



OPINION

Genetically Engineered Alfalfa Threatens the Future of Organic Meat and Dairy

Santa Cruz organic farmers and research groups warn of the threat posed by genetically engineered alfalfa crops.

By **Patrick Evans** February 15, 2011

Certified organic milk and dairy products could soon vanish from market shelves, according to local organic farmers and research groups.

The spread of pollen and seed from [Monsanto](http://www.monsanto.com/Pages/default.aspx) (http://www.monsanto.com/Pages/default.aspx)-made, genetically engineered (GE) [RoundUp Ready alfalfa](http://www.roundupreadyalfalfa.com/) (http://www.roundupreadyalfalfa.com/) into non-GE commercial and organic alfalfa crops might eliminate the U.S. supply of organic alfalfa and lead to overuse of potentially toxic glyphosate-based herbicides, said organic interest groups such as the [Center for Food Safety](http://www.centerforfoodsafety.org/2011/01/27/usda-decision-on-ge-alfalfa-leaves-door-open-for-contamination-rise-of-superweeds/) (http://www.centerforfoodsafety.org/2011/01/27/usda-decision-on-ge-alfalfa-leaves-door-open-for-contamination-rise-of-superweeds/), the [Northeast Organic Farming Association](http://www.nofa.org/policy/alfalfa2011.php) (http://www.nofa.org/policy/alfalfa2011.php) and the [National Organic Coalition](http://www.nationalorganiccoalition.org/index.html) (http://www.nationalorganiccoalition.org/index.html).

"This is our Egypt; this is our Tunisia," said Jeffrey Larkey of [Route 1 Farms](http://www.route1farms.com/Route_1_Farms/about_us.html) (http://www.route1farms.com/Route_1_Farms/about_us.html) in Santa Cruz, "because the courts have failed us and the government has failed us. We have to join in a united stance and make our voices heard."

On Jan. 27, glyphosate-tolerant (GT) alfalfa was deregulated for commercial use by U.S. Department of Agriculture (http://www.usda.gov/wps/portal/usda/usdahome) Secretary Tom Vilsack (http://www.usda.gov/wps/portal/usda!/ut/p/c4/04_SB8K8xLLM9MSSzPy8xBz9CPoos_gAC9-wMJ8QYoMDpxBDA09nXw9DFxcXQ-cAA_2CbEdFAEUOjoE!/?contentidonly=true&contentid=2010/12/0674.xml). California farmers took special notice of the USDA decision, because California is the largest dairy-producing state in the nation and one of the largest alfalfa producers. RoundUp Ready alfalfa is a strain modified to tolerate glyphosate, an herbicide that kills plant cells by preventing the synthesis of proteins.

Organic farmers say that the use of herbicides is not necessary to control weeds in alfalfa feeds.

"Ninety-seven percent of alfalfa is made without herbicide, because the nature of alfalfa is that you grow it, and there are weeds the first time," Larkey said. "You cut it, there's a lot fewer weeds. The third time you cut it, there's hardly any weeds at all. It inhibits other plants from growing."

The USDA originally proposed "partial-deregulation" of GT alfalfa and "co-existence" for GE and non-GE agriculture. The department later changed its tone and fully deregulated the crop. Vilsack defended his decision in an [open letter](http://www.usda.gov/wps/portal/usda/usdahome?contentidonly=true&contentid=2010/12/0674.xml) (http://www.usda.gov/wps/portal/usda/usdahome?contentidonly=true&contentid=2010/12/0674.xml) to the agriculture industry.

"I have tremendous confidence in our existing regulatory system and no doubts about the safety of the products this system has approved and will continue to approve," Vilsack said. "As a regulatory agency, sound science and decisions based on this science are our priority, and science strongly supports the safety of GE alfalfa."

Farmers and research groups do not agree that GE alfalfa is safe or sound science.

"The pollen from alfalfa is carried by insects," said Larry Jacobs, co-founder of [Jacobs/Del Cabo](http://www.jacobsfarm.com/) (http://www.jacobsfarm.com/) organic farm in Santa Cruz. "Some bees pick up the pollen; some wind picks up the bees and throws them 10 miles away. Ultimately you can't prevent the cross pollination."

"You run the risk of losing the ability to get alfalfa seeds not contaminated with GMOs (genetically modified organisms)," he said.

The [National Organic Program](http://www.ams.usda.gov/AMSv1.0/nop) (http://www.ams.usda.gov/AMSv1.0/nop) mandates that organic animal products come from animals raised exclusively on certified organic feed, usually hay made with organic alfalfa.

"There can be a huge impact on the dairy industry and the meat industry," Jacobs said. "The organic dairy industry depends upon organic alfalfa."

The U.S. harvested 21.7 million acres of alfalfa in 2007, equal to 72.6 million tons. Organic alfalfa made up 1 percent of the yield.

The net worth of the domestic alfalfa market, without counting the dependent dairy market, was \$10.5 billion in 2008, according to the USDA.

