

# Our Food, Whose Choice? Consumers Take Action on Genetically Modified Foods

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### **Our Food, Whose Choice?**

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# Genetically Modified, Genetically Engineered GM Foods: The Basics

**Is the GM food controversy related to “mad cow” disease and dioxin food scares?** Not directly. But food scares have shaken consumer confidence in regulatory procedures and heightened consumer demand for prudence.

**Are GM crops different from conventional ones?** Cross-breeding has been a tool of farmers since the beginnings of agriculture, but genetic modification is a world apart. Conventional hybridisation occurs within the same, or closely related species. In contrast, genetic engineering extracts genes bearing a specific, hereditary trait from one organism (animals, plants, bacteria) and artificially inserts them into a completely different organism (e.g. food crops).

**Does genetic modification improve the nutritional value of food?** Researchers are working on nutritionally enhanced foods, such as an iron-and-vitamin fortified rice. In practice, existing GM crops have been engineered for more profitable farm production, not healthier farm produce.

**Could GM foods damage my health?** Currently, the only known health risks from GM foods are the possibility of food allergies and increased resistance to antibiotics. However, in the absence of long-term safety testing, no one can know for certain what the harmful effects of a GM food may be. The most problematic hazards are the unexpected ones and those that develop slowly over time.

**Can GM crops damage wildlife or the environment?** As with human health, science does not understand the full implications of genetic manipulation and cannot predict its long-term environmental impacts. Studies have shown that wildlife can be harmed by GM crops and that GM crops can cross-pollinate with conventional plants, with unforeseeable impacts on ecological equilibrium.

**Haven't GM foods been tested and aren't there rules to protect consumer health?** Government pre-market safety reviews of GM products range from relatively thorough in European Union countries to none at all in most of the world. In the United States, where most GM crops are grown, pre-market safety reviews are voluntary. GM foods have not been around long enough, however, to assess their long-term impact on health.

**How can I identify GM foods? And how can I avoid them?** In the absence of labelling, it isn't easy. According to Greenpeace, GM soya is present in about 60% of all soy derivatives, including vegetable oils, soy flour, lecithin and soy protein. GM corn can be found in 50% of all corn products and derivatives, such as cornstarch, corn flour and corn syrup. Over 90% of these processed foods are excluded from European Union labelling norms, the most stringent in the world. Testing all consignments for GM content would be prohibitively costly. Identity testing by DNA scanning works for some food but cannot detect GM ingredients in highly refined oils and grains. These can only be tracked through documentation. With no way of identifying GM ingredients, you would need to avoid all soya and corn-based ingredients and all foods and beverages produced with GM enzymes. Lists of GM and GM-free foods available in the United States and Europe can be found on the Internet. One way of avoiding gene cuisine is to eat organic foods.

**With GM crops and foods already so ubiquitous, can consumer activism really make a difference?** It already has. With global and local action, the consumer rights to information, choice and safety can prevail.

WHICH? CMUK

# Biotech/Biofoods/GE/GM/GMOs

## Novel Foods Newspeak

**Antibiotic Resistance Markers:** GM usually employs virus genes to “smuggle” in the inserted genes. Antibiotic resistance genes are used as markers to track the gene carrying the trait being transferred.

**Biotechnology:** Overall term for the scientific techniques that use living cells and organisms to produce new foods and chemicals for both medical and agricultural uses. The term **bioengineered foods** is also used for crops and processed foods produced this way.

**BST** (recombinant Bovine Somatotropin, **rBST**, also called Bovine Growth Hormone, **rBGH**), the first genetically engineered animal hormone approved in the United States, is used to boost milk production in cows. Sold by Monsanto, it is banned in Canada and the European Union. Codex Alimentarius, the UN food standards body, has not certified that BST is safe.

**Bt**, *bacillus thuringiensis*, is a natural bacteria used by organic farmers to control pests. Bt-engineered crops (e.g. corn, potatoes) produce this toxin throughout the plant. Studies show that pollen from Bt corn can kill Monarch butterfly caterpillars and that Bt crops may be toxic to beneficial insects.

**Gene/DNA:** A section of DNA that codes for a specific biochemical function in a living organism. **DNA** is the double helix molecule that transmits hereditary traits contained in genetic material in chromosomes.

**Genetic Engineering (GE)**, also known as gene splicing or recombinant DNA technology, takes the DNA of genes from one

species and inserts them into another species to transfer a desired trait. **Genetically engineered (GE) foods** are those grown from seeds or containing ingredients altered through this process.

**Genetic Modification (GM).** See genetic engineering. **Genetically modified (GM) foods** is the term preferred by Consumers International.

**Genetically Modified Organisms (GMOs):** A plant, animal, bacteria or other life form that has had its DNA artificially altered by new processes known collectively as genetic engineering.

**GM Crops:** The main GM food crops now in commercial cultivation are soya, corn (maize), canola (rape seed) potatoes and tomatoes. In the pipeline are rice, sugar beets and other foods. Animal feed is the principal market for GM crops. Genetic modification is generally used to improve plant resistance to pests and weedkillers. Whether destined for human or animal consumption, the environmental impact of GM crops is the same.

**GM Foods, Gene Foods:** Foods containing genetically modified ingredients, derivatives of GM ingredients or GM enzymes. Soybeans and corn are the most extensive GM crops and their derivatives

can be found in an estimated 60% of all processed foods.

