



Ready or Not, Genetically Engineered Crops Explode on Market

USDA allows new GE crops over objections of growers, environmentalists, manufacturers, and retailers

By Stephanie Davio and Jay Feldman

In a decision that has outraged organic and conventional alfalfa farmers, as well as environmental, consumer, grower, food manufacturers, and retailer groups, the U.S. Department of Agriculture (USDA) announced on January 27, 2011 its plans to fully deregulate RoundUp Ready (glyphosate-tolerant) genetically engineered (GE) alfalfa. This decision follows the agency's completion of a court-mandated Environmental Impact Statement (EIS), which fails to consider pesticide resistance, recognize that GE contamination or organic and conventionally grown crops present a huge problem, and prove that "coexistence" between deregulated GE alfalfa and non-GE alfalfa is likely or possible.

There is general concern that widespread contamination will result from the planting of GE alfalfa, the fourth largest agricultural crop in the U.S., which has been prohibited by a U.S. District court decision since 2007. The Center for Food Safety, seed growers, Sierra Club, Beyond Pesticides, and others sued USDA in 2006 (*Geertson Seed Farms, et al v. Johannns*) because of the department's failure to evaluate the environmental effects of GE alfalfa under the *National Environmental Policy Act* (NEPA). USDA allows GE crops under the *Plant Protection Act* (PPA), which authorizes the department to restrict the introduction of "plant pests." Court decisions have found that compliance with PPA does not release USDA from its duty to conduct an EIS. USDA and the White House have been under pressure from the manufacturer of the seed, Monsanto, and supporters of the product, which have stockpiled the GE seed since the court-ordered ban in 2007 in anticipation of a pro-GE USDA decision. Analysts have indicated that the germination quality and viability of the seed would have been threatened if it is not planted this spring.

Background on Genetic Engineering

Genetically engineered seeds and crops, also referred to as genetically modified organisms (GMO), are touted by chemical manufacturers as a way to reduce pesticide usage, increase disease resistance, and improve crop yields. This technology is not a panacea to reduce pollution while feeding the world, however; GE crops that are currently available are either resistant to herbicides, thus increasing herbicide usage, or are engineered to produce their own pesticide, such as the biological pesticide *Bacillus thuringiensis* (Bt). GE crops are also known to contaminate conventional non-GE and organic crops through "genetic drift" and take a toll on the

Genetic Drift

Pollen from GE crops can potentially drift and wreak havoc on both the surrounding ecosystem and for organic and non-GE farms. A study presented to the Ecological Society of America in August 2010 shows that GE canola grows like an invasive plant along roads in North Dakota. Scientists from the University of Arkansas found that as much as 80% of the wild canola they sampled along over 3,000 miles of highways and roadsides was genetically engineered to be resistant to glyphosate. If organic farmers' crops become polluted with GE pollen, they may be subject to loss of their organic certification and financial losses. Because of GE pollen drifting from a neighboring farm, non-organic farmers have been accused of using GE crops without paying for them. For instance, a Canadian canola farmer was sued by Monsanto for patent infringement after the company allegedly found their GE crops on his property. The farmer says he has never planted Monsanto's seeds.



Because of genetic drift contamination, organic farmers and public health advocates are concerned that GE alfalfa could threaten the availability of organic milk.

environment as a result of increasing insect and weed resistance to the pesticides use, contaminated waterways, and adverse affects to pollinators and other non-target organisms.

RoundUp Ready crops, which are genetically engineered to be resistant to Monsanto's best selling herbicide RoundUp (active ingredient glyphosate), have been key to Monsanto's profits, but not without environmental costs. Currently marketed RoundUp Ready crops include soy, corn, canola, cotton, sugar beets, and now alfalfa. Alfalfa, as the nation's fourth most widely grown crop,

is planted on over 20 million acres and is the country's third most valuable with a worth of about \$8 billion per year (not including the value of final products, such as dairy). It is primarily used as feed crops for dairy cows and beef cattle, as well as pork, lamb, and sheep. It's not just for livestock -some vegetable farmers use the hay as mulch and alfalfa meal as a beneficial soil amendment. Alfalfa sprouts constitute an important sector of the salad market and alfalfa also plays a major role in honey production.

