Bayer purchased Aventis CropScience and formed Bayer CropScience.

Although Bayer did not seek USDA approval for commercialization of LibertyLink® rice, in January of 2006, Riceland discovered trace amounts of genetically engineered DNA in the 2005 long-grain rice crop harvested in the Midwest. According to Bill Reed, Riceland VP of Public Affairs, Riceland initially believed that the genetically engineered material was from "residual fragments of genetically engineered corn or soybeans resulting from use of common public transportation systems."⁹ Because the genetically engineered material was present in such small quantities, a genetics lab was unable to determine its origin. Riceland collected additional samples in May, and "[a] significant number tested positive for the Bayer trait."¹⁰ Bayer confirmed that the genetically engineered material was LLRice601. To date, LLRice601 has not

⁷ Some commodity groups, such as the American Soybean Association, have cooperative agreements in place with seed breeders to prevent commingling of commodity soybeans with unapproved for export varieties. Unapproved for export varieties of soybeans, however, do exist and the extent to which they could, or have, entered the soybean breeding stock, or are otherwise commingled during post-harvest activities, is an issue deserving continued attention.

⁸ AgrEvo USA Co, Availability of Determination of Nonregulated Status for Rice Genetically Engineered for Glufosinate Herbicide Tolerance, 64 Fed. Reg. 22595 (April 27, 1999).

⁹ Bill J. Reed, *Statement Regarding Genetically Engineered Material in Rice* (August 18, 2006), available at http://www.riceland.com/about/ge_docs/Statement%20Regarding%20Material%20in%20Rice%20Updated.pdf#search=%22Statement%20Regarding%20Genetically%20Engineered%20Material%20in%20Rice%20%22 (also on file with the authors).

¹⁰ *Id.*



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been found in California, which primarily grows short and medium-grain rice. Moreover, California has a strict rice licensing program to restrict the use of experimental, genetically modified varieties.¹¹

The USDA learned of the incident on July 31, 2006 and on August 18, 2006, after conducting a safety review and approving a method to test for LLRice601, announced that genetically engineered rice was present in the food supply, but that the product posed no known health or environmental risks. Japan immediately banned long-grain rice imports from the United States and the European Union implemented a testing regime for all rice from the United States. Within a matter of days of the announcement, the first lawsuits were filed against Bayer and Riceland. Based on Bayer's assertion that it is similar to the previously deregulated LLRice06 and LLRice62 the USDA has approved LL Rice 601 for human consumption, although Bayer does not intend to release liberty-link rice commercially.¹²

How did LLRice601 enter the food supply? The source of the commingling is unknown, and one can only speculate as to the cause of the event. According to a Louisiana State University press release, foundation seed for a rice variety known as Cheniere has tested positive for LLRice601. Perhaps the seed stock may have been contaminated. It is possible that volunteer¹³ LLRice601 may have been the source of such contamination. There are a number of events that could lead to the emergence of a volunteer. The experimental LLRice601 crop may not have been devitalized¹⁴ properly. Although USDA has stringent requirements for devitalizing experimental crops, a recent audit of USDA's Animal and Plant Health Inspection Service (APHIS) found that APHIS has not adequately established timeframes for this essential step in field testing.¹⁵ Because rice is self-pollinating, contamination due to pollen drift between fields is unlikely. A volunteer within the same field, however, could cross-pollinate with new, non-genetically engineered plantings. In addition, birds could have transported LLRice601 grain to nearby fields, or flooding, a common practice in rice cultivation, may have transferred the genetically engineered variety to another field. On the other hand, simple human error could have resulted in grains of LLRice601 accidentally mixing with Cheniere foundation seed during seed processing.

II. LLRice601: Another Round of StarLink-Type Litigation?

As noted above, farmers have filed at least three lawsuits as a result of this commingling. Some potential similarities, from a litigation perspective, exist between LLRice601 and the

¹¹ See A. Bryan Endres, *Coexistence Strategies in a Biotech World: Exploring Statutory Grower Protections*, 13 MO. ENV'T L. & POL'Y REV., 206-240 (2006) (discussing California's rice licensing program).

¹² See Bayer CropScience, Availability of an Environmental Assessment and a Preliminary Decision for an Extension of a Determination of Nonregulated Status for Rice Genetically Engineered for Glufosinate Herbicide Tolerance, 71 Fed. Reg. 53076 (Sept. 8, 2006).

¹³ A volunteer is the undesired germination of grain from the previous year's crop.

¹⁴ Devitalization is the process whereby seeds and other material capable of propagation are destroyed.

¹⁵ USDA, *Audit Report: Animal and Plant Health Inspection Service Controls Over Issuance of Genetically Engineered Organism Release Permits, Audit 50601-8-Te*, (December, 2005).