**Novel Foods:** Term used by the European Union and others for GM foods.

**Precautionary Principle:** Under the Rio Declaration of the 1992 UN Conference on Environment and Development (the Earth Summit), governments must take a “better safe than sorry” approach to potential environmental and health risks, in which the burden of proof for a product’s long-term safety falls to its producer.

**Roundup and Roundup Ready:** Roundup is the trade name of a weedkiller produced by Monsanto. Roundup Ready seeds, also from Monsanto, are genetically modified to withstand this herbicide, so that spraying kills weeds without damaging the crop.

**Substantial Equivalence:** The concept, used by the biotech industry and many regulatory agencies, that the composition of GM foods is not chemically different from conventional ones in ways that could affect their safety or nutritional value, and therefore require no special safety testing or labelling.

**Transgenic:** *trans* means “crossing from one place to another” and *genic* refers to genes. See **Genetically Modified Organisms**.

**“Terminator” Technology:** Experimental technology that alters plant reproduction so that harvested seed will be sterile if farmers attempt to replant it.

# Sound Science or Food Folly? Gene Foods Controversy at a Boil

**G**enetically modified crops are grown from a revolutionary seed technology embraced by farmers across the United States, Canada, Argentina and elsewhere. Ten years ago, no gene-altered crops were grown commercially and no GM foods were on the market. Today, GM ingredients are turning up in animal feeds and foodstuffs being traded, processed, mass produced, sold and consumed the world over.

The handful of agribusiness transnationals (TNCs) that develop, patent and sell GM seeds have directed their most intensive marketing efforts at farmers. Promises of higher yields with lower pesticide and herbicide use brought a 20-fold increase in GM seed sales between 1995 and 1998, according to the Rural Advancement Foundation International. Savings for farmers is just one short-term windfall. Corporate profits are another. According to the inventors and patent owners of these magic-like seeds, once they've worked a few bugs out of the system, genetic modification will unlock the biochemical keys to feeding the world's hungry — while still treading lightly on the Earth.

Most governments have welcomed the biotech boom and its vision of a technological fix for two of the planet's most intractable problems. Except in some European countries, regulators have acquiesced to the deregulatory recommendations of the biotech

“Who’s Afraid of GM Foods?” from the cover of *The Economist*.

## To GE or Not to GE?

### Possible benefits:

- GM crops that are pest resistant and give higher yields could provide more food for the growing world population.
- Plants could be modified to produce more nutritious or healthier foods.
- GM plants could be developed to survive in extreme conditions like droughts.
- Pesticides and herbicides may be used less intensively with energy savings from reduced crop spraying.
- GM food could have health benefits, such as providing edible vaccines.
- GM foods could provide, cheaper, better quality, tastier food.

### Possible risks

- We don't know enough about what will happen to genes inserted into GM crops.
- Growing GM crops on a large scale may have implications for biodiversity, the balance of nature, wildlife and the environment.
- Genes from GM crops could transfer to non-GM crops and other plants growing nearby.
- Using antibiotic-resistant genes as GM markers could add to the problem of antibiotic resistance.
- Toxins or allergens may be increased, transferred or produced as a result of genetic modification.

— from *Which?* (Consumers Association, UK) March 1999

ACA/CONSUMING INTEREST

bloc, whose powerful influence they showed little interest in challenging. Scientific innovation has outstripped the ability of regulators to anticipate adverse effects of the new technology on health and the environment.

And so GM foods have been rushed to the market with indecent haste — despite incomplete scientific knowledge about how genetic manipulation works; despite certain, but unpredictable, impacts on ecological equilibrium; despite the lack of adequate tracking mechanisms to monitor impacts on health.

Nor has much attention been given to educating consumers, since these designer genes don't offer them much. Thus, despite an

established international canon of consumer protection rights—including a comprehensive body of food safety norms already in place in countries like the United States — consumers' right to informed choice on GM foods has been largely ignored.

While many long-term impacts are still unknown, no one has yet demonstrated that the GM foods now on the market are harmful to human health or that their environmental impact isn't localised and manageable. "Who can be absolutely certain that these products will not have some bad effect on animals or plants or the environment?" writes Floyd Norris in the *New York Times*. "Ask the question that way, and the answer is that no one can. Ask whether the evidently small risks offset the potential gains—in nutrition and in reducing pesticide use, among others— and you might get a different answer."

Risk vs benefit: the question is legitimate, but where GM crops and foods are treated like conventional ones, the public's opinions are not being consulted. By refusing to segregate GM products from non-GM ones —and by treating reluctant consumers like recalcitrant children who don't know what foods are good for them— food producers created a monster that turned on them: Frankenfoods. Place this monster on a supermarket shelf and people who care about what goes onto their plates may well think twice before reaching the cash register — especially in Europe, where recent food scares brought on the slaughter and disposal of mountains of tainted beef, poultry and dairy products.

### Hard to Swallow: Risks to Health

The main causes for concern to human health from GM foods are adverse allergic reactions, build-up of resistance to antibiotics and the potential for new, or more virulent, toxins in foods.

