FoEE Biotech Mailout

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The StarLink Scandal

Friends of the Earth

StarLink : more bad news for biotech

This issue of the FoEE Biotech Mailout is mainly dedicated to the StarLink Scandal, with articles by guest authors, Ronnie Cummins of the Organic Consumers Association, and Kristin Dawkins of the Institute for Agriculture and Trade Policy

The Gene Giants suffered a serious setback on September 18th when the Genetically Engineered Food Alert (GEFA) coalition(*) (www.gefoodalert.org) revealed that an illegal, likely allergenic variety (Cry9C) of genetically engineered (GE) maize called StarLink had been detected in a major US consumer food product, Kraft taco shells. The GE Food Alert Coalition, which tested the taco shells and broke the news about StarLink, is made up of seven US groups: Friends of the Earth, Organic Consumers Association, Pesticide Action Network, Center for Food Safety, Institute for Agriculture and Trade Policy, National Environmental Trust, and the US Public Interest Research Group.

The StarLink scandal made headlines, generated thousands of news articles and TV clips, and brought home the realisation to American consumers that the nation's supermarkets are filled with an extensive inventory of untested, unlabelled, genetically engineered foods. In 1998, the US Environmental Protection Agency had approved the commercial cultivation of StarLink - maize spliced with a powerful Bt toxin (bacillus thuringiensis). Developed by a subsidiary of the French-German biotech conglomerate Aventis, StarLink was approved only for animal feed because of fears that this controversial Cry9C variety (50 to100 times more potent than other Bt-spliced varieties) could set off food allergies in humans.

Critics of GE food have warned for years that splicing foreign proteins into common food products, proteins which in most cases humans have never eaten before, can set off dangerous food allergies-with symptoms ranging from fever, rashes, and diarrhoea to anaphylactic shock and sudden death. The FDA admits that eight percent of all US children are now plagued by food allergies, and that the situation is growing worse. Nutritionists warn of a suspected link between food allergies and asthma. Even the staid New England Journal of Medicine warned in its March 14th, 1996 issue that unlabelled genetically engineered foods are "uncertain, unpredictable, and un-testable."

In 1996, a gene-altered soybean spliced with Brazil nut DNA patented by what is now Dupont's seed subsidiary, Pioneer Hi-Bred, was pulled off the market before commercialisation after researchers learned that it could set off a deadly allergy in humans. Even after this near-disaster, Plant Genetic Systems, the developer of StarLink maize (PGS was later bought out by Aventis), apparently continued gene-splicing Brazil Nut DNA into rape seed, potatoes, tobacco, beans, and peas in European field tests in the open environment. (See Plan Molecular Biology (1998) 37:829-838)

Denials - Then Mass Recalls

The biotech industry, Kraft/Phillip Morris, and the EPA at first tried to deny the validity of the GEFA lab tests, but within days public pressure forced Kraft, the largest food corporation in America, to recall 2.5 million boxes of the maize tacos. This action was followed by a halt of sales of Cry9C seeds by Aventis on September 26th, and a formal recall order issued by the USDA on October 9th for all 350,000 acres of StarLink maize planted across the US. GEFA then struck again and forced further recalls (Safeway maize taco shells, Mission Foods maize products, Western Family brand maize tacos) by announcing on October 11th and October 25th that StarLink maize had been detected in other brand name products being sold in thousands of supermarkets. In the wake of the StarLink crisis, some of the largest US food and animal feed processors - Kellogg, ConAgra, Archer Daniels Midland, and Tyson - either temporarily closed their grain mills or an-

nounced mandatory testing for Cry9C maize. Meanwhile, the White House sent emergency teams to Japan and Europe, trying to reassure major US trading partners that the StarLink controversy would be kept under control.

By the end of October, consumer confidence in the safety of GE foods was severely shaken. Thousands of farmers and grain elevator operators expressed anger at Aventis and the biotech industry. The state Attorney General's office in Iowa criticised Aventis and seed dealers for not telling farmers to keep StarLink out of the human food chain. As one Iowa grain elevator operator told the Washington Post on October 25th, "I think we're just hitting the tip of the iceberg here. We just don't know what's in those elevators, and when we start letting this stuff go and it's tested, it's going to get worse."

