



Protecting the Non-GMO Integrity of Organic Ingredients: The Time To Act Is Now

By Ken Roseboro

Today there are two major food trends occurring on opposite ends of the food chain in the United States. On the consumer end, more and more Americans want organic foods produced without harmful pesticides, growth hormones and genetic modification. But, on the opposite end, at the farm, conventional farmers are planting millions of acres of genetically modified corn, soybeans and cotton.

These two trends are on a collision course, putting the integrity of organic's non-GMO status at risk. As conventional GMO crops grow in number, there is an increasing chance that organic crops will be contaminated. However, if everyone from producers to processors takes action now, the chances of contamination can be reduced significantly. Several organic industry leaders have already spearheaded efforts through a non-profit group called The Non-GMO Project, but it is essential to have commitment throughout the chain to win this fight.

GMOs Dominate Conventional Crops

In the United States, GM varieties, which are genetically altered to withstand sprays of herbicides or kill pests, dominate conventional commodity agriculture. In 2007, GM varieties accounted for 91 percent of soybeans, 87 percent of cotton and 73 percent of corn according to the U.S. Department of Agriculture. The majority of canola is also GM with most of that grown in Canada. A small percentage of GM alfalfa is grown, but last year a U.S. Federal judge issued an injunction blocking sales of GM alfalfa seed until the USDA conducts an environmental assessment. The only GM fruits and vegetables grown commercially are papaya in

Hawaii, zucchini and yellow squash. But this year farmers will also plant GM sugar beets.

American consumers eat many foods containing ingredients derived from GM corn, soy, cotton and canola. In fact, more than 70 percent of processed conventional foods contain these ingredients. Most Americans, however, are unaware that they are eating GM foods because the United States, unlike the European Union, Japan, South Korea and other nations, does not require such foods to be labeled.

Opposition to GM foods is strong in Europe. Switzerland has a national ban on GM crop production, while Austria, Greece and Poland have strong GMO-free policies. Nearly 50 EU regions, which are the equivalent of American states, have declared themselves GMO-free. In October 2007, Italian food producers, consumers and conservation groups collected three million signatures in a petition drive to ban GM food in the country. In the same month, French president Nicolas Sarkozy suspended plantings of GM crops in France.

Health and Environmental Risks

There are health and environmental concerns surrounding GM crops. Genetic modification or "engineering" involves a random insertion of genes from bacteria, animals or other living organisms into the DNA of food plants. Such genetic manipulations—which would never occur in nature—may produce new toxins or allergens or reduce the nutritional value of food. Research studies give reasons to be concerned. A study conducted in the United Kingdom in the late 1990s found that GM potatoes damaged the stomach and intestines of rats. In 2006, Australian

scientists found that an experimental GM pea produced a dangerous immune response in mice. In 2007 French scientists analyzed data from a study on Monsanto Company's GM corn, MON 863, and found that it damaged the livers and kidneys of rats.

There are also environmental concerns. A famous 1999 Cornell study found that monarch butterfly larvae died after being fed milkweed plant leaves containing pollen from GM corn. A 2002 study by Alison Snow, a biology professor at Ohio State University, found that the *bacillus thuringiensis* GM trait has the potential to migrate to weeds and strengthen them. Also, a 2007 study published in the *Proceedings of the National Academies of Sciences* found that pollen from GM corn produced increased mortality and reduced growth in caddisflies, aquatic insects that are essential food for fish and amphibians.

Contamination Challenges

"Gene flow" is the major GMO threat facing organic farmers. GM crops, such as corn, can pass their modified genes to neighboring fields of organic crops through cross pollination. The organic corn would then contain the altered genes.

Genetic modification of food crops, which manipulates the DNA, is diametrically opposed to organic production with its holistic approach of *working with* natural systems. As a result of this different philosophy and the risks associated with GM crops, genetic modification is an "excluded method" in the National Organic Program (NOP).

While GMOs are prohibited in organic production, many leaders in organic feel that the NOP could do more to protect organic's non-GMO integrity. "Right now we are repeating the mantra that GMOs are not allowed in organics, yet (organic) standards do not require nor encourage the use of the practical and relatively affordable tool of testing for GMO contamination," said Dag Falck, organic program manager, Nature's Path. "Climbing GMO levels in organic may be happening right in front of our closed eyes," he said.

That was the experience of an organic soy processor who lost \$100,000 last year due to GMO contamination of organic soybean oil. The problem was traced to a railcar of organic soybeans. DNA tests on the soybeans found GMO levels as high as 20 percent, raising questions of fraud. The processor blamed the supplier; the supplier blamed the processor. The results were financial losses, damaged reputations and threats of lawsuits. Everyone lost.

In a 2001 nationwide survey conducted by the Organic Farming Research Foundation (OFRF), certified organic farmers reported the first direct financial and related operational impacts associated with the threat of GMO contamination. For example, 46 percent of survey respondents rated the risk of exposure and possible contamination of their organic farm products by GMOs as moderate or greater. OFRF executive director Bob Scowcroft said, "If this trend continues, what we're seeing now will prove to be just the tip of the iceberg."

