

Genetically Modified Catastrophe

Biotech lobbyists dupe governments into supporting failed and dangerous GMOs

Nearly five years ago, Australian states gave a resounding “NO!” to planting genetically modified (GM) crops. Since then, reports from around the world of costly contamination by genetically modified organisms (GMOs), erratic yields, closed markets, and economic losses, continue to plague GMO adopters—verifying the wisdom of the states’ moratoria. New evidence demonstrating health dangers of GM foods, however, requires that the bar be raised higher. It is no longer sufficient just to prevent planting. GM ingredients must be eliminated from the food supply to protect the public (see accompanying article).

For some reason, several state parliamentarians choose to ignore the overwhelming evidence that GM foods are unsafe.¹ They further ignore the cyclone of economic disasters that have been ushered in by these unpopular crops. These optimistic politicians believe that although the crops have damaged other economies, GMOs will somehow, magically boost Australian agriculture. It is obvious that biotech lobbyists have been bending ears to the point of deafness to reason.

Biotech promises come up short

Those lobbyists have practice. For more than a decade they spread promises around the world of unprecedented economic booms coupled with threats that slow adopters would be left behind. But after years of empty claims, many now see beyond the biotech rhetoric. The *San Francisco Chronicle* pointed out that most of their hoopla remains “in the ‘promise’ category - and has been each year.”² The *Asia Times* describes their “smorgasbord of marketing claims” as adding to “the credibility problems that are piling up against genetic engineering.”³ According to *The Wall Street Journal*, “Not only has the biotech industry yielded negative financial returns for decades, it generally digs its hole deeper every year.”⁴ And the Associated Press says it “remains a money-losing, niche industry.”⁵

In spite of their poor track record, biotech advocates continues to attract politicians who swoon over the technology’s sex appeal. “This notion that you lure biotech to your community to save its economy is laughable,” said Joseph Cortright, an Oregon economist who co-wrote a report on the subject. “This is a bad-idea virus that has swept through governors, mayors and economic development officials.”⁶

Nowhere in the biotech world is the bad-idea virus more toxic than in its application to GM plants. Not only does the technology under-deliver, it consistently burdens governments and entire sectors with losses and problems. The Canadian National Farmers Union (NFU) observed, “Corporate and government managers have spent millions trying to convince farmers and other citizens of the benefits of genetically-modified (GM) crops. But this huge public relations effort has failed to obscure the truth: GM crops do not deliver the promised benefits; they create numerous problems, costs,

and risks. . . . It would be too generous even to call GM crops a solution in search of a problem: These crops have failed to provide significant solutions.”⁷

US loses big with GMOs

Among the first politicians hypnotized by biotech’s charm were in the White House during the first Bush administration. Vice President Dan Quayle chaired the elite Council on Competitiveness, which chose to fast track GM food in hopes that it would strengthen the economy and make American products more competitive overseas. The opposite ensued.

In Europe, virtually the entire food manufacturing and retail industry responded to consumer pressure by banning GM ingredients. Because of the difficulty of segregating GM from non-GM crops, they simply rejected *all* food crops from the US if any of that species were modified. US corn exports to Europe, for example, have been virtually eliminated, down by 99.4 percent, even though the US produces plenty of non-GM corn. The American Corn Growers Association (ACGA) calculated that the introduction of GM corn caused a drop in corn prices by 13 to 20%.⁸ Their CEO said, “The ACGA believes an explanation is owed to the thousands of American farmers who were told to trust this technology, yet now see their prices fall to historically low levels while other countries exploit US vulnerability and pick off our export customers one by one.”⁹ US soy sales also plummeted due to GM content.

There are four major GM crops that comprise 99.9% of GM acreage: soy, corn, cotton, and canola. All four have varieties engineered to survive applications of specific herbicides. For example, if you spray Monsanto’s Roundup herbicide onto natural soybean plants, they die. But Monsanto’s patented “Roundup Ready” soybeans survive. About 71% of all GM crops in the world are herbicide tolerant. Cotton and corn have also been engineered to produce a pesticide—called Bt—in every cell. About 18% of GM crops are Bt producing. Another 11% are engineered with both of these traits.