## The GM Fields: What and Where

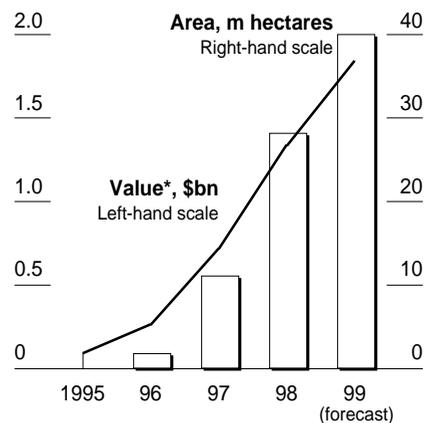
- The two main GM crops are soya and corn, followed by cotton, canola and potato.
- Almost 28 million hectares of GM crops were grown worldwide.
- GM soya accounted for 52% of the global transgenic area and GM corn accounted for 30%.
- Herbicide tolerance was the dominant GM trait, accounting for 77% of the global transgenic area. Insect resistance accounted for 22%.
- Some 98% of global transgenic crop acreage is accounted for by three countries: the United States, Canada and Argentina.

— All figures for 1998.

— Source: "Gene Giants." *RAFI*, 3/30/99, citing Clive James, *Global Status of Transgenic Crops*, ISAAA Briefs. Website: [isaaa.org/fr/brief8.htm](http://isaaa.org/fr/brief8.htm)

## Reap What You Sow

GM crops worldwide



\* Seeds and technology fees

Source: International Service for the Acquisition of Agri-Biotech Applications, cited in *The Economist* (UK), June 19, 1999.

## Food Allergies

Genetic engineering can transfer allergies from foods to which people know they are allergic to foods they think are safe. Soybeans altered with genes from Brazil nuts were recalled in 1996 when tests found they could produce an adverse, potentially fatal reaction in allergy-prone individuals. Approximately 2% of adults and 8% of children have true food allergies, and about one-quarter of all people have reacted adversely to some type of food. Failure to label GM foods means that people with allergies have no way of knowing whether they are eating potentially risky foods or, in the event of problems, what ingredient provoked the reaction.

## Antibiotic Resistance

The British Medical Association has called the risk to human health from antibiotic resistance developing in micro-organisms "one of the major public health threats that will be faced in the 21st century." Although antibiotic resistance genes are being phased out, they are present in many GM foods and can increase resistance to antibiotics, thus making disease harder to control.

## Toxic Effects

Genetic manipulation can increase levels of natural plant toxins in foods or create entirely new toxins in unexpected ways. The fact that genetic modification can go seriously awry was shown by one of the first products introduced into the market, an amino acid called L-tryptophan. In the late 1980s, a Japanese firm began using GM bacteria to produce this dietary supplement for over-the-counter sale in the United States. Thirty-seven people died and at least 1,500 contracted a disabling blood disease before the product was recalled. The manufacturer Showa Denko refused to cooperate with US Food and Drug Administration efforts to investigate the cause of the poisonings, but the fatal toxin appears to have been linked to the use of GM bacteria.

## Europe's Emergency Plan

According to an article in *The Independent* (April 4, 1999, UK), the European Commission has formulated a five-point emergency plan if GM plants result in widespread illness or death of wildlife.\*

The plan includes: 1) procedures for controlling GMOs in case of unexpected spread; 2) methods for decontaminating affected areas and eradicating GMOs; 3) methods to dispose of plants, animals and soils exposed during and after the spread; 4) methods to isolate affected areas; 5) plans for protecting human health should undesirable effects occur.

\* EC officials did not respond to CI's attempt to verify this report.

Concerns over the safety of the genetically engineered hormone BST, injected into dairy cows to boost milk production, focus on increased risk of cancer in humans.

There are also fears that herbicide-tolerant crops might, contrary to industry claims, lead to more pesticide use as farmers employ larger amounts than usual without fear of damaging crops. More residues from hazardous chemicals in food and the environment could increase the risk of cancers and other diseases.

GM Fields, by country			GM Fields, by crop (in millions of hectares)		
Country	1998, millions of hectares	%	Crop	1997	1998
United States	20.5	74	Soybeans	5.1	14.5
Argentina	4.3	15	Corn	3.2	8.3
Canada	2.8	10	Cotton	1.4	2.5
Australia	0.1	-	Canola	1.2	2.4
Mexico	0.1	-	Potato	0.1	0.1
Spain	0.1	-	TOTAL	11.0	27.8
France	0.1	-			
South Africa	0.1				

*Source: International Service for the Acquisition of Agri-Biotech Applications, cited in Jornal de Tarde (Brazil), June 22, 1999.*

## Percentage of Acreage Planted with Biotech Crops

	1996	1997	1998
<b>United States</b>			
Corn	13%	26%	50%
Cotton	9%	16%	39%
Soybeans	7%	23%	48%
<b>Canada</b>			
Canola	5%	35%	47%
Corn	0%	3%	38%
Soybeans	0%	0%	6%
<b>Argentina</b>			
Soybeans	2%	23%	50%

*Source: CIEL Brief 1999. Website: www.ciel.org*

From: "Of Cabbages and Kings: A Cartoon Book on GE", available from A SEED Europe.

## Ask the Animals

"After four months of retrieving anecdotes from Kansas to Wisconsin," writes US farmer Steven Sprinkel, "it's high time to see how many stories are out there.

"About hogs that wouldn't eat the ration when GM crops were included. About the farmer who said 'Well, if you want your cattle to go off their feed, just switch them out to a GM silage.'

About the farmer who said his cattle broke through an old fence and ate down the non-GM hybrids but wouldn't touch the Roundup Ready corn. About the cattleman who saw the weight-gain of his cattle fall off when he switched over to GM sources.

