



Battle for Biotech Progress

By Patrick Moore

I was raised in the tiny fishing and logging village of Winter Harbour on the northwest tip of Vancouver Island, where salmon spawned in the streams of the adjoining Pacific rainforest. In school I discovered ecology, and realized that through science I could gain insight into the natural beauties I had known as a child. In the late 1960s I was transformed into a radical environmental activist. A rag-tag group of activists and I sailed a leaky old halibut boat across the North Pacific to block the last hydrogen bomb tests under President Nixon. In the process I co-founded Greenpeace.

By the mid 1980s my interest was in "sustainable development" that would take environmental ideas and incorporate them into the traditional social and economic values that govern public policy and our daily behavior. Every morning, 6 billion people wake up with real needs for food, energy, and materials. The challenge is to provide for those needs in ways that reduce negative impact on the environment while also being socially acceptable and technically and economically feasible. Compromise and cooperation among environmentalists, the government, industry, and academia are essential for sustainability.

Not all my former colleagues saw things that way, however. Many environmentalists rejected consensus politics and sustainable development in favor of continued confrontation, ever-increasing extremism, and left-wing politics. At the beginning of the modern environmental movement, Ayn Rand published *Return of the Primitive*, which contained an essay by Peter Schwartz titled "The Anti-Industrial Revolution." In it, he warned that the new movement's agenda was anti-science, anti-technology, and anti-human. At the time, he didn't get a lot of attention from the mainstream media or the public. Environmentalists were often able to produce arguments that sounded reasonable, while doing good deeds like saving whales and making the air and water cleaner.

But now the chickens have come home to roost. The environmentalists' campaign against biotechnology in general, and genetic engineering in particular, has clearly exposed their intellectual and moral bankruptcy. By adopting a zero tolerance policy toward a technology with so many potential benefits for humankind and the environment, they have lived up to Schwartz's predictions. They have alienated themselves from scientists, intellectuals, and internationalists. It seems inevitable that the media and the public will, in time, see the insanity of their position. As my friend Klaus Ammann likes to hope, "maybe biotech will be the Waterloo for Greenpeace and their allies." Then again, maybe that's just wishful thinking.

On October 15, 2001 I found myself sitting in my office in Vancouver after Greenpeace activists in Paris successfully prevented me from speaking via

videoconference to 400 delegates of the European Seed Association. The Greenpeacers chained themselves to the seats in the Cine Cite Bercy auditorium and threatened to shout down the speakers. The venue was hastily shifted elsewhere, but the videoconferencing equipment couldn't be set up at the new location, leading to the cancellation of my keynote presentation.

The issue, in this case, was the application of biotechnology to agriculture and genetic modification. The conference in Paris was a meeting of delegates from seed companies, biotechnology companies, and government agencies involved in regulation throughout Europe. Surely these are topics covered by the rules of free speech.

Had those rules not been violated, I would have told the assembled that the accusations of "Frankenstein food" and "killer tomatoes" are as much a fantasy as the Hollywood movies they are borrowed from. I would have argued that, if adding a daffodil gene to rice in order to produce a genetically modified strain of rice can prevent half a million children from going blind each year, then we should move forward carefully to develop it. I would have told them that Greenpeace policy on genetics lacks any respect for logic or science.

In 2001, the European Commission released the results of 81 scientific studies on genetically modified organisms conducted by over 400 research teams at a cost of U.S. \$65 million. The studies, which covered all areas of concern, have "not shown any new risks to human health or the environment, beyond the usual uncertainties of conventional plant breeding. Indeed, the use of more precise technology and the greater regulatory scrutiny probably make them even safer than conventional plants and foods." Clearly my former Greenpeace colleagues are either not reading the morning paper or simply don't care about the truth. And they choose to silence by force those of us who do care about it.

The campaign of fear now waged against genetic modification is based largely on fantasy and a complete lack of respect for science and logic. In the balance it is clear that the real benefits of genetic modification far outweigh the hypothetical and sometimes contrived risks claimed by its detractors.

The programs of genetic research and development now under way in labs and field stations around the world are entirely about benefiting society and the environment. Their purpose is to improve nutrition, to reduce the use of synthetic chemicals, to increase the productivity of our farmlands and forests, and to improve human health. Those who have adopted a zero tolerance attitude towards genetic modification threaten to deny these many benefits by playing on fear of the unknown and fear of change.