The report, *Who Benefits from GM Crops?* (Friends of the Earth International, 2010), examines industry claims and finds that genetically engineered crops actually increase carbon emissions, while failing to feed the world. There is still not a single commercial GE crop with increased yield, drought-tolerance, salt-tolerance, enhanced nutrition, or other beneficial traits long promised by biotech companies. GE crops' resistance to glyphosate enables the use of the herbicide during the growing season

without harming the crop itself. With about 100 million pounds of RoundUp applied to U.S. farms and lawns every year, glyphosate is now the number one herbicide in the United States. This has serious implications for public health and the environment, as glyphosate has been linked to cancer, reproductive effects, kidney and liver damage, and skin irritation; it is neurotoxic and toxic to fish and other aquatic organisms. Since increased herbicide usage has also led to resistant varieties of "superweeds," it is not surprising the weeds treated in GE fields are showing resistance to glyphosate.

GE in U.S. food production

- **Corn:** 86% of corn planted in the U.S. 2010 was genetically engineered to either be insect resistant (Bt), herbicide resistant, or both. The states in which this figure was taken from represents 85% of all corn planted acres in the U.S.
- **Soy:** 93% of soybeans planted in 2010 was genetically engineered to either be insect resistant (Bt), herbicide resistant, or both. The states in which this figure was taken from represents 88% of all soybean planted acres in the U.S.
- **Canola Oil:** 90% of U.S. and Canadian canola crop is genetically engineered to be herbicide resistant.
- **Cotton (Cottonseed Oil):** 93% of cotton planted in 2010 was genetically engineered to either be insect resistant (Bt), herbicide resistant, or both. The states in which this figure was taken from represents 92% of all soybean planted acres in the U.S.
- **Beet Sugar:** 95% of the planted area for sugar beets in the 2009/10 crop year were genetically modified to be herbicide resistant seed varieties.
- **Papayas:** Grown in Hawaii to be resistant to ringspot virus.



Decision to Deregulate

Though USDA completed the court-mandated EIS, the document, according to environmental analysts, fails to take into account several scientifically-validated environmental concerns, such as the indiscriminate nature of GE gene flow in crops, a heavy reliance on faulty data, and a high degree of uncertainties in making safety determinations. It also overlooks the problem of herbicide resistant weeds, as well as the widespread corruption of conventional seed varieties by GE strains (such as occurred with StarLink corn and LibertyLink rice). Ignored are documented cases of economic injury to farmers and markets. And, there is no mention at all of possible health consequences or uncertain health outcomes from eating GE crops, despite the fact that long-term health effects of consuming GE food are still largely unstudied and unknown.

Organic at Risk

GE crops present a unique risk to organic growers. Wind-pollinated and bee-pollinated crops, such as corn and alfalfa, have higher risks of cross pollination between GE crops and unmodified varieties. Currently, no provision exists to effectively protect organic farms from contamination, although EPA has required “refuges” or non-GE planted barriers around sites planted with GE crops.

GE Crops Increase Chemical Dependency

USDA's EIS fails to take into account the documented increase in RoundUp-resistant “super weeds” that is requiring the use of highly toxic herbicide cocktails for weed control on GE-planted farms. In a report published in 2009, analysts found that GE crops have been responsible for an increase of 383 million pounds of herbicide use in the U.S. over the first 13 years of commercial use of GE crops (1996-2008). The primary cause of the increase, according to the report, *Impacts of Genetically Engineered Crops on Pesticide Use in the United States: The First Thirteen Years* (Organic Center, 2009), is the emergence of herbicide-resistant weeds. Scientists at the Pan-American Weed Resistance Conference last year gathered to discuss the increasing number of documented cases of glyphosate resistance, and the possibility that the broadscale

use of the herbicide would “be driven to redundancy in the cotton, corn and soybean belt.” To combat this, Monsanto is already in the process of commercializing dicamba-resistant GE crops, such as soybeans. The dicamba tolerance trait is expected to also be stacked with the glyphosate-resistant trait, which will result in the sale of more pesticide product.

Future of Genetic Engineering

On February 4, 2011, about one week after the decision to deregulate alfalfa, APHIS issued its decision to allow the U.S. sugar beet industry to continue growing Monsanto's RoundUp Ready GE sugar beets, despite the fact that the decision violates many environmental laws. Like GE alfalfa, GE sugar beets are genetically engineered by Monsanto to tolerate repeated applications of that company's weed killer RoundUp, or glyphosate.

Sugar beets are a fairly limited crop, planted on a little over one million acres, mainly in northern states, and worth approximately \$1 billion. Sugar beets account for roughly half of the American sugar supply, with the rest coming from sugar cane. GE sugar beets accounted for more than 90 percent of the sugar beets grown last year, and some farmers say there might not be enough non-engineered seed available to satisfy demand. Without a favorable decision, the government projected a possible 20 percent reduction in American sugar production. As a result, USDA was under pressure to allow the genetically engineered beets to be grown, and to do so in time for the spring 2011 planting season before the seeds would expire, and result in heavy financial losses for Monsanto.