About the organic farmer with a terrible deer problem on his soybeans, and when he drives out at night, there are 40 of them mowing down his tofu beans while across the road there isn't one doe eating on the Roundup Readies.

About the raccoons romping by the dozen in the organic corn, while down the road there isn't one ear that's been touched in the Bt fields.

Even the mice will move on down the line if given an alternative to these 'crops'."

— ACRES USA Special Report, Sept. 1999

## Altered Food Quality and Nutrition

Genetic modification can alter the nutritional value of foods in both positive and negative ways. Canola oil, for example, has been altered to contain less of the fat molecules that can build up in people's arteries. But nutritional content can also suffer as a result of genetic modification, as is the case of milk from BST-injected cows, which has higher levels of pus, bacteria and fat.

## Tomatoes Go Bananas: Environmental Risks

Science's imperfect understanding of nature means that nature, and not scientific forecasts of minimum risk, will determine the extent of the impact of GM crops on the environment. Just as the consequences of the chemical revolution—pollution, toxic waste and cancer—took half a century to surface, so the environmental implications of biotech may remain unidentified for years or decades.

Released GMOs are live organisms capable of reproducing, migrating and mutating. Pollen from GM plants is carried by wind, birds and insects. Once released into the environment, live GMOs cannot be recalled and may become a permanent source of "gene pollution" and collateral damage.

## Superweeds

Crops engineered to resist herbicides and pesticides (like Bt crops) can pass traits on to their wild relatives (as between GM canola and wild mustard) and create pesticide and herbicide resistant superweeds. Genes inserted into GM crops could "contaminate" wild plants, which may become resistant or toxic to certain plant pests. This could upset the existing ecological balance by causing wild plants to spread excessively or by reducing the insect population feeding on the newly toxic plant. If pesticide resistance were transmitted to plant pests, farmers would be forced to use more and more pesticides to control them, with unknown effects on the environment and added danger to public health.

## Loss of Biological Diversity

Genetically modified organisms threaten to diminish biological diversity. If GMOs eradicate weeds and insects, species that depend on them will also suffer. As Andrew Simms of Christian Aid (UK) writes, the use of herbicide-tolerant crops is like "giving one plant a genetic radiation suit, then dropping a small nuclear device to wipe out all other plant life in the area, as well as the animal life that depends on it, along with any hope of sustainable agriculture."

Measures to protect global biodiversity from potential GM hazards are a main goal of the UN's Biosafety Protocol when negotiations resume in early 2000. (See page 20)

# Recommendations: Revise, Regulate, Revoke

**Consumer organisations, in general, are not categorically opposed to genetic modification. What they demand is safety and the right to informed choice. Below is an overview of demands from diverse campaigning groups, including scientists, environmental NGOs and consumers. (See page 18 for CI positions on some of these issues.)**

## Environmental Protection

- Moratorium on planting commercial GM crops until there is scientific consensus, or as close agreement as reasonably achievable, about potential long-term environmental effects. *British Medical Association, interim report, May 1999*
- Establish more stringent safety protocols for GMO field testing. *Gene Campaign, India*
- Immediate suspension of all environmental releases of GM crops, both commercially and in open field trials, for at least five years. *World Scientists' Statement. Website: www.isis.dircon.co.uk*
- Provide rules for transboundary movement of GMOs, including measures for prior notification of imports, and tracking and labelling of GMO products. Establish provisions for liability and compensation for GMO-related environmental damage. *UN Biosafety Protocol proposals*

## Health Safety

- Indefinite moratorium on releases of GMOs pending further research on new allergies, the spread of antibiotic resistance genes and the effects of transgenic DNA. *British Medical Association*
- Immediate ban on the use of antibiotic resistance marker genes in GM food. *Gene Campaign, India*
- More robust systems of disease surveillance to deal with the potential emergence of new diseases associated with GM material. *British Medical Association*

## Food Production and Sales

- Segregation at source to enable identification and traceability of GM foods. *British Medical Association*
- Labelling of GM imports and banning unlabelled ones, if the industry refuses to segregate. *British Medical Association*
- Stringent pre-market safety testing, including long-term animal feeding and volunteer human feeding studies. *Campaign for Food Safety (US)*

- Companies committed to supplying GM-free foods must have separate food production facilities for non-GM food. *Food Magazine (UK)*

- Consumers must have a guaranteed supply of GM-free foods. *Bureau Européen des Unions de Consommateurs*

## Mandatory Labelling

- Governments must require mandatory labelling of all genetically engineered foods and ingredients based on complete traceability of GMOs throughout the entire production, processing and distribution chain. *Transatlantic Consumer Dialogue. Website: www.tacd.org*
- Mandatory labelling by exporting countries of export products as non-GMO and GM for segregation. *Consumers Union of Japan*
- Mandatory labelling of foods containing more than 1% of GM materials. *Consumers Union of Japan*
- Mandatory labelling and product information to trace allergens back to their source in cases of GM-induced food allergies. *Campaign for Food Safety (US)*

## Patents and Trade

- Revoke and ban patents on living organisms, cell lines and genes. *World Scientists' Statement*
- Ban "Terminator," "Traitor" and similar sterile seed technologies. *Gene Campaign, India*
- Countries must be given international rights, under the precautionary principle, to ban or control the import and use of GMOs, including rights to prior informed agreement on all transboundary movements of GMOs. *Greenpeace*

## Public Consultation

- Support a comprehensive, independent public enquiry into the future of agriculture and food security for all, taking account of the full range of scientific findings as well as socio-economic and ethical implications. *World Scientists' Statement*

# Ethical and Social Concerns

## Forced Feeding

**F**ood is a chain that links ecology, land, labour, poverty, trade, science, health and culture. Changes in this chain, especially revolutionary ones like genetic manipulation, have an impact at every step.

