



As You Sow
Foundation

Special Report

May 2001

GENETICALLY ENGINEERED FOOD AND FINANCIAL RISK

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As You Sow is a non-profit organization that provides proxy-voting information on corporate responsibility issues.

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Special Thanks: Compton Foundation, Interfaith Center on Corporate Responsibility, Conrad MacKerron, John Merck Fund, Sheridan Pauker, Armin Rosencranz, Ph.D, US Bancorp Piper Jaffray Social Equity Investment Group.

INTRODUCTION

The international furor over genetically engineered (GE) foods has spread from Europe to the United States. The financial stability of these products has become a major concern for shareholders and money managers as the scientific community, media, politicians and the public have raised issues connecting GE foods with health, environmental and ethical concerns.

Are genetically engineered foods a sound investment? The sections that follow try to address this question in an attempt to chart a course for investors who are asking themselves: What's the market doing? What are consumers doing? What are analysts and media saying? What are the regulatory agencies doing? What are the financial and legal liabilities?

A recent and highly publicized example of the connections between market conditions, health and environmental concerns is evident in the case of StarLink corn.

StarLink

In 1998, the U.S. Department of Agriculture certified StarLink corn, allowing for its planting in the U.S. Manufactured by Aventis CropScience, StarLink has been genetically engineered to produce the protein pesticide Cry9c. The USDA restricted its use to animal feed and other industrial uses because of concerns that Cry9c could trigger allergic responses in humans. Despite this ban, traces of StarLink were found in a number of corn products (tostadas, taco shells, tortillas, and chips) in September of 2000, triggering a massive recall of 300 potentially contaminated products.

- **StarLink Impact**

The StarLink recall affected every part of the food supply chain - demonstrating the high risks involved with developing and safely regulating GE crops and food-products (see Figure 1).^{1 2}

Aventis and farmers were the biggest losers. Yet food companies that thought they were immune to the GE food controversy – because they didn't produce the products, just sold them – found themselves scrambling to pull items off their shelves. Supermarkets and restaurants such as Safeway, Albertson's, Mission Foods, Food Lion, Shaw's and Wendy's and Applebee's, were all hard hit. ConAgra and Kellogg were forced to temporarily close down operations as a precautionary measure. ADM and ConAgra have begun scanning corn for StarLink at grain elevators.^{3 4}

StarLink Affected Companies Throughout the Food Supply Chain

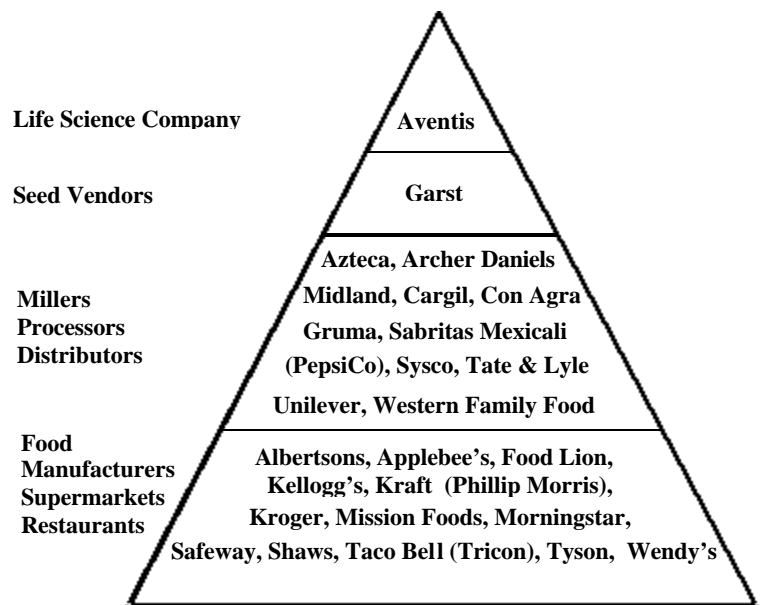


Figure 1

Furthermore, the unexpected contamination soured U.S. relations with major export markets for corn, such as Japan and Korea. Despite the massive recall and widespread media attention, StarLink continues to fail segregation procedures. In mid-March, Kellogg's Morningstar Farms brand began recalling its meat-free corn dogs after a sampling was shown to contain StarLink.⁵

- **Massive Recall**

Nearly 300 kinds of taco shells, tortillas, chips, and other corn products were recalled from US supermarkets and grocery stores because of suspected contamination with