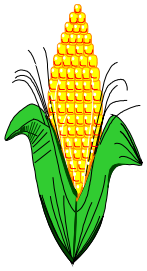
StarLink Hits the Fan

Aventis, Kraft, Safeway, Mission Foods, Western Family, Shaw's, Food Lion, Randalls, Kroger, Albertson's, H.E.B., and scores of other food companies and supermarket chains (not to mention grain elevators and farmers) have begun totalling up several hundred million dollars in losses. Consumers claiming to have been poisoned by StarLink maize products filed a multi-million dollar class-action suit in Chicago. Kraft and a number of supermarket chains have voiced dissatisfaction with the lack of oversight of GE crops by US regulatory agencies.

The EPA is caught between a rock and a hard place: fending off pressure by the biotech industry to reverse itself and declare that Cry9C maize was safe for humans and, on the other hand, resisting pressure from public interest groups to take all of the nation's Bt crops-maize, cotton, potatoes, and soybeans off the market because of their ever more obvious hazards. Meanwhile, America's overseas allies are trying to figure out what to do about the growing demand on the part of consumers in their own countries to close the door on billions of dollars of GE-tainted US agricultural imports.

The US announcement on October 27th that they would let Archer Daniels Midland, Cargill, ConAgra and other grain exporters ship StarLink-contaminated maize to international markets only made matters worse. In effect, the grain cartel and the White House were telling America's best overseas customers: Here, take this contaminated maize. Americans are refusing to eat this stuff, Tyson Foods, the largest poultry producer in the US, won't even feed it to their chickens, but you can eat it.

The fallout and collateral damage from the StarLink scandal will likely continue. As the New York Times stated October 17th, Aventis may be hit with a barrage of lawsuits: "Just what farmers knew and when they knew it could end up playing a role in lawsuits growing out of the affair, according to lawyers who handle agriculture cases. Aventis and the seed companies might have a hard time fending off liability for the expenses of farmers, grain elevators, millers and food companies in sorting out the mess if they did not do enough to head off foreseeable risks that mixing would occur."



The only way the European Union's de facto moratorium on new GM (genetically modified) seeds is likely to be lifted is for US farmers to be required to segregate genetically modified crops from those grown from traditional seeds.

The appalling lack of US government regulation and the greed of so-called Life Science corporations to rush untested and, in this case, likely dangerous products to market have now become obvious, even in the heartland of agbiotech, the United States. Polls taken before the StarLink scandal broke showed that the majority (51% in a poll by Angus Reid) of Americans and Canadians (60% in a poll by Unilever) were already opposed to genetically engineered foods, while an overwhelming majority (80-94%) support mandatory labelling, mainly so that they can avoid buying these controversial foods. US farmers, and even a number of large food corporations, have already begun cutting back on their use of GE seeds or food ingredients, as reported previously in BioDemocracy News #29 www.purefood.org. While 33% of US maize acreage was GE last year, this year it fell to 19.5%. Whether or not the StarLink debacle represents a mortal blow to the first generation of GE foods and crops remains to be seen. Certainly a review of recent global developments indicates that the crisis of credibility surrounding genetically engineered foods is steadily increasing.

FDA - No Labelling, No Safety Testing

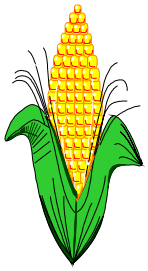
The US government's "no labelling" and "no safety testing" policy has become a serious liability and source of controversy. The Center for Food Safety and other public interest groups filed a major lawsuit in 1998 in US Federal Court to take GE foods and crops off the market. On October 2nd, the lawsuit was headed off by the FDA, but only by admitting in court that they actually have had no real policy in place on genetically engineered foods and crops since 1992. In effect, all so-called "regulation" up until now has been completely voluntary on the part of Monsanto, Aventis, and the rest of the biotech industry. Commenting on the October 2nd decision, Center for Food Safety attorney Andrew Kimbrell stated: "This court decision means that for almost a decade these novel foods have gone virtually unregulated in the United States. American consumers have been used as unknowing guinea pigs..."