### Ethics of Eating

Already, millions of people holding ethical or religious dietary principles are unwittingly consuming foods that go against the grain. Individuals who don't eat pork, for example, won't want it spliced into their chicken. Vegetarians may want to steer clear of the Flavr Savr tomato, which contains genes from a flounder to withstand cold weather and improve its shelf life.

GM foods raise ethical dilemmas that transcend questions of dietary preference. Some people object to genetic modification as unnatural, unnecessary tinkering that "takes mankind into realms that belong to God, and to God alone," in the words of Britain's Prince Charles.

### Food (In)Security

A fourth agricultural revolution of genetic engineering and biotechnology is emerging just as the third one — agrochemicals and intensive farming — is beginning to unravel, says food policy expert Tim Lang. "We have to see that it is the production of food that matters, not just its consumption."

The Green Revolution was initially touted as a success when it dramatically increased rice and wheat yields in Southeast Asia.

Eventually, its adverse social consequences surfaced in concentration of land ownership and greater poverty for small farmers.

Proponents of genetic engineering claim it will help the estimated 800 million hungry people of the world by boosting food productivity. "One main source remains for significantly increasing the productivity of the plant and its grain — genetic enhancement," a Du Pont company executive states.

But according to development journalist María Elena Hurtado in her forthcoming book *GM Foods: The Consumers' Revolt*, the jury is still out on the contributions of genetic engineering to food production. "The potential of tailoring seeds to suit difficult environments, such as drought-prone regions, has still not been realised. It is not yet known how well new seeds will fight pests and weeds or reduce crop losses. Nor is it known whether scientists will work on crops grown in developing countries and by poor farmers."

Moreover, the problem today is not a shortage of food but barriers to effective and equitable distribution.

Even if no GM crops are grown in a developing country, the technology could have widespread impacts. National economies could suffer from the loss of export incomes from crops, like cacao and quinoa, that biotech firms and farmers in developed countries are attempting to reproduce in the lab.

The dumping of GM food is another fear. "Your people have rejected GM food," Indian farmer Vivek Cariappa told campaigners in the UK. "Where will it go?" It won't go into the seas. It will go to countries like ours."

## Corporate Control and Patents

Corporate control over food production, already a powerful influence on modern agricultural systems based on factory farming, mono-cropping and reliance on chemical inputs, will increase with GM technologies. (See page 12) One way that biotech companies exercise dominance is through patents on GMOs, including plant — and human — genes. Most of the world's agricultural genetic diversity resides in the South. Under global trade rules, TNCs can patent genetically modified varieties of those crops. "Genetic resources taken freely from the South will be returned to them later as pricey, patented commodities," says Michael Hansen, of the Consumer Policy Institute (US).

The corporate drive to control even traditional plant and herbal knowledge, to patent it as a new creation, to licence and then to sell it for a profit has coined a new word: biopiracy. Take the patent awarded to the University of Toledo (US) on the use of African soapberry to kill zebra mussels. Ethiopian scientists had researched the technique for 19 years, based on hundreds of years of innovation and use by Ethiopian communities. The University of Toledo's contribution was one day of experimentation and four months of legal work to verify the initial evidence.

### Sterile Seeds

New technologies still in the testing stage clearly show that corporations are not really interested in feeding the world. One such process, dubbed "Terminator" by critics, makes seeds sterile when farmers attempt to replant them, as they have for the past 12,000 years.

The implications of Terminator technology are "causing a furor among farmers and breeders around the world," a RAFI bulletin notes. "Half the world's farmers are poor and can't afford to buy seed every growing season, yet poor farmers grow 15 to 20% of the world's food and they directly feed at least 1.4 billion people. These farmers depend upon saved seed and their own breeding skills in adapting other varieties for use on their (often marginal) lands."

While widespread repudiation of Terminator technology has forced several biotech companies to announce a moratorium on the sale of these sterile seeds (see page 21), research is continuing on related processes — "Traitor" technologies — to control genetic traits of plants with external chemical catalysts. Once perfected, a seed's genetic traits could be turned on or off with the application of chemicals, such as a herbicide or fertilizer, also sold by the companies. "(They) tell us that trait control will mean more options for farmers," RAFI states, "but chemically-dependent seeds will more likely lead to bioserfdom."

### Can't Fool Mother Nature

Suman Sahai, an Indian geneticist and convenor of the Gene Campaign, worries that the corporate focus of many campaigns blinds them to potential benefits of biotechnology. "Do we want to say 'no' to protein-enriched rice and potatoes? Are we going to shoot down this technology — or test it and evaluate it first, and then see if we want it?"

In her view, the questions to ask are: Is it safe? Is it effective? Is it necessary? Does it alleviate hunger? Who controls it?

The Boycott Quarterly

*"Let me see if I've got this straight... You want to take my medicinal plant collection and tape-record my remedies and, in return, you'll leave me a certificate saying I'm a folk hero?"*

From: "Of Cabbages and Kings: A Cartoon Book on GE", available from A SEED Europe.