The case of "Golden Rice" provides a clear illustration of this. Hundreds of millions of people in Asia and Africa suffer from Vitamin A deficiency. Among them, half a million children lose their eyesight each year, and millions more suffer from lesser symptoms. Golden Rice has the potential to greatly reduce the suffering, because it contains the gene that makes daffodils yellow, infusing the rice with beta-carotene, the precursor to Vitamin A. Ingo Potrykus, the Swiss co-inventor of Golden Rice, has said that a commercial variety is now available for planting, but that it will be at least five years before Golden Rice will be able to work its way through the

byzantine regulatory system that has been set up as a result of the activists' campaign of misinformation and speculation. So the risk of not allowing farmers in Africa and Asia to grow Golden Rice is that another 2.5 million children will probably go blind.

What is the risk of allowing this humanitarian intervention to be planted? What possible risk could there be from a daffodil gene in a rice paddy? Yet Greenpeace activists threaten to rip the G.M. rice out of the fields if farmers dare to plant it. They have done everything they can to discredit the scientists and the technology, claiming that it would take nine kilos of rice per day to deliver sufficient Vitamin A. Potrykus has demonstrated that only 100 grams of Golden Rice would provide 50 percent of the daily need.

Golden Rice is not the only example of civilization being held hostage by activists. Since its introduction to Chinese agriculture in 1996, G.M. cotton has grown to occupy one third of the total area planted in what is northern China's most important cash crop. This particular variety, called Bt cotton, has been modified to resist the cotton bollworm, its most destructive pest worldwide.

On June 3, 2002 Greenpeace issued a media release announcing the publication of a report on the "adverse environmental impacts of Bt cotton in China." In typical Greenpeace hyperbole, we were advised that "farmers growing this crop are now finding themselves engulfed in Bt-resistant superbugs, emerging secondary pests, diminishing natural enemies, destabilized insect ecology," and that farmers are "forced to continue the use of chemical pesticides."

Let's examine these allegations one at a time:

- **Bt-Resistant Superbugs:** There is not a single example or shred of evidence in the Greenpeace report of actual bollworm resistance to Bt cotton in the field. There is evidence from lab studies in which bollworms were force-fed Bt cotton leaves, but any scientist knows that this kind of experiment will eventually result in selection for resistance. Greenpeace, however, is claiming selection for resistance has actually happened to farmers in the field. According to Professors Shirong Jia and Yufa Peng of the Chinese National GMO Biosafety Committee, "no resistance of cotton bollworm to Bt has been discovered yet after five years of Bt cotton planting. Resistant insect strains have been obtained in laboratories but not in field conditions." So much for the superbugs.
- **Emerging Secondary Pests:** Greenpeace points out that there are more aphids, spiders, and other secondary insect pests in fields of Bt cotton than in conventional cotton. This is called an "adverse" impact in their report. The fact is, because Bt cotton requires much less chemical pesticide than conventional cotton, these other insects can survive better in Bt cotton fields. For the scientifically literate, this reduction of impact on non-target insects is actually considered one of the environmental *benefits* of G.M. crops. How Greenpeace figures this is "adverse" is beyond comprehension.
- **Diminishing Natural Enemies:** The Greenpeace media release states that there are fewer of the bollworm's natural predators and parasites in Bt cotton fields compared to conventional cotton, and calls this an "adverse impact." Again, a careful read of

the report comes up with no evidence for this claim. And again, according to Professors Jia and Peng, "as of today, there are no adverse impacts reported on natural parasitic enemies in the Bt cotton fields." And after all, isn't it a bit obvious that if using Bt cotton reduces bollworm populations, that bollworm parasite populations will also be reduced? Will Greenpeace now embark on an international campaign to "save the bollworm parasites"?

- **Destabilized Insect Ecology:** This one is a hoot. To speak of "insect ecology" in a monoculture cotton field that was sprayed with chemicals up to 17 times a year *before* the introduction of Bt cotton is ridiculous. The main impact of Bt cotton has been to reduce chemical pesticide use and therefore to reduce impacts on non-target species.

- **Farmers Forced to Continue Using Chemical Pesticides:** This claim gets the Most Misleading and Dishonest Award. No, Bt resistance does not provide 100 percent protection. Because secondary pests sometimes need to be controlled, farmers using Bt cotton usually use some pesticides during the growing cycle. Professors Jia and Peng sum it up this way: "The greatest environmental impact of Bt cotton was...a significant reduction (70-80 percent) of the chemical pesticide use. It is known that pesticides used in cotton production in China are estimated to be 25 percent of the total amount of pesticides used in all the crops. By using Bt cotton in 2000 in Shandong province alone, the reduction of pesticide use was 1,500 tons. It not only reduced the environmental pollution, but also reduced the rate of harmful accidents to humans and animals caused by the overuse of pesticides."

The Greenpeace report is a classic example of the use of agenda-based "science" to support misinformation and distortion of the truth. Once again, Greenpeace demonstrates that its zero tolerance policy on genetic modification can only be supported by distortions and false interpretations of data--in other words, junk science.