Inside sources report that the FDA has postponed publishing new proposed regulations on genetically engineered foods, at least until after the November elections. In the aftermath of the StarLink controversy, the FDA understands that its forthcoming propos regulations (no mandatory labelling, no mandatory safety testing, no required liability insurance) will likely set off a huge public backlash during the legally required public comment period. But federal officials and the Gene Giants are caught in a terrible bind. If they do what most of the public wants and require mandatory pre-market safety testing and labelling, leading food corporations and supermarkets will do what they are already doing in Europe and Asia, that is remove GE foods and ingredients from their brand-name products. Stores won't sell products branded with the "skull and crossbones" of the GE label, and farmers will be very reluctant to grow these crops. On the other hand, if the FDA, USDA, and EPA continue to do the bidding of the biotechnology industry, they risk losing billions of dollars in US export sales, not to mention the political risks of provoking the ire of US consumers, who are now apparently awakening to the GE food controversy with a vengeance.

International Fallout

On the international front, the leading producers of genetically engineered crops, the US (74% of all GE crops), Canada (15% of all GE crops), and Argentina (10%), face a similar dilemma. If they try to use the hammer of economic sanctions from the World Trade Organisation to force Frankenfoods down the throats of the WTO's other 131 nation-state members, they risk provoking a trade war and possibly even a meltdown of the entire global "Free Trade" system. If they don't use the police and enforcement power of the WTO, however, more and more countries are going to make it harder and harder for untested and unlabeled GE products to get into their countries. For example:

Europe, which has not approved a new GE crop since April 1998, told the US on October 11th, according to the Bureau of National Affairs journal, "that the only way the European Union's de facto moratorium on new GM (genetically modified) seeds is likely to be lifted is for US farmers to be required to segregate genetically modified crops from those grown from traditional seeds..."



If biotech companies and the FDA are unable to keep an unapproved variety like StarLink out of the human food chain … what are they going to do once the next generation of bio-pharm plants begins to be commercialised?

Meanwhile new human health fears over antibiotic-resistant genes in GE cattle feeds are prompting Europe's leading food producers and supermarket chains to ban GE animal feeds in their meat and dairy production. Recently a government advisory board in Britain, the Advisory Committee on Animal Feeding Stuffs, admitted that antibiotic-resistant marker genes found in genetically engineered foods and animal feeds may be able to transfer antibiotic resistance to the bacteria in animals' guts, giving rise to dangerous pathogens in humans that can't be killed by traditional antibiotics. German scientists earlier this year - in a story widely reported across Europe - found that antibiotic-resistant genes from GE rape seed plants were combining with bacteria in the stomachs and intestines of bees. The BBC reported on October 6th that the UK's major grocery chains, Iceland, Sainsbury, Waitrose, Marks & Spencer's, and Asda, are all removing GE ingredients from animal feed. A recent UK poll commissioned by Friends of the Earth found 63% of British shoppers wanting supermarkets to drop GM ingredients from animal feeds. As reported in BioDemocracy News #29, the European Commission and the Food and Agriculture Organisation of the United Nations are now both calling for mandatory labelling of animal feeds, a move that analysts predict will all but kill non-segregated, GE-tainted US grain exports to Europe and Asia.

Cargill Segregating

Cargill, the world's largest grain company, announced in September that they are expanding their contract production and marketing of non-genetically engineered maize, and will strictly segregate these varieties at their processing plants in Paris, Illinois, Indianapolis, Indiana, and Liverpool, England. As Cropchoice News (www.cropchoice.com) reported on September 29th, "Cargill's latest parlay into non-GMO comes at time when it and other big grain processors continue to downplay the demand for non-biotech grain. But like ADM and ConAgra, Cargill is making moves into the non-GMO market even as they suggest it is unimportant." Cargill's shift reaffirms the conclusion of a recent study carried out by professor David Bullock at the University of Illinois which found that US grain handlers can efficiently and economically segregate GE and non-GE grain varieties by simply designating specific grain elevators, grain processing plants, and transportation facilities as either GE or non-GE.