APHIS conducted an environmental assessment (EA) that it published in November 2010. The EA evaluated a range of options, including authorizing production of GE sugar beets under APHIS permit conditions. Without completing an EIS, APHIS concluded that the GE sugar beet root crop, when grown under APHIS' “imposed conditions,” can be partially deregulated without posing a plant pest risk or having a significant effect on the environment.



The National Organic Coalition's Seven-point plan:

National Organic Coalition (NOC) is a national alliance of organizations working to provide a "Washington voice" for farmers, ranchers, environmentalists, consumers and progressive industry members involved in organic agriculture. The coalition seeks to protect the stringency and integrity of the national organic standards. Prior to any de-regulation of new genetically-engineered crops, NOC believes that a GE contamination plan is essential to protect all non-GE crops. At a minimum, the following seven points must be addressed transparently and fairly (for all stakeholders involved).

1. Establish a USDA Public Breeds Institute to ensure that the public has access to high quality non-GMO breeds and germplasm.
2. Create a Contamination Compensation Fund funded by GMO patent holders, to provide immediate assistance to persons contaminated by GMOs, from seed to table.
3. Complete elimination of deregulated GM crop status, including prior deregulations, with on-going oversight and public evaluation of compliance and enforcement.
4. Conduct comprehensive, independent, longitudinal studies on the health, environmental, and socio-economic impacts of GMOs, prior to GM crop approvals.
5. Prohibit the growing of promiscuous GM crops that are likely to cause GMO contamination.
6. Prevent food security risks associated with the concentration of our food system in the hands of a few companies.
7. Institute an immediate labeling protocol for all GM crops, products, and ingredients.



This conclusion is at sharp odds with earlier court rulings and the views of growers of organic and non-GE crops, who will likely see their crops contaminated by the GE sugar beets, threatening their livelihoods and the ability of farmers and consumers to choose non-GE foods. Prior to making any further decision on the petition for a full deregulation of GE sugar beets, APHIS is developing an EIS which it expects to complete by the end of May 2012.

In 2008, the Center for Food Safety, Organic Seed Alliance, High Mowing Organic Seeds, and the Sierra Club sued USDA for deregulating

Monsanto's GE sugar beets without complying with NEPA's requirement of an EIS before deregulating the crop. In August 2010, the federal court banned the crop until USDA fully analyzed in an EIS the impacts of the GE plant on the environment, farmers and the public. Three weeks later, despite the court's ruling, and without any prior environmental analysis, USDA issued permits to seed growers to again grow the genetically modified sugar beets. The groups again sued USDA. In November 2010, the court granted the plaintiffs' motion for a preliminary injunction and ordered the seed crop destroyed. However, a federal appeals court reversed the decision in February 2011, saying that the groups had not shown that the seedlings were likely to contaminate natural sugar beets.

A formal 60-day notice of intent to sue the agency concerning its decision to allow unrestricted deregulation of GE alfalfa was filed on February 7, 2011 by the Center for Food Safety, Beyond Pesticides, Sierra Club, Cornucopia Institute, and others. This officially notifies USDA's Animal and Plant Health Inspection Service (APHIS) of the groups' intent to sue pursuant to the citizen suit provision of the *Endangered Species Act* (ESA), citing APHIS' violation of Section 7 of the ESA in failing to ensure that the deregulation of GE alfalfa is not likely to jeopardize threatened or endangered species and their habitat. According to Section 7, APHIS must consult with the U.S. Fish and Wildlife Service (FWS) to ensure that agency actions do not impact threatened or endangered



species. The notice charges that there is no evidence that APHIS consulted with FWS prior to its decision to deregulate GE alfalfa; APHIS unilaterally determined that there would be “no effect” on endangered species.

So what can consumers do?

A coalition of organic companies and environmental organizations, including Beyond Pesticides, opposes USDA’s GE alfalfa decision. On January 31, 2011, the coalition released an open letter and call to action on the USDA’s decision to deregulate GE alfalfa, allowing its unrestricted cultivation and threatening organic and non-GE conventional farmers. It sets a precedent for future deregulation of GE crops. The letter encourages individuals to write to President Obama opposing the decision and asking that the administration reconsider its position.