GM papaya was introduced in Hawaii in 1997, but unlike the major crops, genes were inserted into papaya DNA so the plant could resist disease. The gene-spliced version defends against the ring-spot virus. The farmers, politicians, and scientists, however, all succumbed to the bad-idea virus—believing that genetic engineering would “save the industry.” Japan, which had been consuming 60% of Hawaii’s market,¹⁰ shut its doors to the unwanted GM variety. The papaya price immediately dropped from \$1.23 per kilo to just \$.89, and has since fallen below 80 cents—well under production costs. The islands have lost half of their papaya farmers¹¹ and 28% of papaya acreage.¹² According to a 2006 article in *The Honolulu Advertiser*, “Hawaii papaya production sank to a more than 25-year low last year despite record demand among US consumers for the tropical fruit.”¹³ Non-GM papaya, however, consistently sells for more than the GM variety. Although the GM papaya is still on the market, other failures in the US— GM tomatoes and potatoes—have been removed.

GM crops not only close markets and slash prices, they force governments to shell out huge sums. According to Charles Benbrook, PhD, former executive director of the

National Academy of Sciences' Board on Agriculture, the US government payments to farmers are up by \$3 to \$5 billion annually due to GM crops.¹⁴ He says growers have only been kept afloat by the huge jump in subsidies.¹⁵

Market prices for non-GM growers also drop, and they may spend more to set up segregation systems, GMO testing, buffer zones, and separate storage and shipping channels to try to hold onto non-GMO markets. Even then, they risk contamination and lost premiums.

Instead of helping the economy, GM crops have been a disaster for the US. The government has trouble even giving GM grains away as food aid to developing nations.

Canola crashes on GM

When Canada became the only major producer to adopt GM canola in 1996, it led to a disaster there as well. The premium-paying EU market, which took about one-third of Canada's canola exports in 1994 and one-fourth in '95, stopped all imports from Canada by 1998. The GM canola was diverted to the low-priced Chinese market. Not only did Canadian canola prices fall to a record low,¹⁶ Canada even lost their EU honey exports due to the GM pollen contamination. The Canadian NFU warns, "Closing markets and falling prices threaten to overwhelm any small, short-term economic benefits that GM crops or livestock may offer."¹⁷

Australia benefited significantly from Canada's folly. By 2006, the EU was buying 38% of Australia's canola exports.¹⁸ It is therefore remarkable that Australia is now vying to introduce GM canola. Not only would their EU market likely fall away, they risk losing Japan as well. Japan took half of Australia's canola seed exports from 2001-2004, but Japan's loyalty may be stretched beyond repair with GM. More than three quarters of Japanese consumers are uncertain about the impacts of eating GM food.¹⁹ Some co-op purchases have already been diverted from Canada to Australia specifically due to consumer demand for GM-free supply.²⁰ In September 2007, a report showed that Canadian exports to Japan were suffering due to Australian competition.²¹

The Western Australia Standing Committee on Environment and Public Affairs said, "Australia was able to secure greater market access because it was producing non-GM canola."²² The Australian Bureau of Resource Economics (ABARE) acknowledged, "It is easier to trade non-GM grains in the current market environment than it is to trade GM grains."²³ Furthermore, according to the WA Department of Agriculture, non-GM canola commands premiums in both Japan and Europe.²⁴ While price differentials of \$12 to \$14 per ton were paid by Europe, this soared to \$115 for Australian canola over Canadian varieties in 2006, when the drought put non-GM canola in short supply.²⁵ This means that other canola producing nations might derive *huge* financial benefit should the moratorium be lifted in Australia.

Australians don't want GM food either

You don't have to look outside of the country to find resistance to GMOs. According to 2006 polls, most Australians are not comfortable with GM food and are unlikely to eat it.²⁶ The two largest domestic canola buyers, Goodman Fielder and Unilever, both have a non-GM canola oil policy. Australian livestock and dairy marketers are also concerned about the impact on sales if canola meal were to become GM. Even wheat and barley marketers have suggested that contamination from GM canola might jeopardize sales to some buyers.

If only a small percentage of farmers adopt GM varieties, *all* Australian canola farmers will feel the effects. In Canada, the entire industry suffered closed markets and reduced prices. To segregate their non-GM canola, Australian farmers would have to pay 5-15% of the crop's value, according to ABARE,²⁷ but there is no guarantee that they would keep their customers.

GM farmers don't necessarily earn more

The biotech companies have been quite successful in convincing farmers that GM crops are the ticket to greater yields and higher profits. But the Canadian NFU flatly states, "The claim that GM seeds make our farms more profitable is false."²⁸ Net farm incomes in Canada plummeted since the introduction of GM canola, with the last five years being the worst in Canada's history.