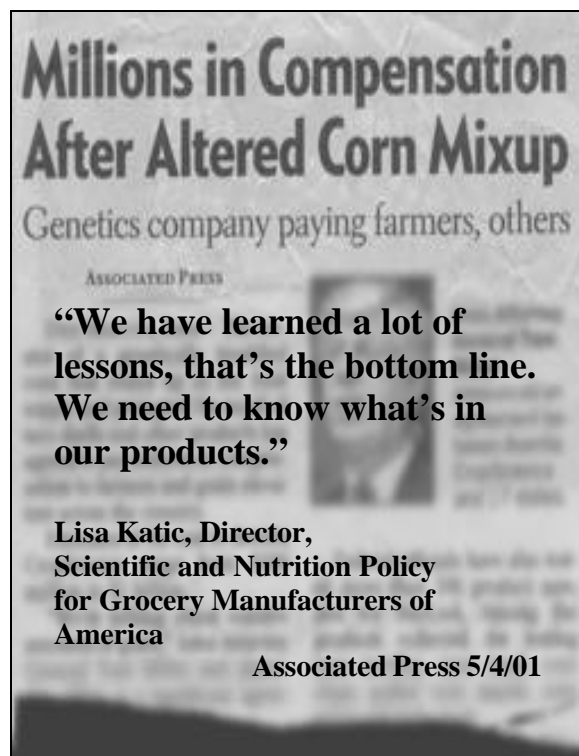
StarLink corn, a biotech corn not approved for human consumption by the FDA.⁶ The recalls began in September 2000, when StarLink was found in Kraft taco shells used by Taco Bell, and has continued to be found in additional products.⁷

- **430 Million Bushels Contaminated**

In March, 2001 Aventis CropScience, announced that StarLink had contaminated more than 430 million-bushels of corn – or over 4 percent of that year's U.S. corn production. This estimate dwarfs the amount of the 2000 corn crop earlier reported as containing StarLink – about 50 million bushels grown by farmers licensed to use it and 20 million bushels contaminated from neighboring fields.⁸

- **A Billion Dollars and Counting**

An internal industry study conducted for Kellogg, ConAgra, Unilever, and Aventis predicts up to “billions” of dollars in food industry losses in the aftermath of the recall.⁹ Aventis has reached an agreement with 17 US states that legally binds the company to compensate farmers and grain handlers for loss of value resulting from the StarLink recall over the next four years. Aventis’ costs alone may run as high as \$1 billion once all the lawsuits are settled.^{10 11}



- **Aventis Shake Up**

Aventis’ agriculture unit showed zero sales growth in the year 2000 and analysts predict this dismal performance is directly related to the StarLink fiasco. In November 2000, six weeks after the contaminated corn was discovered, the company announced plans to divest itself of its agriculture unit.¹² Aventis SA fired some top managers and Maurice Delage, President of Aventis CropScience USA (the American subsidiary that designed and marketed StarLink), and other management associates left the company. Many view these changes as an attempt to restore consumer confidence in Aventis after the StarLink episode.¹³

- **Dramatic Decrease in Overseas Markets**

Overseas buyers are especially concerned about StarLink, and have drastically curtailed purchases of U.S. corn. Tim Hannagan, head grain analyst at Alaron Trading Corp., said Japan has cut its weekly purchases of U.S. corn by about two-thirds.¹⁴ In addition, the USDA issued a report showing that US corn exports were down 39 percent, largely because of the StarLink recall. South Korea has also declined to purchase any more US corn for the time being, costing the US corn industry millions of dollars in lost revenues.¹⁵

- **Farmers Advisory to Avoid Corn Crops**

The National Corn Growers Association started advising farmers in January to begin asking for written verification that the seed they purchased was tested for the Cry9C protein. They further advised U.S. farmers to grow crops other than corn on last year’s StarLink corn acreage. This is because of the danger that stray StarLink plants will contaminate conventional corn. This could prolong the elimination of StarLink corn from the human food chain, further raising the associated costs.¹⁶

- **Food Companies and Industry Organizations Want Stricter Testing**

Kraft, the first company to issue a voluntary recall of its StarLink products, called for the government to tighten regulation of GE plants for discontinuing “partial approvals of advances in plant biotechnology,” as happened with the StarLink corn.¹⁷ The American Seed Trade Association called for stricter assurances that corn seed is tested for certain genetically engineered strains. The National Corn Growers Association started advising farmers in January to start asking for written verification that the seed they were buying was tested for the Cry9C protein.^{18 19}

- **Editorials Call for Caution**

A recent LA Times editorial called for tighter reins on GE food, citing two major academic studies in 1999 which left scientists concerned the GE foods “could irrevocably alter ecosystems, even destabilize the food chain”.²⁰ The Star Tribune questioned the credibility of the proposed FDA and EPA regulations, saying they will not significantly improve public confidence in GE foods.²¹ When traces of StarLink corn were first found in samples shipped to Japan from the US, the New York Times said that this compounded doubts all over the world over the effectiveness of US testing methods.²² A reporter from the Christian Science Monitor warned that “Unless regulators and grain handlers can better guarantee the purity of American grain, the nation could see key farm exports shrink and US consumer confidence rattled.”²³