"Society must take this technology by the horns and twist it to fit our needs," she believes.

Open, transparent systems of evaluation — with monitoring done by independent experts and data made accessible to public scrutiny — are the key. Public debate over risks and benefits will determine whether it is in the public interest to proceed with these technologies, and how.

"Reality must take precedence over public relations," Sahai adds, echoing the words of scientist Richard Feynman, "for Nature cannot be fooled."

Claudius

# Biotech Behemoths Who Controls the Technology?

**T**hey call themselves Life Sciences corporations. Others call them the Gene Giants. The agricultural biotech industry is dominated by a handful of transnational corporations with interests in agrochemicals, seeds, foods, additives and pharmaceuticals.

According to RAFI, the top five Gene Giants — AstraZeneca, DuPont, Monsanto, Novartis and Aventis — account for nearly two-thirds of the global pesticide market (60%), almost one-quarter (23%) of the commercial seed market and virtually 100% of the GM seed market.

Yet five years ago, none of top five Gene Giants appeared on the list of leading seed corporations. In fact, three of the top five

companies didn't even exist: since then, Zeneca+Astra merged to form AstraZeneca; Rhone Poulenc+Hoechst became Aventis; Ciba Geigy+Sandoz became Novartis; and DuPont took over Pioneer Hi-Bred.

The biotech industry exerts tremendous influence on governments and, through governments, over the international institutions that regulate food safety and trade. Monsanto, in particular, has built a revolving door to US regulators, even sharing patent rights on the controversial "Terminator" technology with the US Department of Agriculture. Industry also pulls its weight in academia, through research funding, and in farm communities, through sales and licensing agreements.

## Seed Industry Top Three

Three companies account for 20% of the US\$23 billion seed trade worldwide.

Companies		1998 Seed Sales, US Millions
DuPont	(USA)	\$1,835+
Monsanto	(USA)	\$1,800 (est.)
Novartis	(Switzerland)	\$1,000

Source: RAFI, Sept. 1999

## Monsanto's Misdeeds

A decade of acquisitions and mergers have turned Monsanto into the world's second largest seed firm and the world's third-ranking agrochemical company. Monsanto controls nearly 90% of the GM seed market in the United States, where, in 1999, farmers planted roughly half of their corn, cotton and soyfields with GM crops.

The hubris of this corporation is notorious. "[Biotechnology] is the single most successful introduction of technology in the history of agriculture — including the plow." Monsanto CEO Robert Shapiro has said. Among its misdeeds, Monsanto has:

- ... fought tooth-and-nail the labelling of the BST milk hormone, despite new evidence of health risks, and threatened dairy farmers in Vermont (US) with legal action when they stuck BST-free labels on butter and milk cartons.
- ... hired private investigators to identify farmers re-using seed. By early 1999, Monsanto's seed police had taken hundreds of farmers to court for breaking Roundup Ready license agreements.
- ... In the UK, the printers of The Ecologist magazine pulped an issue on Monsanto rather than face the possibility of a libel suit.

Monsanto's strategies may have backfired. In December, the biotech giant and other leading producers of GM seeds were hit with a class-action suit by farmers accusing the companies of rushing seeds to market without adequate safety testing, and giving them misleading guarantees about the marketability of GM crops. Companies were also accused of illegally controlling the supply of the seeds.

# To Know, and Say No

## Respecting Consumer Rights

“Food is different from other consumer products,” Jean Halloran and Michael Hansen write in *Why We Need Labelling of Genetically Engineered Food* (CI, 1998). “It’s something we literally take inside ourselves. It’s necessary on a daily basis for growth and life, and bound up in our cultures and traditions, so we care about it intensely. Consumers have a fundamental right to know what they are eating, and that it is safe.”

Modern consumer protection legislation is based on eight fundamental rights, as detailed below. Four rights, in particular, are especially pertinent to the GM food debate.

■ **The Right to Safety:** As Australian public health expert Stephen Leeder notes, “claims of safety based purely on authority don’t wash any more.” Consumers don’t want to be dictated to about what is good or right for them: they want to participate in the processes where safety standards are determined.

Consumers may not be willing to jeopardise long-term health and safety merely to allow corporations to rush new foods to the market before regulators have a chance to catch up. “Even where safety evaluations are thorough,” CI argues, “it is still naive at this stage

## Consumer Rights Defined

*A framework of eight basic rights has been developed over the years to protect consumer welfare. These form the basis of legislation and advocacy worldwide. Every year on March 15, groups use World Consumer Rights Day to advance these principles.*

■ **The right to the satisfaction of basic needs:**

To have access to basic, essential goods and services, adequate and nutritious food, clothing, shelter, health care, education and sanitation.

■ **The right to safety:**

To be protected against products, production processes and services that are hazardous to health or life.

■ **The right to be informed:**

To be given the facts needed to make an informed choice and to be protected against dishonest or misleading advertising and labelling.

■ **The right to choose:**

To be able to select from a range of products and services, offered at competitive prices with an assurance of satisfactory quality.

■ **The right to be heard:**

To have consumer interests represented in the making and enactment of government policy and in the development of products and services.

■ **The right to redress:**

To receive a fair settlement of just claims, including compensation for misrepresentation, shoddy goods or unsatisfactory services.

■ **The right to consumer education:**

To acquire the knowledge and skills needed to make informed, confident choices about goods and services while being aware of basic consumer rights and responsibilities and how to act on them.