Government officials in Taiwan announced October 17th that they will follow the lead of other Asian and Pacific countries and require mandatory labelling of food with genetically engineered ingredients. According to officials, labelling requirements will come into force in 2001 - with similar measures being implemented in South Korea and Japan. Taiwan is a major importer of US grains, importing over 4.5 million metric tons of maize last year. According to Cropchoice News, "The government's decision is in response to intense pressure and follows publication of a Gallup poll in which 74% of Taiwanese said they expected the government to require labels on GMO food." According to Reuters news agency, Uni-Food Enterprises, Taiwan's largest food company, reacted to the news by promising to comply with the labelling requirements and move toward using non-genetically engineered ingredients. Uni-Food Enterprises, with $2.6 billion in annual sales, produces animal feeds, dairy products, frozen foods, instant noodles, and soft drinks.

Japan Says No Thanks

According to an Associated Press story October 25th, Japanese authorities have warned the United States not to export StarLink maize to Japan. Government officials were embarrassed after a public interest group, the Consumers Union of Japan, announced in Tokyo that it had found traces of StarLink maize in snack foods sold in Japanese stores as well as in imported animal feed. StarLink maize is prohibited in both human and animal feed in Japan. An earlier AP story on October 24th reported that an entire 55,000 ton shipload of US maize destined for Japan was rejected after testing positive for StarLink, "sending shock waves through importers in Japan as well as other Asian countries such as South Korea and Taiwan." According to the AP "Japan imports about 60 percent of its food, much of it from the United States. In 1999, Japan imported 15.9 million tons of maize from the United States, including 10.8 million tons for animal feed, the Foreign Ministry said. The remaining 5.1 million tons were for food, mostly for maize starch." Korea imports about eight million tons of maize per year from the US. The Consumers Union of Japan and allied consumer groups in South Korea are calling for a moratorium on the importation of all GE foods into their countries. In a recent poll 82% of Japanese consumers said they were opposed to genetically engineered food-the highest level of resistance in the world.

Worried officials from the U.S. Grains Council and the National Maize Growers Association, two major agribusiness trade association groups, rushed to Tokyo in late September to outline industry plans to channel StarLink into "approved markets" and keep it out of shipments to Japan. The White House also dispatched a trade delegation to Europe. According to www.AgWeb.com, an "emergency meeting" took place in Washington on October 6th with agribusiness representatives

meeting with high officials from the Clinton/Gore administration. A National Maize Growers Association official expressed the hope at this meeting that Japan would soon approve StarLink for animal feed, but after the recent developments in Japan, this scenario appears unlikely.

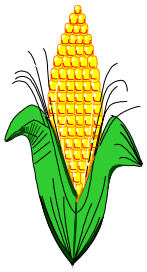
Latin Fallout

The StarLink scandal has spread into Mexico and Latin America as well, with TV coverage by networks such as Telemundo, Univision, and CNN. According to Reuters, Mexico Greenpeace protesters on October 11th "wearing white overalls and mime-like white masks entered an upscale Mexico City supermarket and boldly labelled mainstream maize flour products that contain genetically modified maize with stickers bearing a giant "X," for "X-perimental." Maize flour is the main ingredient in tortillas, Mexico's most important food product. Greenpeace also announced in October that 450 tortilla factories across Mexico will use only locally produced (non-GE) maize in their products. Mexico is the world centre of biodiversity for maize, with 25,000 varieties found in the country. Environmentalists warn that pollen and "genetic pollution" from genetically engineered maize plants could cause irreparable harm to Mexico's native maize varieties. Mexico is also the winter home for Monarch butterflies, who migrate south from Canada and the United States. An important study at Cornell University in 1999 found that the pollen from Bt maize kills Monarch butterflies.