MARKET BACKLASH

- **US Exports of GE Crops Plummet**

The American Corn Growers Association says biotech crops are costing US farmers up to \$700 million in lost markets as consumers around the world shun GE food.²⁴ Others estimate a loss of \$1 billion in sales for American agriculture.²⁵ Since 1997, the European Union (EU) has virtually ceased importing corn from the US, exports dropped from more than 1.5 million metric tons in 1997 to less than 70,000 metric tons in 2000 (Figure 2). US exports of soybeans to the EU plummeted from 11 million tons in 1998 to 6 million tons in 2000.

An Iowa State University economist calculated this to be the equivalent of losing a market for 1 out of every 3 bushels of soybeans grown in Iowa.²⁶ Pioneer Hi-Bred announced that it would not sell to US farmers six of its GM corn varieties this next planting season, because they’re not EU approved.²⁷

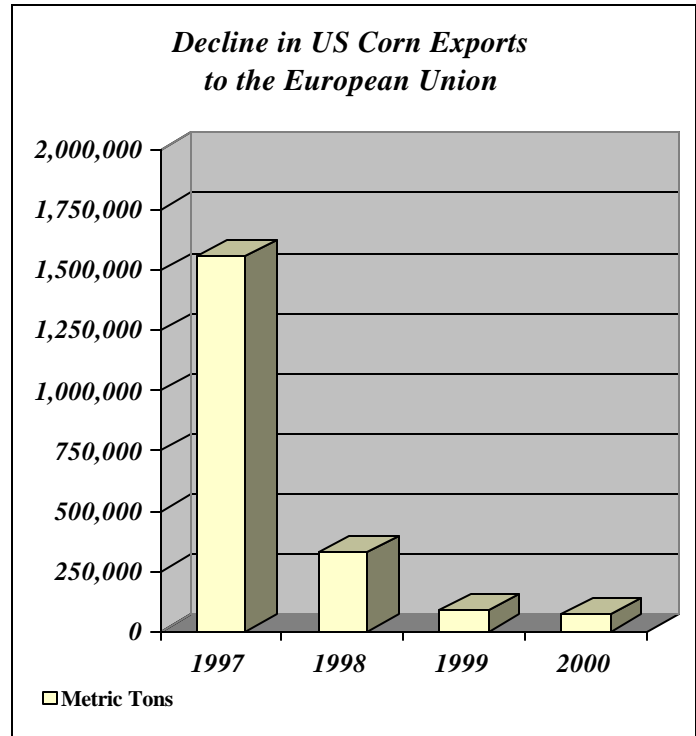


Figure 2

- **US / Canadian Food Companies Begin Avoiding GE Foods**

Responding to consumer concerns, some of North America’s best-known brand names have begun eliminating GE ingredients from their products. These include: Starbucks one of the largest coffee and milk users in the US²⁸, Frito Lay, the world’s largest snack food maker,²⁹ Seagram, one of the world’s largest distillers,³⁰ Heinz and Gerber baby foods,³¹ Whole Foods and Wild Oats Markets, the two largest natural-food store chains in the US,³² McCain Foods, which produces about a third of the world’s French fries,³³ and Gardenburger, one of the largest US soy-burger manufacturers.³⁴ Several other soy food makers, such as Lumen Foods, are now promoting a range of “non-GE” and “non-GE certified” foods.³⁵ Purdue Chicken, one of America’s largest poultry producers, is positioning itself not to use any GE feed.³⁶ And J.R. Simplot Co., under instructions from McDonalds, told its farmers to stop growing GE potatoes.

- International Food Companies Continue to Avoid GE Foods**

Burger King, Pizza Hut, Nestle, Pepsi Cola, Coca Cola, Heinz, Mars, Danon, Kellogg's Campbell Foods, Cadbury Schweppes are among the 30 largest food companies in Europe who agreed to phase out GE products.^{37,38} Michael Coupe, Trading Director for Asda, one of several of Europe's largest food retailers who have committed to removing GE ingredients, said, "if other retailers follow suit, non-GM [genetically modified] animal feed will become the industry standard."³⁹ Tesco and CWS/Co-op, two major supermarket chains in Britain announced plans to eliminate GM-fed meat as soon as possible.^{40,41}