■ **The right to a healthy and sustainable environment:**

To live and work in an environment that is non-threatening to the well-being of present and future generations.

of development in any new technology to presume that all potential risks to consumers' health have been identified."

#### ■ The Right to be Informed + The Right to Choose = The Right to Make Informed Choices

Information cannot guarantee safety. But information facilitates understanding and the choice to buy or not to buy. Full information about the production process enables those consumers who want to take an extreme precautionary approach in their food choices to do so and would allow any subsequent health problems to be properly identified and traced back to their source.

Labelling of GM foods is necessary but not sufficient. Supplementary information on how and why genetic modification took place must be available on the label or by other means, such as displays at the point of sale, leaflets or free consumer information phone lines.

Failure to provide information is also a breach of fair trade. Absence of labelling is a misleading, deceptive and unfair trade practice which could bring detrimental results to sectors of the food industry.

#### ■ The Right to a Healthy and Sustainable Environment

Demand for GM foodstuffs will ultimately determine what GM crops are planted. The acceptance issue must extend to use of GM products in animal feeds, since most GM crops go to animals, not people. (In the US, some 90% of harvested soybeans and 60% of traded corn goes to animal feed.). Either way, the environmental impact is the same.

With the growing evidence of risks to ecosystems, consumers may want to use their purchasing power to exercise a "precautionary approach" at the cash register. Consumer groups may find that environmental impact and protection norms in their countries are a useful point of departure for action. Activists can also monitor their government's position on Biosafety Protocol negotiations and other international treaties dealing with GMOs and environmental issues.

*...and the company is 97% certain that this product is almost GM-free, at least in parts.*

#### ■ Right = Correct

Not only do consumers *have* rights... they *are* right. This is one of the lessons learned by Gary Goldberg, president of the American Corn Growers Association, speaking at a recent US FDA public hearing on GM foods. "There are many things we've learned since this whole debate has started. The first is that the customer is always right. They don't have to be right for the right reasons, but they are still always right."

## International Frameworks

- **UN Guidelines for Consumer Protection.** Approved in 1985 and updated in 1999 to include environmental concerns, Article 3 of the Guidelines cites the "access of consumers to adequate information to enable them to make informed choices according to individual wishes and needs."
- **World Food Summit:** Held in 1996, the WFS highlighted political aspects of food security, including issues of technology, patents and trade.
- **Farmers' Rights:** The UN's Food and Agriculture Organisation (FAO) is reviewing its Undertaking on Plant Genetic Resources to incorporate a concept known as Farmers' Rights, which would establish compensation for farmers' seed and hybrid innovations.
- **Plant Breeders' Rights:** Patents on seeds were first made possible under the 1961 International Convention for the Protection of New Varieties of Plants (the UPOV convention).
- **Corporate Codes of Conduct.** The consumer movement's efforts to get the UN to adopt a Code of Conduct on Transnational Corporations have not yet succeeded. However, principles articulated in the attempt are valid as a framework to guide the work of consumer groups in demanding corporate responsibility.

# Warning: Gene Cuisine

## Looking at Labelling

**W**hy the fuss over labelling? It doesn't place a moratorium on genetic engineering, as many advocate, or alter the risks vs benefits equation. But labelling does allow consumers to make informed choices about what they eat and the ways they want their purchases to affect the marketplace and the environment.

Yet there is tremendous resistance to labelling: from the biotech industry, the World Trade Organisation, the Codex Alimentarius international food standards commission, from national governments and regulatory agencies, from food producers and retailers — from just about every quarter but consumers.

As a spokesperson for a Monsanto subsidiary admitted to the press: "Labelling is the key issue. If you put a label on genetically engineered food, you might as well put a skull and crossbones on it."

Most arguments against labelling rest on claims of substantial equivalency: that genetically modified foodstuffs do not differ significantly from their conventional counterparts and therefore do not require special labelling. This is the policy adopted by the US Food and Drug Administration, whose standards are widely used as a model for regulations in other parts of the world.

But the fact that GM seeds, plants and foods do indeed differ from traditional ones is made clear by the fact that the corporations which genetically alter the seeds can patent them. "One of the ironies of this issue," CI Director General Julian Edwards told Codex Alimentarius in 1998, "is the contrast between the enthusiasm of food producers claiming that their biologically engineered products are different and unique when seeking to patent them and their similar enthusiasm for claiming that they are the same as other foods when asked to label them."

Codex Alimentarius is the UN body responsible for setting international food safety standards. While its rulings are not binding, they are adhered to by most countries and respected in trade disputes. Codex has an unimpressive track record on genetically modified foods. In May 1998 and again in April 1999, the Codex Committee on Food Labelling failed to act on consumers' calls for mandatory labelling.