The average GM crop reduces yield. Even a US Department of Agriculture (USDA) 2006 report stated that "currently available GM crops do not increase the yield potential of a hybrid variety. . . . In fact, yield may even decrease if the varieties used to carry the herbicide tolerant or insect-resistant genes are not the highest yielding cultivars."²⁹

Most of the Bt corn in the US is designed to kill the European corn borer. According to the US National Academy of Sciences,³⁰ before Bt corn was available, only 5.2% of corn acreage was sprayed to protect against the corn borer. The reason, in part, was because the yield loss associated with the pest is only about 4%—not worth the cost of the pesticides. Further, insect infestation is intermittent, not consistent in every season.

A much larger number of farmers, however, now use Bt corn as an insurance policy, just in case their area gets infested during the growing season. According to the USDA, "adoption of Bt corn had a negative impact on net returns among specialized corn farms." This was likely due to the fact that "the value of protections against the European corn borer was lower than" the higher costs paid for the Bt seed. The USDA "could not find positive financial impacts in either the field-level nor the whole-farm analysis" for adoption of Bt corn and Roundup Ready soybeans. They said, "Perhaps the biggest issue raised by these results is how to explain the rapid adoption of [GM] crops when farm financial impacts appear to be mixed or even negative."³¹

When Monsanto's GM cotton varieties were first introduced in the US, tens of thousands of acres suffered deformed roots and other problems, forcing the company to pay out millions in settlements.³² Nonetheless, a USDA report on the first few years showed

higher average returns for the GM varieties.³³ In China, Bt cotton also appeared to offer higher net returns, better yields, and pesticide reduction when first introduced in 1997.³⁴ According to a study by Cornell University, however, by 2004, Bt farmers in China were earning significantly less than non-Bt farmers. One contributing reason was that the Bt cotton became more susceptible to other non-target pests, resulting in damage and forcing farmers to spray 15-20 times more than before.³⁵

Bt cotton destroyed the lives of thousands of farmers

Many Indian cotton farmers invested in Monsanto's Bt seeds based on promises of higher incomes. The crops' erratic performance has been a tragedy. According to one in-depth analysis in Andhra Pradesh, yields were down the first year by 52% and performance was unpredictable over the next two years. Over three years in Andhra Pradesh, non-Bt farmers earned 60% more.³⁶

Problems with the GM variety included failure to germinate, drought damage, root-rot, leaf curl virus, brittle stems, increased pests, smaller bolls, increased labor requirements per acre, and a shorter harvest season.³⁷ In addition, the Maharashtra State Department of Agriculture found that "The average boll weight" was less and "the staple length of the Bt cotton" was shorter, "hence it fetches lower prices in [the] market compared with other popular hybrids."³⁸ Angry, indebted Bt cotton farmers held violent street protests, burned seed outlets, and even "tied up . . . Monsanto representatives in their villages," until the police rescued them.³⁹ Thousands of Bt cotton farmers also committed suicide—the rate in one region was one suicide every eight hours.

The Andhra Pradesh Agriculture Minister demanded that Monsanto pay recompense for farmers losses,⁴⁰ several Bt varieties were banned by state governments, and official reports showed massive losses. Monsanto nonetheless continues to claim that its Bt cotton is performing well and they are promoting their seeds at a frantic pace. They commissioned their performance studies, however, using market research agencies, not scientists. One report, for example, claimed 4 times the actual reduction in pesticide use, 12 times the actual yield, and 100 times the actual profit.⁴¹

In Indonesia, Monsanto offered bribes to 140 officials over 5 years to try to get their cotton approved, according to US court records. But it performed so badly, GM cotton was eventually kicked out.⁴² In Australia, Bt cotton has shown no benefit, according to a 2006 report,⁴³ but it did show higher insect control costs, lower yields, and lower profits in its first year.⁴⁴

Herbicide tolerant crops lower yields

Herbicide tolerant crops appear to consistently provide lower average yields. As elsewhere, US farmers had expected higher yields with Roundup Ready soybeans, but independent studies confirm a yield loss of 4-11%.⁴⁵ Brazilian soybean yields are also down since Roundup Ready varieties were introduced.⁴⁶ In Canada, a study showed a 7.5% lower yield with Roundup Ready canola.⁴⁷