The Wall Street Journal reported that, "In Europe, consumer opposition is so intense that 'GM-Free' has become an effective marketing slogan."⁴² Japan's two largest breweries and a major Mexican corn tortilla maker will no longer buy GE corn from the US.⁴³ Novartis, one of the world's leading agricultural biotechnology companies, acknowledged that it had eliminated GE ingredients from all of its consumer food products.⁴⁴ Pulmuone, Korea's largest maker of tofu and soybean products will stop using GE beans.⁴⁵

Other major markets are now rejecting US crops. Japan, the single biggest buyer of American corn, has virtually halted its purchases for the first quarter of 2001. South Korea also will not consider buying more US supplies.⁴⁶ A delegation of Russian agricultural lawmakers announced they would not purchase GE crops from the US.⁴⁷

- Crop Producers Are Backing Off**

In 1999, the New York Times correctly predicted a "sharp slowdown in growth, if not actual decline, seems likely in 2000, and even industry optimists are saying it may take several years to get rolling again."⁴⁸ In 2000, an extensive USDA survey of 63,400 growers found that farmers would plant 24% fewer acres of GE crops.⁴⁹ An American Corn Growers Association survey of 582 farmers showed a 15 - 20% drop in GE corn plantings.⁵⁰

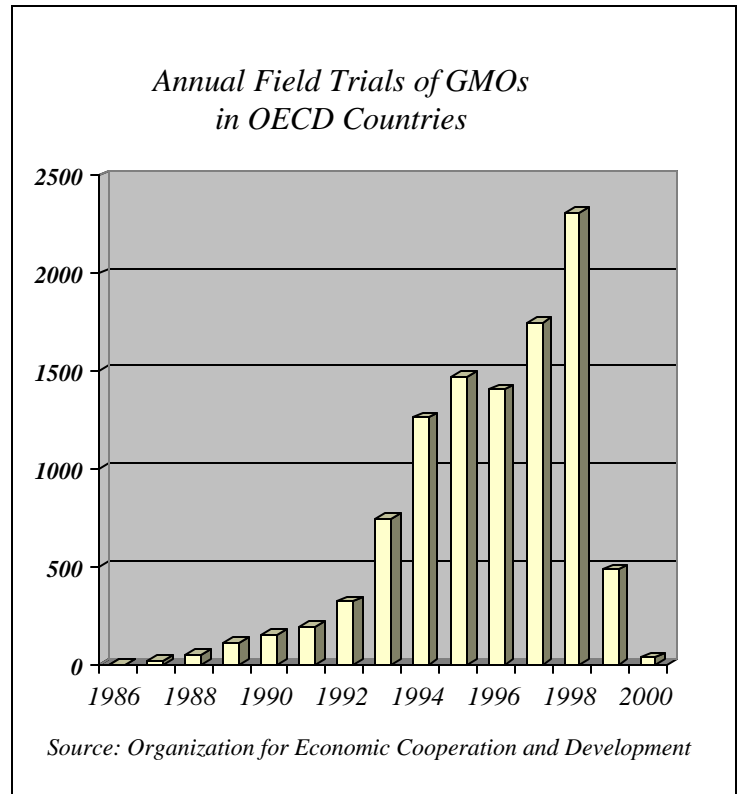


Figure 3

A 2001 Reuters straw poll at the annual meeting of the American Farm Bureau Federation, the nation's largest farm organization, showed US farmers deciding to further cut their 2001 spring plantings of GE crops by 4 percent overall.⁵¹ The Federation has urged farmers to demand corn seed for 2001 spring planting that is free of StarLink.⁵² Field trial testing of GE crops among OECD member countries has plummeted more than 95% since 1998. (Figure 3)

In March of 2001, Monsanto quietly announced that it would no longer market its GE potato.⁵³ R.D. Offut Co., one of the nation's largest producers of potatoes will not raise any GE spuds in 2000; in 1999, 20% of their potato crop was genetically engineered.⁵⁴

Meanwhile, organic food sales are soaring, in large part because of concerns over GE food. Organic milk sales were up 75% in 1999 and the demand for organic soybeans is so high the US is now importing them from China.⁵⁵

- **International Markets Reject Planned GE Wheat, Outlaw GE Seeds**

Plans to market GE wheat are being reconsidered after an international industry survey of major wheat buyers showed negative reaction from its biggest customers. European buyers of US spring wheat announced in 2001 that there was no market for GM wheat in Europe and warned they would take their business elsewhere if US farmers began planting such crops. US wheat exports to Europe are nearly a fifth of its total wheat exports.⁵⁶ In 2000 the US Wheat Associate’s Tokyo office warned that importing GE wheat would be a “highly sensational and emotional issue” in Japan and could “lead to a total boycott of US agricultural products.”⁵⁷ Australia’s national wheat exporter AWB, representing 40,000 growers and annual sales exceeding AUS\$3 billion, announced “We do not sell GM [genetically modified] wheat nor will we in the foreseeable future.”⁵⁸ Thailand has already banned the import of GE wheat seeds.⁵⁹