A hunger strike led by Greenpeace finally ended in Manila on May 22 after 29 days. Activists were protesting the introduction of Bt corn into the southern Philippines. In order to whip up media attention, activists have spread scare stories that G.M. corn "would result in millions of dead bodies, sick children, cancer clusters and deformities." Thankfully, the government did not give in to these fools and stood by its decision, based on three years of consultation and field trials, to allow farmers to plant Bt corn. Already there are indications of higher yield and improved incomes to farmers who chose to use the Bt corn.

For six years, anti-biotech activists managed to prevent the introduction of G.M. crops in India. This was largely the work of Vandana Shiva, the Oxford-educated daughter of a wealthy Indian family, who has campaigned relentlessly to "protect" poor farmers from the ravages of multinational seed companies. In 2002, she was given the Hero of the Planet award by *Time* magazine for "defending traditional agricultural practices."

Read: poverty and ignorance. It looked like Shiva would win the G.M. debate until 2001, when unknown persons illegally planted 25,000 acres of Bt cotton in Gujarat. The cotton bollworm infestation was particularly bad that year, and there was soon a 25,000 acre plot of beautiful green cotton in a sea of brown. The local authorities

were notified and decided that the illegal cotton must be burned. This was too much for the farmers, who could now clearly see the benefits of the Bt variety. In a classic march to city hall with pitchforks in hand, the farmers protested and won the day. Bt cotton was approved for planting in March 2002. One hopes the poverty-stricken cotton farmers of India will become wealthier and deprive Vandana Shiva of her parasitical practice.

Until recently the situation in Brazil was far from promising. A panel of three judges managed to block approval of any G.M. crops there. Meanwhile, the soybean farmers in the south of the country have been quietly smuggling G.M. soybean seeds across the border from Argentina, where they are legal. The fact that Brazil was officially G.M.-free has allowed European countries to import Brazilian soybeans despite the E.U. moratorium on the import of G.M. crops. But recently things have changed.

With the election of President Luiz Inacio "Lula" da Silva of the Workers Party in 2002, the Green elements within the party pressed the government to enforce the ban on genetically modified organisms. There was something ironic about a "workers party" enforcing a policy that will damage farmers who have come to enjoy the benefits of biotechnology. In the end, the Brazilian farmers rebelled like those in India. In 2003 the government relented and allowed G.M. soybeans to be planted. The soybean farmers of southern Brazil have become prosperous, bringing benefits to the environment and their local communities.

Surely there is some way to break through the misinformation and hysteria and provide a more balanced picture to the public. Surely if reasonable people saw the choice between the risk of a daffodil gene in a rice plant versus the certainty of millions of blind children, they would descend on Greenpeace offices around the world and demand to have their money back. How is it that these charlatans continue to stymie progress on so many fronts when their arguments are nothing more than wild, scary speculation?

The main reason for the failure to win the debate decisively is the failure of supporters of G.M. technology to act decisively. The activists are playing hardball while the biotech side soft-pedals the health and environmental benefits of this new technology. Biotech companies and their associations use soft images and calm language, apparently to lull the public into making pleasant associations with G.M. products. How can that strategy possibly hope to counter the Frankenfood fears and superweed scares drummed up by Greenpeace and so many others?

Just from a brief scan of the Monsanto, Syngenta, and Council for Biotechnology Web sites, it is clear that these companies and organizations are trying to project positive, clean, and calming thoughts. This is all well and good, but it is no way to turn the tide. Stronger medicine is needed. Imagine an advertising campaign that showed graphic images of blind children in Africa, explained Vitamin A deficiency, introduced Golden Rice, and demonstrated how Greenpeace's actions are preventing the delivery of this cure. Imagine another ad that showed impoverished Indian cotton farmers, explained Bt cotton, and presented the statistics for increased yield, reduced pesticide use, and better lives for farmers--followed by the clear statement that activists are to blame for the delayed adoption of the technology.

How about an ad that graphically portrays the soil erosion and stream siltation

caused by conventional farming versus the soil conservation made possible by using G.M. soybeans? And another one that shows workers applying pesticides without protection in a developing country versus the greatly reduced applications possible with Bt corn and cotton? What if all these ads were hosted by a well-known and trusted personality? Wouldn't this change public perspectives? The biotechnology sector needs to ramp up its communications program, and to get a lot more aggressive in explaining the issues to the public through the media. Nothing less will turn the tide in the battle for the minds, and hearts, of people around the world.

Patrick Moore is chairman and chief scientist of Greenspirit Strategies, an environmental consulting agency.



Published in *Biotech Bounty* March 2004

This information was found online at:
http://www.taemag.com/issues/articleid.17889/article_detail.asp