If the Australian state moratoria are lifted, herbicide tolerant canola will be planted in 2008. According to Australia's Network of Concerned Farmers, "Although Monsanto claim a 40% yield increase with Roundup Ready canola,⁴⁸ their best on their website for Australian trials reveal yields are 17% less than our national average." Further, "non-GM trials performed in similar conditions during the same season and similar areas far outyielded the GM trials."⁴⁹ No independent studies have evaluated GM varieties, which, according to New South Wales Agriculture Minister Ian MacDonald, should be a requirement before lifting the moratorium.⁵⁰ But Monsanto and Bayer have consistently refused to allow such studies.⁵¹ In addition to expected lower yields, Australian canola farmers would have to pay about \$27.82 more per hectare due to the costlier GM seeds.⁵²

High adoption rates are misleading

Although GMOs occupy only about 1.5% of total global crop land, the percentage of US soy, corn, and cotton farmers using GM seeds is quite high. The industry says this demonstrates that their crops perform better, but this argument is simplistic and misleading.

- Biotech companies bought a large portion of the seed industry worldwide. They control the vast majority of the soy, corn, cotton, and canola seeds in North America. They not only offer incentives and quotas to their dealers for selling the GM varieties, many of the high performance non-GM varieties have been removed from the market. The US-based Center for Food Safety states that "for many farmers across the country, it has become difficult if not impossible to find high quality, conventional varieties of corn, soy, and cotton seed."⁵³ Charles Benbrook also confirms that "limited supplies of [popular] conventional crop seeds" has contributed to more GM seed sales. A 2007 Friends of the Earth report concludes that since "farmers must buy GM in order to get higher quality seeds . . . GM adoption rates may give an exaggerated impression of farmers' interest in GM crops."⁵⁴
- While Roundup Ready soybeans do not offer higher profits to farmers, the technology can reduce farm labor and give farmers "increased flexibility in the timing of herbicide applications"⁵⁵ This convenience is another reason for the high adoption.
- Roundup Ready soybeans fields are usually "cleaner," meaning less weeds. Because farmers take pride in cleaner fields, this attribute turns out to be a very significant psychological motivator for GMO adoption—especially when the neighbor has cleaner GM fields. In fact, "some landlords insist on clean fields,"⁵⁶ according to Mike Duffy, an Iowa State University economist.
- Duffy says that landlord pressure and advertising likely contribute to the high use of herbicide tolerant soybeans. But he points out, "The primary beneficiaries of the first generation biotechnology products are most likely the seed companies that created the products. Additionally, in the case of herbicide tolerance, the

companies that supply the tolerant herbicides also benefit from the development of the biotech crops.”⁵⁷

- Some farmers admit that they use GM seeds because they fear Monsanto. “Thousands of US farmers have been investigated by Monsanto,”⁵⁸ for allegedly saving harvested GM seeds and replanting them in the next season—an age-old farm practice made illegal by GMO buyers’ contracts. Monsanto won at least US\$15.2 million from nearly 200 lawsuits against farmers and organizations, plus earnings from hundreds of private settlements. Several farmers complained that they either did not purchase Monsanto’s seeds at all, or did not save them. They say Monsanto’s allegations are based on faulty GMO detection tests or on unwanted GM contamination in their fields. Unwilling to challenge Monsanto in the expensive court system, some farmers choose to buy the company’s seeds each year just to prevent the company from targeting them.

Herbicide use rising due to GMOs

The convenience factor of herbicide tolerant crops is now giving way to a nuisance factor of herbicide tolerant weeds. Overuse of Roundup has is causing a huge problem of weeds that are resistant to its active ingredient glyphosate. Herbicide use in the US was up 138 million pounds in the first nine years after GM crops were introduced.⁵⁹ That increase is accelerating, with approximately 120 million more pounds used in years 10 and 11.⁶⁰ Roundup Ready soybeans are also associated with higher herbicide use in Brazil. As weeds fail to respond to Roundup, farmers rely on more toxic pesticides. Over the past two years, for example, use of the highly toxic 2,4-D was up by 237% in the US.