Between 1997 and 2000, Germany, France, Luxembourg, Spain, Portugal and Austria formally banned the planting of Novartis GE corn.^{60,61} Norway has banned several GE products out of fear they increase antibiotic resistance in people and animals.⁶² Brazil, Latin America’s largest agriculture producer has outlawed the planting of GE crops.⁶³ Saudi Arabia and Sri Lanka have banned the import of genetically modified foods,^{64,65} and India declared they would not be allowed until their safety is scientifically proven.⁶⁶ Indonesia asked a subsidiary of Monsanto to stop using GE cottonseeds.⁶⁷

- **Lower Yield, Less Robust, Reduced Nutritional Value**

One of the reasons for the rapid adoption of GE crops has been the expectation of a higher yield than for non-GE crops. A number of US research projects have addressed this issue. Results seem to indicate the reverse: in most field trials the GE crop shows lower yields than the non-GE crop, as indicated in the table below, in the case of Roundup Ready (RR) soybeans.

States	Yield (T/ha)		% Difference RR - Conv.
	Conventional	Roundup Ready	
Illinois	3.90	4.04	+3.5%
Iowa	4.10	3.83	-7%
Michigan	4.44	4.30	-3%
Minnesota	4.44	4.10	-8%
Nebraska	3.90	3.43	-12%
Ohio	4.04	3.90	-3%
South Dakota	3.30	2.96	-10%
Wisconsin	4.77	4.64	-3%

Table 1: Differences in yields between conventional and GE (Roundup Ready) soybeans⁶⁸

Researchers found that Roundup cotton was less resistant to root-knot nematode, a serious cotton pest.⁶⁹ A decade long investigation into the competitive abilities of five strains of GE maize, rape, sugar beet and potato showed that they “tended to curl up and die in the face of competition from wild species”.⁷⁰ A US study reported that GE soybeans have lower concentrations of phytoestrogen compounds, which are believed to protect against heart disease and cancer.⁷¹

- **Crop Processors and State Issue Warnings**

The Illinois Agriculture Dept. asked seed companies and dealers to stop the sale of GE seed not approved for all major export markets.⁷² Archer-Daniels-Midland Co., a major buyer of crops with more than 500 grain elevators and 355 crop processing plants worldwide, began airing ads warning farmers that their mills will buy only crops that have full seed and food approval globally. Another US giant grain processor, A.E. Staley, is discouraging Midwest farmers from raising GE crops. “It clouds bright predictions for seed sales.... another disappointing sales season would dent the ability of the biotech industry to recoup its staggering research costs.”⁷³

- **Big Six Stock Prices Take a Dive, Force Spin Offs**

In February 2000, USA Today reported that “the share price of the ‘big six’ agricultural biotech firms—Monsanto, DuPont, Novartis, AstraZeneca, Dow Chemical, and Aventis—were on average 27% below their 52-week highs . . . “amid the backlash against genetically modified food.”⁷⁴ The Wall St. Journal wrote, “In part to avoid having pharmaceutical operations dragged down by the controversy over GE food, Pharmacia, Novartis and AstraZeneca spun off their agricultural units into separate companies towards the end of 2000.”⁷⁵

CONSUMER BACKLASH

- **FDA Documents Consumer “Outrage”**

A 2001 internal report commissioned by the Food and Drug Administration to gauge sentiment about

its proposals for voluntary labeling, said that virtually everyone questioned in a series of focus groups the agency sponsored last year believed that foods ought to be labeled if they contain any genetically engineered ingredients.⁷⁶ The report stated that consumers feel “outrage” when they learn how many supermarket products already are produced through biotechnology.⁷⁷

- **Consumer Boycotts are Increasing**

More organized opposition is coming from two of the world’s largest environmental groups who are leading international anti-GE food campaigns. Friends of the Earth launched a campaign in 21 European countries, and are targeting Safeway supermarkets in the US. Greenpeace is conducting a high profile worldwide campaign with Kellogg being their main target.⁷⁸ Over 15 major US companies – called the “Frankenfoods Fifteen” - have been targeted for some form of consumer action. Starbucks was recently the target of a 100-city protest, which caused it to announce its intention to offer non-GE alternatives.⁷⁹



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LABELING

- **Different Voices, Same Concerns**

Rejection of GE foods has come from a wide variety of organizations such as the US Chefs Collaborative that is trying to eliminate GE foods from menus,⁸⁰ to the Church of England, which banned the planting of GE crops on its land,⁸¹ European consumers also held an international conference in Belgium to discuss creating “GE-free zones” throughout Europe where growing of GE foods would be banned by local communities.⁸² A proposed San Francisco city ordinance would favor vendors using organic foods and urge federal authorities to require labeling and testing of all genetically modified foods.⁸³