According to a report posted by UK geneticist Mae-Wan Ho on the internet October 18th, Argentina, the second largest producer of genetically engineered crops in the world after the United States, "is having second thoughts as the world market [for GE soybeans and maize] collapses. This was the message conveyed by both the Environment Minister Ruben Dario Patrouilleauz, who headed the Argentinean delegation to the Biosafety Protocol Conference in Montreal, and the Director General of Cultural Affairs, Raul Alfredo Estrado Oyuela. Both spoke at a special Parliamentary debate on agricultural biotechnology in La Plata, Federal Province of Buenos Aires, on September 26th." Monsanto has been very successful thus far in getting 84% of Argentina's soybean farmers to plant GE (Roundup Ready) soybeans. This may soon change however as EU markets for Argentina's processed oils and animal feed begin to close down, and as EU and Asian markets for Brazilian soybeans (where GE soya is illegal) continue to rapidly expand.

Scientific Warning

On the scientific front, the StarLink controversy has shone the spotlight once again on the hazards of Bt-spliced crops in general, not just the Cry9C variety. In dramatic testimony presented to the EPA October 20th, a highly regarded international expert, Dr. Michael Hansen of the Consumers Union, pointed out that: (1) The EPA has ignored an EPA-funded study that shows that Bt toxins have induced signs of allergenicity in agricultural field workers, as well as an additional study indicating allergenicity in lab rats; (2) the EPA has failed to require tests of all Bt crops for allergenicity using the blood serum and chemical reagents from these earlier studies-even though these tests could be done quickly with little expense; (3) the EPA have failed to carry out adequate safety tests for StarLink or any of the other Bt crops which they have approved; (4) government "acute toxicity" protocols are based on the erroneous scientific assumption that Bt toxins generated by gene-spliced plants in the field are identical to Bt toxins produced by bacteria in the laboratory; and (5) the government continues to downplay the potential hazards of antibiotic resistant marker (ARM) genes-found in Bt crops and all genetically engineered foods-even though recent studies underline that ARM genes have the ability to transfer antibiotic resistance to soil bacteria, bees, mammals, and other organisms, including humans. As Hansen reminded the EPA in May 1999, the British Medical Association, which represents some 85% of the doctors in Britain, released a report calling, in part, for a prohibition on the use of antibiotic-resistant marker genes in genetically engineered plants. For Dr. Hansen's full testimony see: www.purefood.org/ge/btcomments.cfm



Why was it left to Friends of the Earth to commission the tests that found StarLink in taco shells? The food industry needs to get its act together (New Scientist magazine 7th October 2000)

As Larry Bohlen of Friends of the Earth stated in a press release October 20th, "The EPA should not allow Bt maize to be planted next year unless they can assure mill workers, farmers and rural residents that they will not develop allergies and respiratory problems. Farmers could be affected and not even know the reason why due to the EPA's failure to test for health impacts."

In a related scientific development, researchers at the University of Minnesota have found that Bt maize does indeed pose a major hazard to Monarch butterflies, since Monarchs are found in concentrated numbers in and around milkweed plants in maize fields throughout the maize growing season. Researchers were surprised to find, according to an October 25th article in the Los Angeles Times, "just as many" Monarchs were breeding and feeding within maize fields as in non-agricultural sites. In other words, millions of Monarch butterflies throughout the Midwest maize belt are feeding on their only food source, milkweed plants, just at the same time that Bt maize plants are shedding their toxic pollen, pollen which lab and field tests have conclusively shown are poisonous to the butterflies. The biotech industry has worked overtime in the past year trying to maintain that Bt pollen poses insignificant risks to Monarch butterflies. Besides the Bt threat, scientists have warned that Monsanto's Roundup herbicide, sprayed on GE soybeans and other crops, kills off the Monarch caterpillar's sole food source, the milkweed plant.