Drought resistance? Hardly

In the rosy world of biotech promises, drought and salt tolerant GM crops are just around the corner. But scientists believe that many genes work together to confer these properties. This presents levels of complexity that genetic engineers are ill-equipped to deal with. Thus, these and the so-called second generation GMO traits offering consumer advantages such as better nutrition or flavor are conspicuously missing from the commercialized crops and almost non-existent among GM plants being field trialed. Selective breeding has been much more successful at producing these types of traits. The research director of Syngenta, a major GMO producer, said, “We have conducted many genetic engineering experiments for seed materials and plant protection and they have often failed. On the other hand, excellent results have frequently been achieved with the traditional approach to plant growing.”⁶¹

That approach typically involves mating plants with desired traits and then growing out huge numbers of offspring seeds to see which inherited the desired qualities. New marker assisted breeding methods can accelerate this process. Scientists identify the natural plant genes that are associated with the trait they want and then check the DNA of the plants’ offspring to see which ones inherited those genes. They can then grow those plants and discard the others, saving time and money. Unlike genetic engineering, marker assisted selection does not artificially manipulate plant DNA or insert genes from other species. *It*

looks but doesn't touch. Victorian scientists used that method to develop non-GM drought tolerant canola.⁶²

By contrast, GM crops such as Roundup Ready soybeans are *less* resistant to heat and drought. As *New Scientist* reported: “Hot climates don’t agree with Monsanto’s herbicide-resistant soybeans, causing stems to split open and crop losses of up to 40 percent. This could be a serious blow to the St. Louis-based [Monsanto] company, which sees Brazil and other Latin American countries as major markets for its soy beans.”⁶³ Indeed, during the 2005 drought in Southern Brazil, “crop losses were 25% higher for GM soy than for conventional soy.”⁶⁴ And according to the Paraguayan Environment Ministry, the GM “varieties were highly sensitive to drought, and there was a high risk of losing between 60 and 90% of the production.”⁶⁵ Bt cotton in India and elsewhere has also performed poorly when water is in short supply.

Contamination happens

“Contamination of non-GM crops by GM crops is inevitable.”⁶⁶ This is the conclusion of a Western Australian Parliamentary inquiry and that of any reasonable observer looking at the evidence. In spite of biotech industry assurances that it wouldn’t be a problem, contamination has been a consistent and often overwhelming hardship for seed dealers, farmers, manufacturers, even whole food sectors. The biotech industry recommends buffer zones between fields, but these have not been competent to protect non-GM, organic, or wild plants from GMOs. A UK study showed canola cross-pollination occurring as far as 26 km away.⁶⁷

But pollination is just one of several ways that contamination happens. There is also seed movement by weather and insects, crop mixing during harvest, transport, and storage, and very often, human error. The contamination in North America is so great, it is difficult for farmers to secure pure non-GM seed. In Canada, a study found 32 of 33 certified non-GM canola seeds were contaminated.⁶⁸ Most of the non-GM soy, corn, and canola seeds tested in the US also contained GMOs.⁶⁹

Contamination can be very expensive. For example, StarLink corn—unapproved for human consumption—ended up in the US food supply in 2000. More than 300 packaged food products were subject to recall and the total cost of the debacle was estimated at more than US\$1 billion. Numerous smaller scale contamination episodes hurt or ruin businesses every month.

Even escapes of experimental GM crops from small trials can devastate an industry. An unapproved GM rice variety, last field trialed in 2001, was discovered in US rice stocks in 2006. Within two days of the announcement, US rice futures dropped \$150 million and the final price tag for industry might rival StarLink’s. In Thailand, even news that “some GM papayas were removed from the Khon Kaen research centre” caused a loss of the European market. A papaya grower said, “Importers cancelled orders and never asked for Thai papayas again.”⁷⁰ Thefts from Hawaiian papaya trials also preceded commercialization there, where the GM variety eventually caused massive

contamination. In one study, 50% of the organic and wild papayas tested were genetically engineered.

Contamination also occurs year to year in the same field. About 10% of canola seeds, for example, fall to the ground and are not harvested. They can germinate in subsequent years as “volunteer” crops. A UK study showed that if a farmer plants GM canola for one year and non-GM thereafter, unless he undertakes stringent control measures, his or her harvest will continue to have more than 1% GM contamination for about 16 years.⁷¹ “Currently, there are no on-farm conditions imposed on the commercial release of [GM] canola.”⁷²

If the farmer rotates from GM canola to another crop, he has another problem. GM canola is herbicide tolerant. Killing the volunteer crops may require using more toxic herbicides. In Canada, there are three herbicide tolerant varieties—two GM and one conventional. Due to cross pollination, studies have found canola that is resistant to *all three types of herbicides*. But it gets worse. Canola can cross pollinate with several weedy relatives such as wild mustard. Now these pollinated weeds have also developed resistance to weed killers and become “super weeds.”