- **The Public’s Main Concerns**

Those who express unease or opposition to GE products usually identify these main concerns:

- ❖ **Need for Mandatory Testing**
 - Lack of Long-Term Health and Environmental Testing
 - Conflicting Scientific Studies
 - Inadequate Government Oversight
- ❖ **Public Health Risks**
 - Allergic Reactions
 - Increased Resistance to Antibiotics
 - Cancer Risks
 - Toxic Reactions
 - Reduced Nutritional Value
- ❖ **Environmental Risks**
 - Increased Herbicide Use
 - Increased Pesticide Residue
 - Damage to Soil and Beneficial Insects
 - Genetic Pollution of Other Plants
 - Creation of “Superweeds” and “Superpests”
- ❖ **Socio-Economic Impacts**
 - Food Monopolies / Life Patenting
 - Monoculture Crop Failure
- ❖ **Need for Mandatory Labeling**
 - Consumer’s “Right To Know”
 - Religious Food Restrictions

In the United States, where about two-thirds of processed foods contain genetically engineered ingredients, there is enormous consumer support to label those foods.⁸⁴ The FDA currently stops short of mandatory labeling requirements, a step already taken by the European Union and some Asian nations. Intense pressures from these overseas markets coupled with growing consumer concern and the industry’s inability to successfully segregate “unapproved” seed varieties from the human food chain could make labeling GE ingredients in the U.S. a reality in the near future.

- **Opinion Polls Show Overwhelming Support of Labeling GE Foods**

Dozens of US media, government and industry opinion polls repeatedly show 70 - 94% of American consumers support labeling of GE food. (see Figure 4) A Food R&D survey of 36,000 consumers reported that 92% wanted GE food labeled. Two USDA surveys found that 94% of 1,900

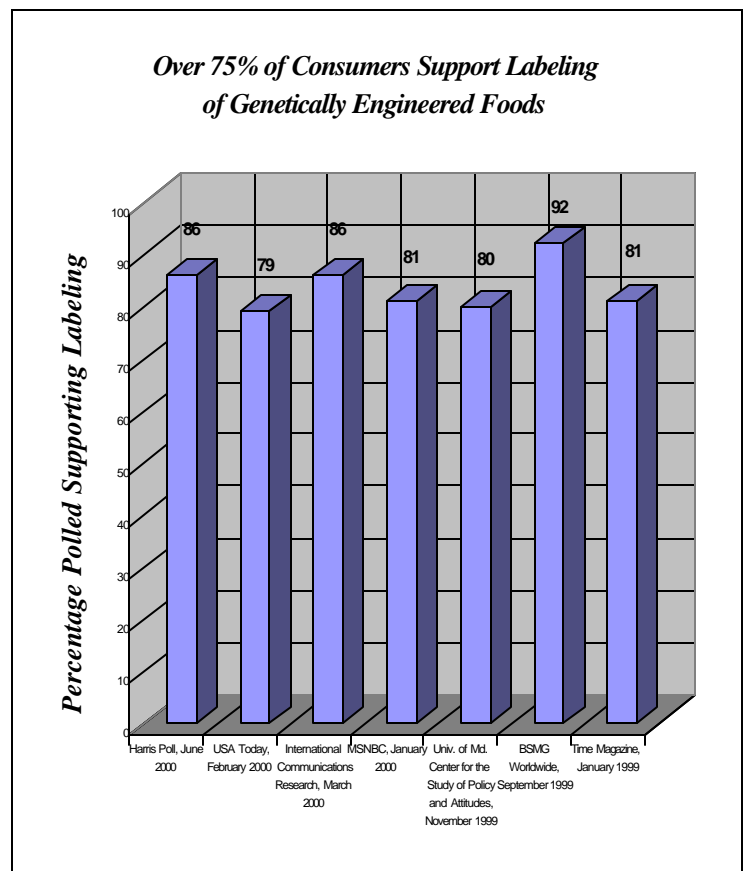


Figure 4

consumers wanted labeling for milk with GE bovine growth hormone and 84% wanted mandatory labeling of GE fruits and vegetables.⁸⁵ ABC news reported that 86% of 1,012 people wanted labeling.⁸⁶ Two Time magazine surveys found that 81% supported labeling, 68% were willing to pay more for it, and 42% said they were very concerned about eating GE foods at all.^{87 88}

- **Industry Says StarLink Increased Consumers Calls For Labeling**

In a survey of 1,000 adults by the International Food Information Council Foundation (funded by the food and drink industry), 58% said that GE foods should be routinely labeled, compared to 43% when a similar poll was conducted last May before news of the StarLink contamination broke.⁸⁹