The Non-GMO Project: a "Call to Action" to Eliminate GMOs

While surveys show that most American consumers are unaware of the presence of GMOs in the food supply, organic consumers tend to be more aware. A 2001 survey found that organic consumers would be willing to pay as much as 50 percent more to avoid GMOs in food

products. In fact, with unlabeled GMOs so prevalent in the U.S. food supply eating organic is the best way to avoid them.

As a result of the GMO threat to organic, The Natural Grocer Company, based in Berkeley, California, launched the "People Want to Know" campaign in 2003 with the aim of organizing natural food retailers to persuade organic and natural food companies to verify the GMO status of their products. Growing to 161 natural food stores and cooperatives, the campaign became the Non-GMO Project in 2005, when FoodChain Global Advisors, an Iowa-based company with expertise in GMO controls and monitoring, was asked to provide technical assistance in DNA testing for non-GMO verification. In 2007, the Non-GMO Project reached critical mass with the backing of Whole Foods Market and United Natural Foods and participation of leading organic food processors, including Eden Foods, Nature's Path Foods, Organic Valley and Lundberg Family Farms.

At last year's Natural Products Expo West tradeshow, Michael Funk, president and CEO of United Natural Foods, described the Non-GMO Project as "a call to action" to eliminate GMOs from natural and organic foods. "There is no greater threat to the organic industry than GMOs," said Funk. "They don't belong in the organic food supply, and they threaten human health and the environment."

Non-GMO Verification

The Non-GMO Project is a voluntary program that enables food manufacturers to establish systems for preventing GMO risk, said the project's executive director Megan Thompson. "It aims to provide technical support so that food companies can provide an alternative to GM food and thus meaningful choices for consumers," she said.

The project's verification process involves evaluating each ingredient in a food product to determine its non-GMO status, as well as raw materials going into each ingredient, thus ensuring traceability back to the farm. Non-GMO verification makes use of a manufacturer's existing documentation, such as organic certification records and GMO test results. Companies that successfully complete the verification can then display the Non-GMO Project seal on their products.

Key to non-GMO verification is identity preservation (IP) a comprehensive system to preserve the non-GMO integrity of a product from the seed through all stages of production and processing until it reaches the store shelf. Some suppliers already have existing IP programs in place.

GMO testing is an important part of non-GMO verification. There are two commonly used methods. A lateral flow "strip" test detects the genetically modified protein in a sample. The test is fast and inexpensive. A polymerase chain reaction (PCR) method detects the genetically modified DNA in a sample and can detect GM content to 0.1 percent and below. While more accurate and sensitive than strip tests, PCR analysis takes more time and is more expensive. The two methods are often used in conjunction with strip tests providing an initial screen, and PCR confirming the results or quantifying GMO levels.

"Process of Progressive Improvement"

Over the past year, the Non-GMO Project's board worked with a technical advisory board to develop a non-GMO standard that aims to be practical for industry and credible for consumers.

A draft standard was introduced in September 2007 with "action thresholds" for GMO levels in products, (see sidebar). The project is flexible in that companies can achieve the action thresholds over time.

John Fagan, chief scientific officer, FoodChain Global Advisors, described the Non-GMO Project as "a process of progressive improvement." He emphasized that companies going through the non-GMO verification won't be punished for not meeting action thresholds. Instead, the thresholds will trigger quality assurance steps.

"The project is not designed to reject anyone," said Fagan.

"We want to make the program as widely accessible as possible," said Thompson.

She emphasizes that developing the standard has been a collaborative process involving more than 30 industry members. The Organic Trade Association's Biotechnology Task Force is also providing input on the Non-GMO Project.

The Non-GMO Project standard is now being finalized. Thompson said there will be an 18-month transition period during which the project will focus on ensuring a non-GMO seed supply and working with farmers to avoid GMO contamination and with food manufacturers to address critical control points and develop non-GMO sources for ingredients. "We will be collecting data to make sure supplies are there so the standard can be achieved," said Thompson.

Following the transition period, plans call for products containing the Non-GMO Project seal to start appearing on shelves in fall 2009. Several food companies have started putting their products through the non-GMO verification process.

"We Need a Solution Now"

Industry leaders believe the Non-GMO Project offers an effective tool to help the industry deal with the GMO threat and preserve the integrity of organics. "The Non-GMO Project will help us unite to deal with the GMO issue. This is something everyone should be part of," said Margaret Wittenberg, vice president of communications and quality standards, Whole Foods Market, Inc., speaking at Natural Products Expo East last fall.

Grant Lundberg, chief executive officer, Lundberg Family Farms, calls the Non-GMO Project timely and said the organic industry is ready to deal with GMOs on a practical level. "This is a recognition that GMOs are an issue and that we need to keep our products as pure as possible. The Non-GMO Project will benefit consumers so they trust what we do."

Time is critical though, said Mark Squire, owner of Good Earth Natural and Organic Foods in Fairfax, California and Non-GMO Project board member. "We need a solution now. This problem will only get worse."

However, if the organic community works together to address this issue, we can preserve the non-GMO integrity of organic foods and provide greater assurance to consumers. □

Ken Roseboro is editor and publisher of *The Organic & Non-GMO Report*, a monthly newsletter focusing on the markets for non-GMO and organic products and "The Non-GMO Sourcebook," an annual directory of suppliers of non-GMO and organic products. He can be reached at ken@non-gmoreport.com. (A complete reference list is included with this article at www.organicprocessing.com.)