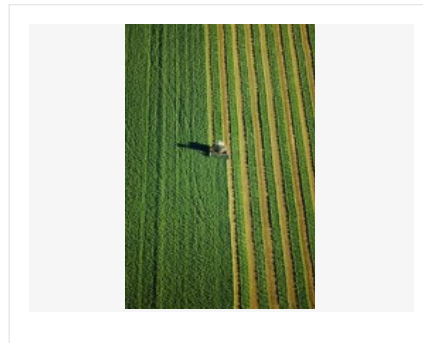
The USDA released an [environmental impact study](http://www.aphis.usda.gov/biotechnology/downloads/alfalfa/FEIS%20Alternatives%20Extracted.pdf) (http://www.aphis.usda.gov/biotechnology/downloads/alfalfa/FEIS%20Alternatives%20Extracted.pdf) (EIS) before its decision to deregulate alfalfa.

The study addressed the impact of GT alfalfa on agriculture, the economy, ecosystem and human health. The EIS declared that GT alfalfa did not pose a significant threat to existing non-GT crops and that RoundUp herbicides were not dangerous to farm workers or consumers.

The EIS admitted that GT alfalfa could cause changes in the agriculture market.

The study said that "GT alfalfa adoption by farmers, presence of GT alfalfa in non-GT alfalfa fields and the demand response to GT alfalfa deregulation would have several distributional and social impacts: the loss and gain of businesses, potential changes in market structure, distribution of the costs of loss of production and avoidance in GE sensitive markets, and potential negative impacts on the preferred environment of organic farmers (one free of GE organisms)."

The EIS also said that GT alfalfa gene-flow was possible, but cited the ability of farmers to create buffer zones and use crop rotation or stronger herbicides to prevent contamination.



"This is the first time the Department of Agriculture acknowledged that there was an economic impact to non-GE farmers from the release of GE crops. But they didn't do anything about it, and they fully deregulated GE alfalfa," said Ariane Lotti, a researcher at the [Organic Farming Research Foundation \(http://ofrf.org/pressroom/releases/101216_preventingge.html\)](http://ofrf.org/pressroom/releases/101216_preventingge.html) (OFRF) in Santa Cruz.

The OFRF maintains that alfalfa will follow corn and soybeans to become so commonly contaminated with GE genes that organic farmers can no longer cultivate it.

"That means for the organic farmer a loss of markets, a loss of choice of what the farmer can or can't plant," Lotti said. "And the farmer then also has to shoulder the entire cost of preventing contamination. If a load of the seed or crop is contaminated, then the farmer can't sell that crop organically and has to sell it into the conventional market at a lower price."

The organization also points at the emergence of "superweeds," herbicide-tolerant invasive plant species, as evidence of the danger posed by GT crops.

"California is a concern because glyphosate-resistant/glyphosate-tolerant weeds are present, and alfalfa is a major crop in California," the EIS said.

In the same way bacteria will adapt to antibiotics, certain hardy weed species have developed resistance to glyphosate. When weed species become glyphosate-resistant, farmers have to use more toxic herbicides, such as 2,4D, a possible carcinogen in the human body.

"Farmers spray lots of herbicides and spray more herbicides than they would normally spray on their fields, to kill all the weeds around," Lotti said. "That has sped up the resistance of weeds to herbicides. So companies like Monsanto are now looking to create more resistance in their crops to more toxic chemicals."

The EIS found that glyphosate, while non-toxic, had some adverse affects in the human body.

"One of the more consistent effects of exposure to glyphosate is reduced body weight gain," the study said. "Other general and nonspecific signs of toxicity from subchronic and chronic exposure to glyphosate include changes in liver weight, blood chemistry (could suggest mild liver toxicity) and in liver pathology."

However, a study released through the [Institute of Science in Society \(http://www.i-sis.org.uk/GTARW.php\)](http://www.i-sis.org.uk/GTARW.php) concluded that glyphosate and related RoundUp formula were toxic and carcinogenic substances.

Umbilical cord cells, embryonic kidney cells and placenta cells were exposed to glyphosate RoundUp formulas. The cells died within 24 hours of exposure.

The study said that glyphosate and its residue chemical, AMPA, attacked the cell membrane, poisoned mitochondria and caused cell death by disrupting DNA in the cell nucleus. They also linked RoundUp formulas to spontaneous miscarriages and multiple myeloma, cancer of plasma cells in human bone marrow.

The findings support organic farmers and food safety activists, who say herbicides are not as safe as agrochemical companies claim.

The website [Food Freedom \(http://foodfreedom.wordpress.com/\)](http://foodfreedom.wordpress.com/) assembled a [series of interviews \(http://foodfreedom.wordpress.com/2010/09/23/interviews-with-glyphosate-sprayed-people-i-viviana-peralta/\)](http://foodfreedom.wordpress.com/2010/09/23/interviews-with-glyphosate-sprayed-people-i-viviana-peralta/) with Argentineans affected by heavy herbicide spraying over the last several decades. The affected populations had been exposed to heavy glyphosate use on GT soy crops. The results were birth deformities, miscarriages, hydrocephalus (water on the brain), cancer and skin diseases.

How do you feel about the USDA decision to deregulate GT alfalfa for commercial use? [Tell us in the comments.](#)

Interested in a follow-up to this article?

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Don Evans

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A well written and in-depth piece that gives more evidence that highly mechanized and chemically and GMO dependent farming is incompatible with organic farming. All arguments about increased crop yields and low harm to humans and other living things aside, cross contamination does and will happen and organic farming will suffer.