- **State and Cities Calls for Labeling**

Legislation to label or ban GE foods is pending in several states including California, Minnesota, Vermont and Maine.⁹⁰ State ballot drives calling for labeling are being conducted in California, Washington and Oregon.⁹¹ Additionally, Colorado, Hawaii, Michigan, New York, Ohio, Pennsylvania, Texas, West Virginia, as well as the city of Boston, Austin and Minneapolis have all had legislative activity involving genetically engineered foods.⁹²

- **National / International Labeling Laws Will Likely Be the Norm**

Bills calling for the mandatory labeling of GE foods have passed or are being considered in the European Union, Japan, Australia, New Zealand, United States, South

Korea,
Taiwan,
Indonesia, Sri Lanka,
Thailand,
Brazil,
Mexico,
Poland,
Russia and Hong Kong.
^{93 94 95} The

“Consumers should have the right of informed choice regarding the selection of what they want to consume “

US – EU Biotech Committee Report 12/18/00

EU Parliament is debating whether to continue the 3-year old ban on approving new genetically modified foods, and has proposed strict regulations in the case

of the possible admittance of GE foods into the market, including labeling and frequent safety checks. A committee of US-EU biotech experts recommended tighter controls and possibly a mandatory labeling system for all GE foods.⁹⁶

GOVERNMENTAL RESPONSE

- **Federal Regulators Acknowledge Need for Improved Standards**

The EPA tightened restrictions on GE corn due to concerns that it may be causing ecological disruptions. The EPA's Scientific Advisory Panel recommended more testing and monitoring of all GE crops, and the requiring of original data from industry studies.⁹⁷ “In order to protect our domestic and foreign markets and ensure public confidence, it's essential that we improve our ability to identify and track genetically modified products,” Agriculture Secretary Dan Glickman said in November 2000.⁹⁸

- **State and City Legislation and Resolutions**

Minnesota became the first US state to approve a 5-year moratorium on planting biotech crops. Similar state legislation is proposed for New York. Legislation to ban or label GE foods is pending in several states including California, Minnesota, Vermont, and Maine.⁹⁹ State ballot drives calling for labeling are being conducted in California, Washington and Oregon.¹⁰⁰ Boston became the first US city to pass a resolution to ban GE foods until they are labeled and subject to safety testing. The Grocery Manufacturers of America, an industry-lobbying group for biotech food, stated that there have been 77 bills related to agriculture biotech introduced this year in 27 states.¹⁰¹

- **International Protocols and Rulings Limit the Spread of GE Foods**

The US joined over 130 countries in signing the Biosafety Protocol, which upholds a country's right to ban the import of GE food.¹⁰² A Brazilian federal judge ruled that Monsanto's Roundup Ready Soybeans could not be released into the environment until a full environmental impact assessment has been conducted.¹⁰³ The Supreme Court of India ruled that Monsanto must halt all field trials of its genetically engineered Bt cotton. The Food and Agriculture Organization called for caution using biotechnology due to health and environment concerns.¹⁰⁴

FINANCIAL AND LEGAL LIABILITIES

- **Concerns Among Insurance Industry**

Swiss Re, the world's second largest reinsurance company, issued a report stating that the risks of genetic engineering "could lead to unsupportably high liability risks which cannot be carried by either the genetic engineering industry or the insurance industry alone."¹⁰⁵ Industry fees cannot be calculated by traditional means, as there is no prior experience with the risks of this new technology.¹⁰⁶

"Life threatening food? More than 50 million Americans claim reactions to recalled StarLink corn"

CBS News 5/17/01

Insurers are concerned about the fast changing political and public sentiment, the mounting evidence of ecological liabilities such as cross pollination with non-GE crops and the creation of "superweeds"; as well as public health concerns regarding allergic reactions to ingredients which have not previously existed in the human food supply, and increased resistance to antibiotics due to use of GE "marker" genes. The European parliament has reviewed legislation imposing full liability on GE companies "if they harm health, the environment or livelihoods."¹⁰⁷

- **Lawsuits Target Both Agri-Business and Government Agencies**

Nebraska farmers filed a class-action lawsuit against Aventis in February 2001, arguing that StarLink corn contaminated their crops through cross-pollination. In addition, the value of their corn crop was diminished because of the recall and the resulting lack of consumer confidence. Illinois farmers have adopted similar legal measures.¹⁰⁸ Additionally, Iowa farmers have filed a lawsuit against Aventis, seeking damages for contamination of their own non-biotech crops. They are also seeking damages for contamination of the entire

nation's corn supply.¹⁰⁹ Aventis is expected to spend up to a billion dollars in lawsuits and government fees because of the mishap.¹¹⁰