There is no technology to fully eradicate GM contamination from the environmental gene pool. Thus, the self-propagating genetic pollution caused by today’s GMOs could theoretically outlast the effects of global warming and nuclear waste.

GM free zones pop up around the world

The natural response of farmers and governments around the world to the threat of GMOs has been to create GM free zones, moratoria, or other types of restrictions.

When Monsanto pushed hard to introduce GM wheat, the North American wheat industry, which had witnessed the fall of the corn, soy, and canola markets, were up in arms. More than 80 percent of US and Canadian foreign wheat buyers said they didn’t want GM wheat and might shop elsewhere if it were introduced. An Iowa State University economist projected a loss of 30-50% of the US wheat exports and a drop in prices by about a third.⁷³ More than 200 groups, including the US and Canadian National Farmers Unions, the Canadian Wheat Board, and the American Corn Growers Association, lobbied against Monsanto. They wanted North America to be a GM-wheat-free-zone. Monsanto withdrew its application on May 10, 2004.

When Hawaii coffee growers realized that GM coffee might destroy its premium market, it successfully lobbied for the University of Hawaii not to develop any varieties. Leaders in the rice, potato, flax, and sugar beet industries have also protected themselves by successfully blocking GM varieties.

More than 4500 jurisdictions on Europe have created GM free resolutions or laws, and countries and regions in every continent similarly have growing restrictions or complete bans.

According to a well-documented Greenpeace submission to the NSW Review of the Gene Technology, “The moratorium in Australia has benefited industry in several ways since its implementation. Benefits include:

- price premiums and preferential market access for Australian canola;
- lower production costs, since costly segregation and identity preservation processes are not required;
- an absence of costly recalls due to unwanted GE contamination – such as recently happened with rice products in the US;
- a reputation among domestic and export markets for high quality non-GE products.”⁷⁴

Australia may have benefited in other crops as well. As early as 2001, Australia’s Industrial Supplies Office “identified the non-genetically modified (non-GM) status of Australia as a possible advantage over other soybean producers, such as the US.” Indeed, Brazil’s non-GM soy is reaping a \$10 per ton premium over their GM varieties.

Swimming against the tide

In Iowa State University a few years ago, a memo was circulated to faculty and staff encouraging them to promote to farmers the idea of selling according to what the market wants. But there was an added point. GMOs were specifically cited as the exception! The very pro-GM “land grant” university, which receives funding from the biotech industry, wanted their staff to promote GMOs knowing that they have been overwhelmingly rejected by consumers, retailers, and food companies since introduced in 1994.⁷⁵ “The depth of market rejection,” according to the Washington D.C. based Center for Food Safety, “is arguably unparalleled by any other consumer product.”⁷⁶

Dan McGuire, Program Director of the American Corn Growers Association says, “Even in the face of all these negative market signals, it appears that some in the U.S. are willing to promote biotechnology no matter how negative the impact is on U.S. exports and commodity prices. That arrogant strategy is turning out to be a ‘market development in reverse’ program.” ACGA’s CEO adds, “An explanation is also owed our foreign customers on why the United States isn’t leading the effort to promote and sell the type of commodities and products they want and demand.”⁷⁷

Non-GMO tsunami expected

The Western Australian inquiry concluded that “there exists no certainty in the market acceptability of GM foods, with consumer attitudes being both varied and unstable on the issue.”⁷⁸ That instability was certainly apparent in 1999. At a January 1999 conference in the US, a biotech company spokesperson projected a 95% conversion of all commercial seeds into GMOs within five years. Anderson Consulting also announced that they were working on a strategy for their client, Monsanto, whose stated ideal future was to genetically engineer 100% of all commercial seeds in the world.

Within weeks, that ideal future crashed. On February 16, the UK parliament invited GMO researcher Arpad Pusztai to testify, forcing his former employer to lift their gag order. When Pusztai started speaking about his controversial discoveries about the inherent health dangers of GMOs, the press erupted. By week's end, they had written 159 "column feet" of text, which, according to one columnist, "divided society into two warring blocs."⁷⁹ By April 1999, overwhelming consumer resistance to GM foods compelled Unilever to publicly commit to remove ingredients from its European brands. Within a week, nearly all major food companies followed suit.