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StarLink corn saga (another glufosinate tolerant genetically modified organism). The ultimate resolution of these rice lawsuits may rest, in part, on StarLink precedent.

In 1998 and 1999, Aventis received EPA approval, subject to several restrictions, to market the StarLink variety of corn seed. As a condition of the permit, EPA required buffer zones and ultimate segregation of the harvested grain into non-human consumption supply chains. In 2000, numerous reports surfaced that human food products had tested positive for the Cry9c protein found in the StarLink corn variety. Manufacturers issued recalls for products containing corn and fear of contamination convinced some food processors to replace domestically raised corn with imports. The market price for corn fell and many members of the supply chain required testing of all corn shipments for the presence of StarLink DNA.¹⁶

In ruling on defendant's motion to dismiss the complaint in StarLink, the court held that plaintiffs adequately alleged that Aventis had a duty to ensure that the variety did not enter the human food supply (i.e., a duty to abide by EPA's permit restrictions) and that Aventis breached several of these obligations, which caused plaintiffs' corn to be contaminated.¹⁷

Complaints filed as a result of the commingling of LLRice601 generally follow this same duty-breach-causation analysis. Plaintiffs in the *Geeridge Farms* suit allege that Bayer had a regulatory duty (Count I) as well as a general duty (Count II) to test, grow, store, transport and dispose of the LLRice601 variety in a manner that would not result in contamination of the rice market. Bayer allegedly breached those duties by failing to adequately oversee or control test growers, which directly resulted in damages to the plaintiffs.

As a result of Bayer's alleged negligence, a testing and import substitution regime similar to that invoked in response to StarLink is now occurring with respect to domestically produced long-grain rice. Immediately after publicly announcing the commingling of LLRice601, the European Union and Japan implemented a testing regime for all U.S. produced rice. Imports found to contain traces of LLRice601 must be destroyed or shipped back to the exporting country.¹⁸

In the StarLink decision, the court identified four possible stages in which StarLink varieties could have entered the human food supply chain: (1) farmers unknowingly purchased seed containing traces of the StarLink variety; (2) pollen drift; (3) post-harvest commingling with StarLink during transportation or storage; and (4) commingling during food processing. Those farmers suffering an economic loss as a result of unknowingly purchasing seed contaminated with the StarLink variety were barred from recovery in tort by what is known as the "economic loss doctrine." The court reasoned that the StarLink Plaintiffs in that situation

¹⁶ See 212 F. Supp. 2d at 835 (describing impact on corn market).

¹⁷ *Id.* at 843.

¹⁸ See Anthony Fletcher, FSA Moves to Block Illegal GM Rice, Food Quality News.com (Sept. 7, 2006); Japan Widens Testing of U.S. Rice, Informa Economics Policy Report (Oct. 3, 2006); Rice Farmers Hold Tight to Crop after GMO Woes, Informa Economics Policy Report (Sept. 20, 2006).



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could have negotiated with seed suppliers for contractual protection from seed contamination, but did not, and therefore were barred from recovering pure economic losses.¹⁹ In contrast, those farmers suffering a *physical injury* to their crops via pollen drift or post-harvest commingling could recover.²⁰

At least some farmer-plaintiffs in the LLRice601 litigation may be able to overcome the economic loss doctrine's bar to recovery in tort if they incurred losses as a result of post-planting contamination. For example, pollen drift or post-harvest commingling might not be subject to the economic loss doctrine's bar to tort recovery because *StarLink* established that this is a physical-type injury to property (the crop) as opposed to a pure economic loss. However, to the extent any farmer-plaintiff purchased seed contaminated with unapproved LLRice601 varieties, the economic loss doctrine would apply as the farmer could have contracted away the risk.²¹

Similar to the *StarLink* case, multiple Liberty-Link suits likely will be combined into a single lawsuit.²² One strategy that Bayer has chosen to defend this lawsuit is an affirmative defense. Such a defense does not deny the truth of the allegations against the defendant but gives some other reason (as insanity, assumption of risk, or expiration of the statute of limitations) why the defendant cannot be held liable. Bayer has claimed that farmers are at least partially at fault for the commingling, and therefore not entitled to compensation. The Federal Rules of Civil Procedure require parties to plead all affirmative defenses early in proceedings. Thus, while it seems troubling to claim that farmers are negligent in this case, Bayer must make the claim now or lose its opportunity to do so. At this stage in the proceedings, Bayer's claim that farmers were negligent is likely just legal maneuvering.