Join the coalition of those opposing the decision, including upcoming National Pesticide Forum keynote Maria Rodale (CEO, Rodale, Inc. and author of *Organic Manifesto*), National Organic Coalition, Center for Food Safety, Organic Trade Association, Organic Valley, Stonyfield Farm, and more. Call or email President Obama and

USDA and tell them you oppose their decision to deregulate GE alfalfa or GE sugar beets. Ask the Administration to reconsider its position:

President Obama

Phone: (202) 456-1111

Email: <http://www.whitehouse.gov/contact/>

USDA

Phone: (301) 851-2300 and record your comments

Email: biotechquery@aphis.usda.gov

Currently, there are no regulations requiring GE foods to be labeled as such. The best way for consumers to avoid GE foods is to choose organic products. Organic agriculture embodies an ecological approach to farming that does not rely on synthetic fertilizers, genetically engineered organisms, antibiotics, sewage sludge, irradiation, or most toxic pesticides. For more information on why organic agriculture is the best choice for you, farmworkers, and the environment see Beyond Pesticides’ *Eating with a Conscience* guide, www.EatingWithAConscience.org.

Genetically Engineered Alfalfa Timeline

June 27, 2005 – U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) announced its determination to grant nonregulated status to GE Alfalfa.

February 16, 2006 – The Center for Food Safety, environmental organizations, and alfalfa farmers files a lawsuit (*Geertson Seed Farms, et al. v. Johanns*) in the Northern District of California challenging the USDA’s deregulation determination. The complaint asserts that in making its determination the USDA violated the *National Environmental Policy Act* (NEPA) and the *Plant Protection Act* (PPA). The suit asks that the court rescind the USDA’s deregulation determination until the agency has completed a full environmental review of the impacts commercialization of genetically engineered alfalfa presents to the environment.

February 13, 2007 – U.S. District Judge Charles Breyer rules that USDA violated federal environmental law by failing to conduct an Environmental Impact Statement (EIS) on GE alfalfa seeds before deregulating them in 2005.

March 12, 2007 – Judge Breyer orders a preliminary injunction, immediately halting seed sales and barring farmers who have already purchased the GE alfalfa seed from planting it after March 30.

May 5, 2007 – Judge Breyer orders a complete EIS and bans further planting of GE alfalfa until USDA can confirm the seeds’ safety. Judge is-



sues permanent order stating that alfalfa is once again a regulated article, requiring an APHIS permit for future plantings. Forage Genetics must supply all known alfalfa seed production locations for public disclosure.

September 2, 2008 – U.S. Court of Appeals Judge Mary M. Schroeder upholds the ban on planting GE alfalfa pending a full EIS. The court finds that the irreversible harm to growers and consumers wanting non-GE alfalfa far outweighs the financial hardships to Monsanto and Forage Genetics and their growers. Beyond Pesticides is a co-plaintiff in the lawsuit.

June 25, 2009 – U.S. Court of Appeals for Ninth Circuit re-affirms previous decision to uphold the nationwide ban of planting GE alfalfa pending a full EIS.

September 21, 2009 – Beyond Pesticides, joined by 32 other groups and individuals, submits comments to U.S. Environmental Protection Agency (EPA) showing new and emerging science illustrating that glyphosate and its formulated products (including RoundUp) pose unreasonable risk to human and environmental health, and as such should not be considered eligible for continued registration.

September 23, 2009 – On a related topic, a Federal Court rules that the approval of GE “RoundUp Ready” sugar beets was unlawful, ordering USDA to conduct a full EIS. *Center for Food Safety v. Vilsack*, No 08-00484 JSW (N.D. Cal. 2009).

December 14, 2009 – USDA announces the availability of a Draft EIS which preliminarily concludes that there is no significant impact to the human environment due to granting non-regulated status to GE alfalfa. Brushing aside the concerns of organic alfalfa growers, consumers, and environmentalists, this draft EIS ignores the new reports and studies that demonstrate the many environmental and health consequences that GE crops cause. USDA argues for non-regulated status of GE alfalfa, stating that the economic gains of ending the ban far outweigh any possible losses, going so far as to say USDA could find no opposition to GE products among organic consumers.

April 27, 2010 – U.S. Supreme Court hears oral arguments in the case *Monsanto Co. V. Geertson Seed Farms*, the first GE crop case for the Supreme Court. This case hinges on the question of whether the organic growers are able to demonstrate a “likelihood of irreparable [environmental] harm.” It is Monsanto’s claim that the growers only demonstrate the likelihood of economic harm. Environmental groups are concerned that a ruling in favor of Monsanto could set a precedent greatly weakening NEPA.

June 21, 2010 – The Supreme Court rules that the District Court had overstepped its authority by prohibiting the USDA from pursuing any partial approval of the crop, but rules that USDA must conduct an EIS.

December 16, 2010 – USDA makes Final EIS available.

January 27, 2011 – USDA announces its decision to deregulate RoundUp Ready alfalfa.

February 4, 2011 – USDA announces partial deregulation for RoundUp Ready sugar beets, despite the incompleteness of an EIS.