In 1999 a group of US farmers filed suit against a number of biotech firms, including Monsanto, accusing these companies of inadequate testing of GE crops before bringing them to market, and lying about the results of tests that were performed. The farmers also accuse these companies of forming an 'international cartel' that fixes the price of biotech seeds.¹¹¹

- **Allergic Reactions**

The FDA is currently investigating several dozen cases of potential allergic reactions to StarLink. The issue has spawned several lawsuits, including a class action suit filed in Chicago, accusing Aventis and others of negligence and consumer fraud for producing or selling corn products that weren't approved for human use.¹¹²

- **Environmental Protection Agency Lawsuit**

Even before anyone had heard of StarLink, Terra Prima, an organic corn chip maker, was forced to destroy \$87,000 worth of its chips due to cross-pollination from genetically engineered Bt corn. Terra Prima filed suit against the EPA alleging that it registered GE crops without adequately considering their health and environmental impact.

- **Food and Drug Administration Lawsuit**

A lawsuit against the FDA demanding adequate safety testing and mandatory labeling of genetically engineered foods, forced the disclosure of documents which shows the agency beset by internal criticism regarding the safety of GE foods and the political pressure to fast track their introduction.¹¹³ A front page story in the New York Times entitled 'Few federal checks exist on the growing of crops whose genes are altered' stated "Part of the problem, scientists say, is that the Agriculture Department has set no scientific standards for proving the environmental safety of a plant."¹¹⁴ A coalition of religious leaders representing Christians, Jews and Buddhists joined the suit against the FDA charging that the lack of labeling of GE foods makes it impossible for religious people to observe dietary laws and customs.¹¹⁵

- **Banks and Analyst Voice Concerns**

Deutsche Bank - Europe's biggest bank - advised investors to sell their shares in companies involved in the development of genetically modified organisms (GMO's) in a report titled "GMO's Are Dead."^{116 117} Credit Suisse First Boston warns that the commercial development of GMO's is suffering from "negative momentum" and compares it to nuclear power saying both are scientifically sound but that "No one is building new nuclear plants today."¹¹⁸ The "market's appetite for life science companies has changed 180 degrees", said a J.P. Morgan analyst.¹¹⁹

In a federal survey of Midwest banks, 28% of agriculture lenders acknowledged reservations about backing purchases of gene-altered seeds.¹²⁰ In 2000, while medical biotech firms rose 58% on Burrill's index, biotech firms engaged in agriculture fell 11%.¹²¹ Promar International recently completed an internal industry study for Kellogg, ConAgra, Unilever, and Aventis, which predicted up to "billions" of dollars in food industry losses. Don Westfall, Vice President of Promar said the aftermath of the StarLink corn scandal "is going to come back to haunt the regulators and the food industry."¹²²

- **A Shareholder Rebellion**

Investors were quick to see the risks of quickly introducing poorly tested and inadequately regulated GE products. Shareholder resolutions – calling for either contingency reports, labeling or phasing out of GE products unless long-term testing proves them safe -- have been filed at over two dozen companies from thirty three different investor groups.¹²³

“No issue has generated as many [shareholder] proposals since apartheid.”

USA Today 2/14/00

SUMMARY

The impact that genetically engineered foods have had on the world's economies is undisputed. In the past years however an increasing number of nations have restricted the import, planting, or testing of GE crops and food as a proactive measure to protect their populations from unnecessary risk. A substantial number of major corporations, representing all aspects of the food supply chain, have begun to recognize the potential threat to their branding, markets and to overall shareholder value. They have begun implementing policies to eliminate GE ingredients from their product lines and in some cases have found that "No GMOs" has been effective marketing device.

These changes in perception have come from increased consumer awareness and action. At every level, from national legislators to consumer campaigns, corporations are being directly addressed and held accountable for their policies regarding GE products.

The rest of the world has taken a firm stand on the issue and has announced publicly their distaste and distrust of GE food and crop. The StarLink recall, effecting dozens of corporations and contaminating a calculable percentage of the US corn supply only strengthened this position. The potential financial risk to companies impacted by the recall of StarLink and by the continued increase in global consumer concern is enormous.

Neither the companies themselves, nor the insurance firms that back them, can independently manage the risk of potential litigation related to genetically engineered foods. Current pending suits against several major firms are linked directly to their mishandling of GE product and this will logically impact on shareholder value.

Key indicators – such as a loss of market share, falling stock prices, an increase in consumer backlash and negative publicity, serious legal and insurance liabilities, and an increase in government regulation – all suggest a potential threat to shareholder value. A first step for prudent investors would be to call on companies to avoid using GE foods and ingredients unless long-term safety is proven and consumer confidence and market stability are restored.

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