The same corporations that removed GMOs from their European lines continue to sell them in the US, where only 1 in 4 consumers believe they have ever eaten a GM food in their lives.⁸⁰ The fact that GMOs flourish in the United States because of consumer ignorance leaves the industry extremely vulnerable. If some campaign or event were to push this issue above the national radar screen causing sufficient consumer concern, US manufacturers would respond like their European counterparts. The tipping point does not require that a majority of shoppers reject GM foods. If even a small percentage started switching brands based on GMO content, major companies would respond. After all, the products don't gain anything from using them. Their foods aren't fresher, tastier, or healthier.

It is likely that Oprah Winfrey could end the genetic engineering of the food supply in the US in about 60 minutes. A religious leader or prominent celebrity might have a similar impact. Whether or not such a luminary steps up, plans are underway that could certainly achieve the tipping point in the US within the next two years.

Already, 29 percent of Americans are strongly opposed to GM foods and believe they are unsafe.⁸¹ But even among the 28 million Americans who regularly buy organic (and therefore non-GMO) food,⁸² many do not conscientiously avoid GM ingredients in their *non-organic* purchases; the products are not labeled. There is a campaign underway, however, that will both educate health-conscious shoppers about GM food dangers and provide clear non-GMO choices in the natural food stores where they shop. Moreover, the natural products manufacturers, who have been bitterly complaining about GMOs for a decade, are now united in an unprecedented initiative to remove all remaining GM ingredients from food products throughout their sector. On top of this, major websites and media channels have committed support by providing regular coverage of the health risks of GM foods. It is expected that millions of health conscious shoppers will soon make brand choices based on non-GMO content, which will force the rest of the food industry into a European-style rejection of GM ingredients.

(After being presented the details of this consumer education campaign at a food industry conference, the president of one company proudly told this author that he had nothing to worry about. He said he imported canned fish products in canola oil from Australia, where GM canola is banned. "Most retailers," he said, "would not carry our product if we had used GMO canola oil."⁸³)

A tipping point against one GM product has already started in the US. There is a massive industry-wide rejection of dairy products made from cows injected with Monsanto's genetically engineered bovine growth hormone. Over the last year, major dairies, supermarkets, even Starbucks restaurants, have committed to stop using the controversial drug. Articles in the *New York Times*, *Boston Globe* and *Reuters* describe this as "an explosion in the industry," "a tipping point," and a "trend" that does *not* show "any signs of abating."

The transformation was triggered by organizations educating consumers about the health risks of the drug—the same strategy, and many of the same organizations, now focused on GM food crops.

Australia showdown

When you trace the promotion of GMOs around the world by governments, scientists, and farm organizations, it always comes back to the powerful transnational GM seed companies. There are only six, but their influence is enormous. Dr. Henry Miller, in charge of biotech issues at the US Food and Drug Administration for many years, admitted, "in this area, the US government agencies have done exactly what big agribusiness has asked them to do and told them to do." Monsanto, which has patents on 90% of the plants currently commercialized, wields the most influence. According to the *New York Times*, "What Monsanto wished for from Washington, Monsanto—and, by extension, the biotechnology industry—got."⁸⁴ They also exert power at state levels. According to a Friends of the Earth report, for example, "the state of North Dakota was considering a bill imposing a moratorium on the development of Roundup Ready wheat in 2001, but after Monsanto publicly threatened to pull back all of its agricultural research funding to the state's land-grant university, the legislature suspended discussion of the bill."⁸⁵

Australian states are certainly feeling the heat from Monsanto and their minions. The parliamentarians are likely getting glowing reports about GMOs that are void of any problems. Based on a linguistic analysis of biotech proponents called *Genetically Modified Language*, they are likely describing those who demand more science as anti-science and, using emotional and irrational arguments, describing them as emotional and irrational.⁸⁶

Hopefully, Australian officials will do their homework and renew the moratorium or, as suggested above, raise the bar and eliminate GMOs from the food supply entirely. Although this last option is traditionally the domain of the federal regulators, they exhibit all the symptoms of hijacking by the biotech industry. Therefore the states may have to step in and impose bans on GM food sold in schools and other institutions that receive state funding. This would force the food companies to take out GMOs altogether and help protect the health of Australians. To protect the environment and economy, however, the clear choice is to continue the ban on planting GM crops.

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