Critics have pointed out that not only is Bt killing Monarchs, but that it is also killing beneficial soil microorganisms and thereby damaging the entire soil food web; as well as killing beneficial insects such as lacewings and ladybugs. Scientists also warn that bees and birds are likely being harmed by eating insects that have ingested the Bt toxin. In addition, organic farmers, 2/3 of whom in the United States use a non-genetically engineered form of Bt spray as an emergency pest management tool, have pointed out that crop pests (beetles, boll worms, maize borers) will inevitably develop resistance to widely cultivated Bt-spliced crops, creating superpests that will overwhelm organic farmers and make organic agriculture more difficult, if not impossible. For all of these reasons,

Greenpeace, the Center for Food Safety, and a broad coalition of public interest groups - including the Organic Consumers Association - are preparing litigation to have all genetically engineered Bt crops taken off the market.

Finally, on another scientific note, even the pro-biotech New Scientist magazine (UK) pointed out on October 7th what has now become painfully obvious: if biotech companies and the FDA are unable to keep an unapproved variety like StarLink out of the human food chain and contained in restricted farm plots, what are they going to do once the next generation of bio-pharm plants begin to be commercialised, plants containing vaccines and pharmaceutical drugs, crops that could harm and poison unsuspecting consumers? As the magazine concluded, "We can't ignore the taco fiasco... Why was it left to Friends of the Earth to commission the tests that found StarLink in taco shells? The food industry needs to get its act together before the new generation of modified plants arrives. Next time, the consequences could be serious."

For the moment the proponents of the Biotech Century seem to have survived the latest storm. Unlike the FDA's last recall of a genetically engineered product, the nutritional supplement l-Tryptophan, in 1989, which left in its wake 37 deaths and 5,000 injuries, there are no dead bodies of StarLink victims visible on the TV news, but the Frankenfoods controversy continues to grow. The question seems to be no longer, if there will be a biotech Chernobyl, but only when.

(Ronnie Cummins, Organic Consumers Association, www.purefood.org)

(*) Genetically Engineered Food Alert founding members include: Center for Food Safety, Friends of the Earth, Institute for Agriculture and Trade Policy, National Environmental Trust, Organic Consumers Association, Pesticide Action Network North America, and the State Public Interest Research Groups.

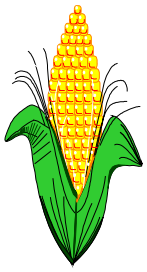
Who should pay for the costs of the StarLink scandal?

The US is exporting a variety of genetically engineered maize that has not been approved for human consumption in the US. StarLink was grown in 1998 on about 10,000 acres in the US, some 250,000 acres in 1999, and more than 350,000 acres in 2000. Who will pay for the costs to farmers, country elevators, distributors, food processors, retailers, exporters, and overseas entities in the maize-products food chain, to rid the global food supply of this potential allergen? What can importing countries do?

Although the Cartagena Protocol on Biosafety is not yet in force, signatories may wish to take action now to prevent the import or demand compensation for costs they may incur as a result of having already imported a variety of genetically-engineered maize from the United States that has not been approved for human consumption.

International Legal Issues

According to customary international law, States do have a duty to ensure their actions do not cause harm in other States. This common law principle was extended to international environmental pollution in the 1941 "Trail Smelter" arbitration and is further elaborated in the 1972 Stockholm Declaration and the 1992 Rio Declaration, as well as several rulings of the International Court of Justice (ICJ). In 1996, the ICJ issued an advisory opinion regarding the legality of nuclear weapons noting that "the environment is not an abstraction but represents the living space, the quality of life and the very health of human beings, including generations unborn. The existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or areas beyond national control is now a part of the corpus of international law relating to the environment."



This would seem to indicate that the US government is liable for what could be characterised as reckless and negligent failure to ensure the segregation of maize it has not approved for human consumption - because it could cause allergies - from maize that is destined for human use.

This would seem to indicate that the US government is liable for what could be characterised as reckless and negligent failure to ensure the segregation of maize it has not approved for human consumption - because it could cause allergies - from maize that is destined for human use. The maize in question contains the *Bacillus thuringiensis* subspecies *tolworthi* Cry9C protein and the DNA necessary to produce this protein. There is evidence that Cry9C is heat stable and resistant to degradation in gastric juice, the two most important indicators of allergenicity. This maize is marketed with the trade name "StarLink," a product of the Aventis CropScience company. But because the US commodities system is not prepared to keep bulk grains separated, StarLink maize has been distributed throughout the US domestic and export markets. Independent DNA testing has found the StarLink protein in a variety of consumer products in the US and in Japan, where recent legislation sets a zero tolerance for the import of unapproved agricultural products. In the absence of an effective segregation system, the US approval itself could be considered reckless and negligent.

