

CLAMOR OVER GENETICALLY MODIFIED FOODS COMES TO THE UNITED STATES

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For several years, those of us interested in the public's reaction to biotechnologically engineered foodstuffs were engaged in trying to solve a puzzle: European consumers were vigorously protesting the introduction of food made from genetically modified organisms—or GMOs, as they have come to be called—but in the United States there was scarcely a whisper of concern. Why was the response so different on the two sides of the Atlantic? Under one theory, the disparity had something to do with Europeans' distrust of their regulatory systems, a consequence of their experience with mad-cow disease, perhaps. Before the situation could be adequately explained, however, it changed. American consumers became interested, and as their concerns grew, their reactions began to parallel those of the Europeans.

The change began in May 1999 with the publication of a short letter in the British scientific journal *Nature*. John E. Losey, a Cornell University entomologist, and his colleagues compared survival rates of a test group of monarch butterfly larvae raised on milkweed leaves dusted with pollen from genetically engineered corn, with survival rates of a comparison group of larvae that ate milkweed leaves dusted with pollen from an unrelated hybrid of corn with no genetic manipulation. Only 56% of caterpillars in the test group were still alive after four days, compared with a 100% survival rate for the comparison group.¹

The genetically transformed corn used by Losey had been engineered to produce a natural pesticide normally found in a soil bacterium called *Bacillus thuringiensis* (Bt), which attacks insect larvae. This “Bt corn”—the result of splicing the bacterium gene responsible for production of the pesticide into the nuclear

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¹ See John E. Losey et al., *Scientific Correspondence: Transgenic Pollen Harms Monarch Larvae*, 399 *NATURE* 214 (1999).

matter of the corn seed—was one of the first successes of agricultural biotechnology. Bt corn is now widely planted across the U.S. grain belt.² Other crops, including potatoes and soybeans, have also been modified to produce the Bt pesticide. These crops represent the first steps toward developing more sophisticated pest-resistant crops that might one day be grown without the need for any externally applied chemical pesticides.

Losey and his colleagues had shown that pollen from Bt corn not only kills certain corn pests, but also could kill monarch butterfly caterpillars. Opponents of biotechnology now had a powerful symbol. Newspapers across the country reported Losey's findings, decorating their stories with beautiful pictures of monarch butterflies, referred to in some instances as "beloved insects."³ In the 1960s, the fight to ban the pesticide DDT had its symbol, the bald eagle, which was dying off as a result of widespread use of DDT. With the appearance of Losey's report, the monarch butterfly became the bald eagle of biotechnology.

In the months following Losey's report, many experts became convinced that the threat to monarch butterflies in the field was far less than what Losey's laboratory study had suggested. But it hardly mattered—the anti-biotechnology movement had its mascot. The Biotechnology Industry Organization (BIO) fought back, organizing a symposium at which researchers were to present follow-up studies on biotech crops and monarch butterflies. However, in its enthusiasm to demolish its critics, BIO mangled its public relations. Rather than waiting until the conclusion of the symposium to trumpet findings suggesting that Bt corn posed negligible threats to monarch butterflies, the organization issued a press release the day before the symposium.⁴ Instead of maintaining a neutral stance until after the scientific issues were debated, BIO boldly announced that scientists were "expected to conclude" that Bt corn posed no threat. What BIO was saying, in effect, was: "Don't confuse me with the facts; I've made up my mind." If BIO had wanted to establish some credi-

² See Frederic Golden, *Of Corn and Butterflies*, TIME, May 31, 1999, at 80, 80 (up to 25% of the U.S. corn crop, or about 20 million acres).

³ See *id.* at 80; Rick Weiss, *Biotech vs. 'Bambi' of Insects?: Gene-Altered Corn May Kill Monarchs*, WASH. POST, May 20, 1999, at A3.

⁴ See Biotechnology Industry Organization, *News Release: Scientific Symposium to Show No Harm to Monarch Butterfly*, Nov. 2, 1999 (visited Feb. 20, 2000) <<http://www.bio.org/news>>.

bility on the issue of the safety of biotech foods, that was emphatically not the way to do it.

As the year progressed, the climate for biotech foods continued to deteriorate. Newspaper and magazine headline writers began referring to genetically modified organisms as “Frankenstein foods,” or simply “Frankenfood.”⁵ Bt crops were not the only targets. Critics also focused on what they called the “terminator gene,” a modification that ensures that seeds from one year’s crop are sterile and unavailable for planting the next year. During the summer of 1999, Monsanto Corporation began the process of acquiring the seed company that owned the patent on the terminator process. Monsanto saw the terminator gene as a way of protecting its investment in developing disease- and pest-resistant plant varieties. Farmers who wanted the benefits of Monsanto’s genetically modified crops would not be able to save seed, but would have to buy seeds from Monsanto every year.⁶ It was a great business model for Monsanto, but it also served as another example of botched public relations. Monsanto’s enemies included not only environmentalists and activists but also the Rockefeller Foundation.

Gordon Conway, the foundation’s president, urged the company to abandon the terminator gene, which, he said, could hurt poor farmers in the developing world, who are often unable to buy seeds each year. Conway also said he was worried that a backlash over biotechnology would slow the development of useful genetically engineered crops that could help alleviate starvation in developing countries. “We have a lot of people to feed, and biotechnology is one of the answers,” he said.⁷

In time, Monsanto did bow to public opposition to the terminator technology. In October 1999, the company announced that it would not pursue the marketing of seeds with the terminator trait.⁸ This action did little, however, to defuse the growing public uproar over biotechnology. The crisis peaked in Decem-

⁵ See Phillip J. Longman, *The Curse of Frankenfood*, U.S. NEWS & WORLD REPORT, July 26, 1999, at 38; Kenneth Klee, *Frankenstein Foods?*, NEWSWEEK, Sept. 13, 1999, at 33.

⁶ See George Johnson, *Monsanto Should Renounce the “Terminator,”* ST. LOUIS POST-DISPATCH, July 4, 1999, at B3.

⁷ Scott Kilman, *Rockefeller Foundation Asks Monsanto to Forswear ‘Terminator Gene’ in Seed*, WALL ST. J., June 28, 1999, at B5C.

⁸ See Barnaby J. Feder, *Monsanto to Bar a Class of Seeds*, N.Y. TIMES, Oct. 5, 1999, at A1.

ber, when protestors denounced genetically engineered foods in the streets of Seattle during a meeting of the World Trade Organization. While ministers and diplomats discussed globalization and world trade inside the meeting, the opposition to biotech foods was itself being globalized. Some U.S. consumers no doubt felt ambushed: they learned they had been eating genetically modified foods for several years without any proper notification or any national debate. Monsanto was hit with a class action lawsuit, charging that it had rushed genetically engineered seeds to the marketplace without proper testing, and that it was conspiring to control the world market in corn and soybean seeds.⁹

The year had begun with a puzzle: Why did the European critics of biotech foods have no counterparts in the United States? By the end of the year, there was nothing to puzzle over. The protests had crossed the Atlantic, and in the United States the debate had begun.

⁹ See David Barboza, *Monsanto Sued Over Use of Biotechnology in Developing Seeds*, N.Y. TIMES, Dec. 15, 1999, at C1.