III. Price Impacts & Concluding Observations Regarding Risk Management Strategy

Figure 1 (below) shows the volatility of the November Rice futures contract after USDA's announcement. The price of rice dropped sharply, but rebounded, closing at \$9.665 on September 29, 2006. The financial impact on rice farmers, therefore, was brief in comparison to *StarLink*. Only those producers that sold rice between August 18 and September 15 would have experienced the sharp price drop. Even with the large decline, the 2006 price remained above 2005 levels. A producer that chose to store rice until the price recovered, only would have incurred storage costs. Any long-run price impact, however, is unclear, particularly if other countries erect significant export barriers to U.S. rice or product sourcing shifts away from

¹⁹ 212 F. Supp. 2d. at 842.

²⁰ *Id.* at 842-43.

²¹ Growers may be able to recover to the extent the seed seller offered implied or express warranties. In addition, "pass-through" liability may flow from the farmer back to the seed seller/developer, to the extent the farmer is held liable for delivering an "impure" crop. See A. Bryan Endres, *Revising Seed Purity Laws to Account for the Adventitious Presence of Genetically Modified Varieties: A First Step Towards Coexistence*, 1 J. of Food L. & Pol'y, 131, 154 (2005) (discussing seed warranties).

²² For a partial list of the pending lawsuits, see <http://www.llrice601contaminationlitigation.com/caseinformation.html>.



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domestically produced long-grain rice, either of which could lead to lower prices for U.S. producers.

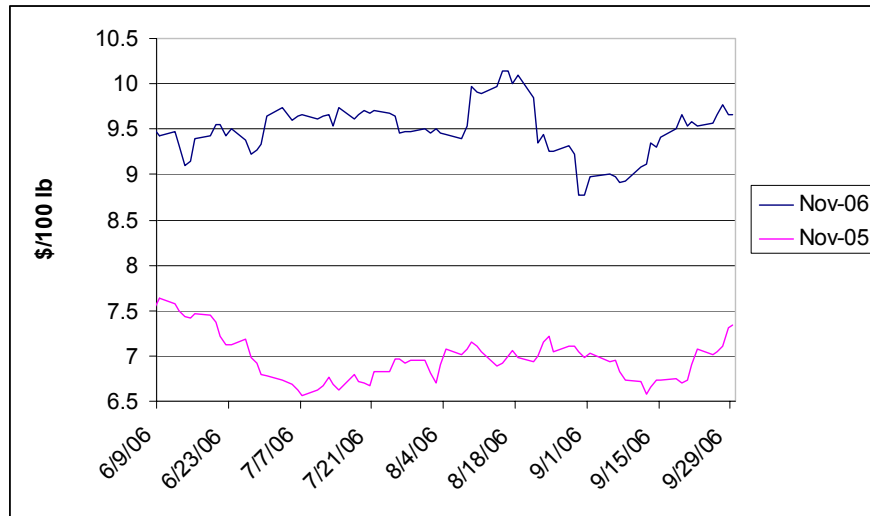


Figure 1, November Rough Rice Futures Contract

The coordinated actions of the rice industry and USDA may have mitigated the price drop and facilitated price recovery. Riceland and Bayer both conducted rigorous testing to verify that they had discovered genetically modified rice, instead of trace amounts of other genetically engineered crops. The USDA conducted a safety review and verified Bayer's testing protocol before making Riceland's discovery public. This allowed USDA to assure consumers and importing nations that LLRice601 posed no known health or environmental dangers. Similar methods of private-public coordination could be employed in cases of future commingling.

Developing a reliable test for genetic engineering events is perhaps the single most important tool for mitigating price risks, especially for crops that rely heavily on an export market. Now that a test for LLRice601 has been developed, nations can test rice shipments prior to export, rather than enacting blanket bans on all long-grain rice imports. Perhaps the ultimate lesson for developers of genetically engineered varieties is that they should submit a detection test for approval *ex ante* for all field tested varieties. Additional measures could also include periodic audits of foundation seeds to prevent widespread contamination.

In the wake of the LLRice601 discovery, the supply chain may have to be tested (and, if necessary, segregated) for unauthorized varieties prior to export. Who should bear the cost of this testing (farmer, elevator, Bayer CropScience) is another issue. Although Bayer currently is paying for testing, it is unclear whether this will continue once USDA approves the variety for commercial release.



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In sum, all commodity growers and leadership within commodity groups should be aware of, and plan for, possible coexistence failures. Both ends of the supply chain—farmers and customers—rely on these coexistence measures. Moreover, consumer and regulatory acceptance of new genetic engineering events world-wide depends upon successful coexistence. In an effort to prevent commingling in the future, the USA rice federation has developed a list of recommendations that include the establishment of a standard seed testing protocol. USA Rice also recommends that Cheniere rice seed should not be sold in 2007. First points of delivery would perform random testing of rice supplied by farmers, and should require farmers to produce certificates indicating that LibertyLink traits were not present in the seed. In addition to these seed breeder-focused controls, USA rice also recommends that an industry-wide education and information system be established. Similar proactive steps could be implemented by other commodity groups as a preventative measure.