Genetically Modified Foods Have Numerous Benefits and No Known Risks

"Responding to the bleating of activists, policy makers have subjected the testing and commercialization of genetically engineered crops to unscientific and draconian regulations, with dire consequences."

In the following viewpoint, Henry I. Miller argues that capitulation by food companies to activists in ceasing use of genetically engineered ingredients is dangerous and not supported by science. Miller contends that genetic engineering actually makes food safer by reducing such dangerous contaminants as fungus and mold. He concludes that making policy based on irrational technophobia is dangerous to consumers and food producers. Miller is a physician and molecular biologist, a fellow at Stanford University’s Hoover Institution, and coauthor of *The Frankenfood Myth: How Protest and Politics Threaten the Biotech Revolution*.

As you read, consider the following questions:

1. According to the author, which six food manufacturers have eliminated genetically engineered ingredients as a result of pressure from activists?
2. Miller claims that research shows that the level of fumonisin in genetically modified corn is lowered by what percentage compared to conventional corn?
3. Name at least two demonstrated, significant benefits of genetically engineered foods listed by the author.

During the late 1990s, a singular phenomenon appeared in countries around the world. One after another, food and beverage companies capitulated to activists opposed to a promising new technology: the genetic engineering of plants to produce ingredients. They are still capitulating to this day [in 2012].

The Rise of Technophobia

The Japanese brewer Kirin and the Danish brewer Carlsberg eliminated genetically engineered ingredients from their beers. In the United States, the fast-food giant McDonald's banned them from its menu; food manufacturers Heinz and Gerber (then a division of Switzerland-based Novartis) dropped them from their baby-food lines; and Frito-Lay demanded that its growers stop planting corn engineered to contain a bacterial protein that confers resistance to insect predation.

These measures were rationalized in various ways, but the reality is that by yielding to the demands of a minuscule number of disingenuous activists, the companies opted to offer less safe products to consumers, thereby exposing themselves to legal jeopardy.

Every year, innumerable packaged-food products worldwide are withheld or recalled from the market due to the presence of "all natural" contaminants like insect parts, toxic molds, bacteria, and viruses. Because farming takes place outdoors and in dirt, such contamination is a fact of life. Over the centuries, the main culprit in mass food poisoning often has been contamination of unprocessed crops by fungal toxins—a
risk that is exacerbated when insects attack food crops, opening wounds that allow fungi (molds) to get a foothold.

The Danger of Fungal Toxins

For example, fumonisin and some other fungal toxins are highly toxic, causing esophageal cancer in humans and fatal diseases in livestock that eat infected corn. Fumonisin also interferes with the cellular uptake of folic acid, a vitamin that reduces the risk of neural tube defects in developing fetuses, and thus can cause folic acid deficiency—and defects such as spina bifida—even when one's diet contains what otherwise would be sufficient amounts of the vitamin.

Many regulatory agencies have therefore established recommended maximum fumonisin levels permitted in food and feed products made from corn. The conventional way to meet those standards and prevent the consumption of fungal toxins is simply to test unprocessed and processed grains and discard those found to be contaminated—an approach that is both wasteful and failure prone.

But modern technology—specifically, the genetic engineering of plants using recombinant DNA technology (also known as food biotechnology or genetic modification)—offers a way to prevent the problem. Contrary to the claims of food-biotech critics, who insist that genetically modified crops pose risks (none of which has actually occurred) of new allergens or toxins in the food supply, such products offer the food industry a proven and practical means of tackling the fungal contamination at its source.

The Benefits of Genetic Engineering

An excellent example is corn that is crafted by splicing into commercial varieties a gene (or genes) from a harmless bacterium. The bacterial genes express proteins that are toxic to corn-boring insects, but that are harmless to birds, fish, and mammals, including humans. As the modified corn fends off insect pests, it also reduces the levels of the mold *Fusarium*, thereby reducing the levels of fumonisin.

Indeed, researchers at Iowa State University and the US Department of Agriculture have found that the level of fumonisin in the modified corn is reduced by as much as 80% compared to conventional corn. Similarly, an Italian study of weaned piglets that were fed either conventional corn or the same variety modified to synthesize a bacterial protein that confers resistance to insect predation found that the modified variety contained lower levels of fumonisin. More importantly, the piglets that consumed the modified corn achieved a greater final weight, a measure of overall health, despite no difference in feed intake between the two groups.

Given the health benefits—to say nothing of the often higher and more reliable yields—governments should introduce incentives aimed at increasing use of such genetically engineered grains and other crops. In addition, one would expect public health advocates to demand that such improved varieties be cultivated and used for food, not unlike requirements that drinking water be chlorinated and fluoridated. And food producers that are committed to offering the safest and best products to their customers should be competing to get genetically engineered products into the marketplace.
Alas, none of this has come to pass. Activists continue to mount vocal and tenacious opposition to genetically engineered foods, despite almost 20 years of demonstrated, significant benefits, including reduced use of chemical pesticides (and thus less chemical runoff into waterways), greater use of farming practices that prevent soil erosion, higher profits for farmers, and less fungal contamination.

**Dangerous Public Policy**

Responding to the bleating of activists, policy makers have subjected the testing and commercialization of genetically engineered crops to unscientific and draconian regulations, with dire consequences. A groundbreaking study of the political economy of agricultural biotechnology [by Gregory D. Graff, Gal Hochman, and David Zilberman] concluded that overregulation causes "delays in the global diffusion of proven technologies, resulting in a lower rate of growth in the global food supply and higher food prices." Current policies also create "disincentives for investing in further research and development, resulting in a slowdown in innovation of second-generation technologies anticipated to introduce broad consumer and environmental benefits."

Everyone involved in food production and consumption has suffered: consumers (especially in developing countries) have been subjected to avoidable health risks, and food producers have placed themselves in legal jeopardy for selling products known to have "design defects."

Public policy that discriminates against and discourages vital innovations in food production is not policy that has the public's interest at heart.

**Further Readings**

**Books**

- Lori P. Knowles and Gregory E. Kaebnick, eds.*Reprogenetics: Law, Policy, and Ethical Issues*. 


**Periodicals**


- Peter Dizikes "Your DNA Is a Snitch," *Salon*, February 17, 2009.


• Erin Nelson and Timothy Caulfield "When It Comes to 'Saviour Siblings,' Let's Just Stick to the Facts," *Globe and Mail* (Canada), June 24, 2009.

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