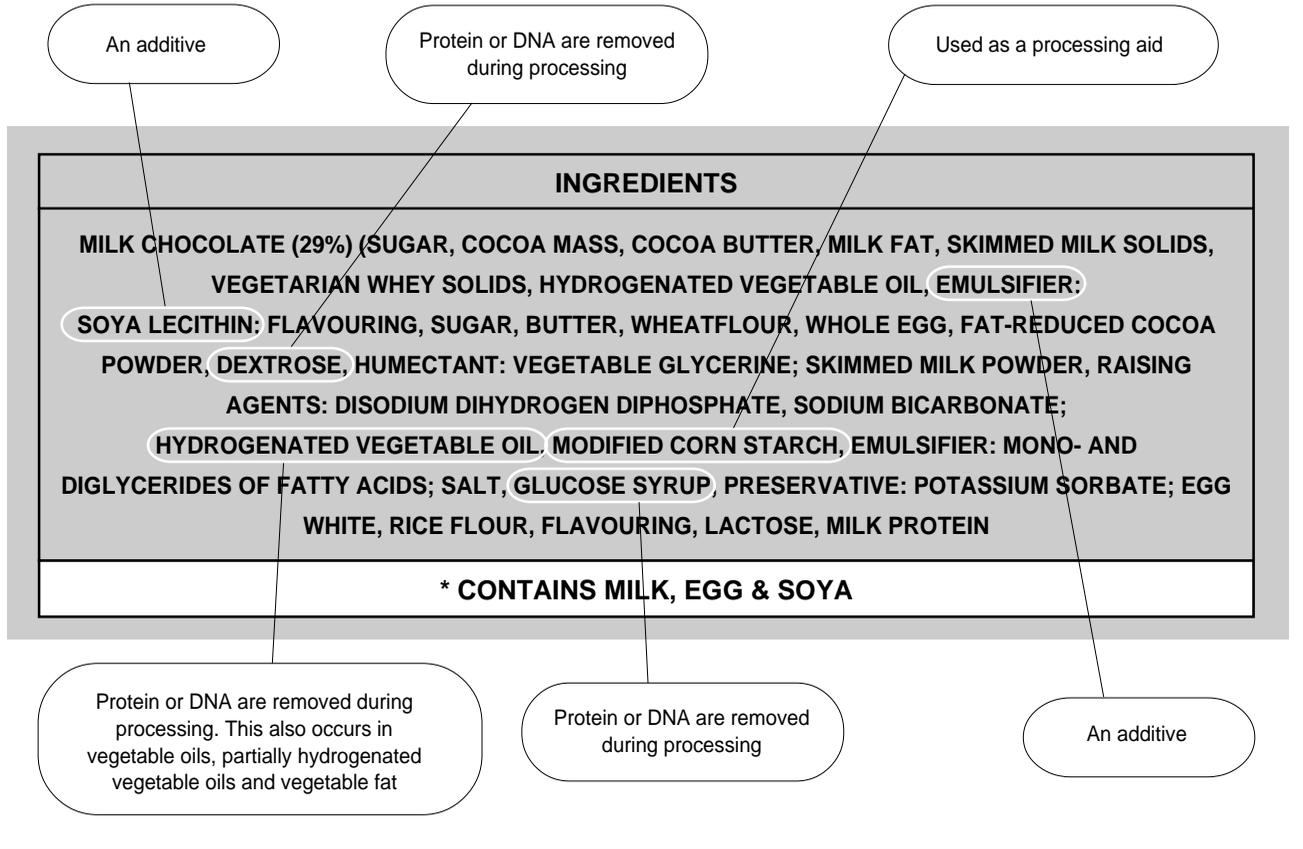
But labelling is being introduced with or without the support of Codex. At the forefront, in the European Union, the debate is no longer whether to label but what, and to what degree. More and more countries are introducing labelling requirements. These are being adopted even by governments — such as Brazil, Australia, New Zealand, South Korea and Japan — previously opposed to labelling. Governments are responding to consumer pressure, increased understanding of biotechnology and developments in supply.

Mandatory labelling of GM food is the focus of much consumer movement lobbying. But given the lack of uniform criteria and abundance of loopholes, many victories ring hollow. Efforts by CI and its members to develop a model labelling scheme have not prospered. "The Devil is in the details," explains CI Food Policy Officer Leen Petré. Activists cite the need for an international clearinghouse on labelling proposals.

Meanwhile, business is voting with its feet, especially where governments are dragging theirs. Retailers have introduced their own labels — and captured new markets with GM-free brands. Agriculture traders and consumers are insisting on segregated supplies — feasible, but complicated and costly — to meet market requirements. Where food producers are willing to pay the premium, this will likely be passed on to consumers, making non-GM foods a privilege instead of an option open to all. Labelling schemes under study in some countries to indicate that a product

# Which? Ingredients Are Genetically Modified?

**Examples of soya and corn-derived ingredients exempt from GM labelling:** This label, published in *Which?*, highlights ingredients derived from soya or corn that might be listed on the label of a typical processed food product. It is impossible to tell from the label whether these ingredients come from GM sources or not. This is because, under current European Union regulations, GM additives, flavouring and processing aids do not have to be labelled. Also, ingredients made from a GM source that do not contain detectable protein or DNA after processing are considered to be equivalent to conventional ingredients and do not have to be labelled, either.



“may contain” GM ingredients also fail to provide consumers with a real choice unless similar GM-free products are on supermarket shelves at an equivalent price.

Even the president of Novartis has been quoted as recognising the need for labelling. And researchers working on biotech crops that improve nutrition, for example, will likely move from resistance to insistence on labels once new GM new products offer something for the consumer. When that happens, food makers may start clamouring to exchange the label "genetically modified" for one saying "genetically enhanced."

*The benefits of using genetically modified tomatoes for this product are less waste and reduced energy in processing.*

WHICH? CA/UK

Labels on GM foods should tell consumers how and why these foods have been modified. (*Which?* CA/UK)

These are examples of foods that have ingredients that are labelled as GM.