Negligence is bad enough. How about intentional harm? Once the contamination was discovered (not by government inspectors, but by non-governmental organisations opposed to genetically-engineered foods), the US Department of Agriculture moved to get rid of the unwanted product by officially approving StarLink for export - placing the burden on importing countries to object to StarLink imports and to test their current supplies. Also, the US Environmental Protection Agency (EPA), which regulates StarLink as a plant pesticide, has published notice domestically that Aventis is seeking an exemption for StarLink's Cry9C DNA and the Cry9C protein, to allow its appearance in human foods as well as animal foods.

This approval is subject to a public comment period and a final ruling by the EPA. The US may hope these actions will be construed by the courts as immunisation from liability; could they not also be construed as wilful and intentional disregard for public health and international law?

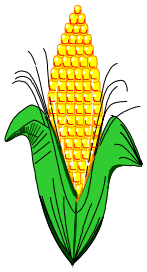
It would be interesting to learn what the International Court of Justice (ICJ) might think about the United States' StarLink-related acts of both omission and commission. The ICJ could become involved in two ways. First, inter-governmental bodies authorised by the United Nations Charter can ask the ICJ to render an advisory opinion on relevant legal matters. For example, the World Health Organisation or the United Nations' food safety body, known as the Codex Alimentarius Commission, could ask the ICJ for an advisory opinion on the legality of exporting a potential allergen banned in the country of origin. But human health is not the only consideration. All maize cross-pollinates freely. Any StarLink grain that may be planted rather than eaten could result in genetic drift, affecting related varieties of plants and adjacent ecosystems - a matter of particular concern to those regions that are centres of diversity for maize. The Conference of the Parties to the Convention on Biological Diversity could test whether it qualifies as an "authorised" body under the UN system, and ask for an ICJ advisory opinion on the environmental issues.

Secondly, the Convention on Biological Diversity (CBD) stipulates that disputes that cannot be settled otherwise may be submitted to the ICJ. A dispute could easily arise, if parties choose not to import co-mingled US maize or seek compensation and redress from the US if they already have inadvertently done so. Although the US is not party to the CBD, it is a signatory, which establishes an obligation on the US to not undermine the objectives of the CBD. In such a case, the ICJ could be asked to settle the matter judiciously.

Compensation and Redress

Access to compensation may become important in countries where efforts to identify and segregate StarLink maize from maize destined for human consumption will become extremely costly. Under customary international law, States have the right to seek compensation from another State responsible for the damages - whether to persons, property, the environment, or economic. While States have shown themselves, over time, to be reluctant to invoke international liability claims against other States, there have been cases in which compensation was negotiated "without reference to legal liability" - such as when the US paid Japan $2 million in 1944 as compensation for injuries caused by nuclear testing in the Marshall Islands. Countries also have the right to impose civil liability on private actors - such as Aventis - in their own courts or in the courts of the country where the act was done.

In the United States, efforts to segregate StarLink after co-mingling are expected to cost between $100 million and $1 billion. The United States Department of Agriculture is attempting to buy back crops from farmers who planted StarLink seed on some 315,000 acres this year, for re-sale to animal feedlots, dry-mill ethanol producers (as wet-milling generates a by-product that re-enters the human food system), or other industrial uses. Aventis has said it will reimburse the US government for the costs of this buy-back program. However, the buy-back from farmers represents only a small portion of the total costs to be incurred in post-harvest reclamation throughout the food system.



Attorneys in the US are preparing for massive liability litigation, as affected parties all sue each other seeking recovery of their damages. Because StarLink's registration with the EPA was limited to animal feed and industrial use, injured parties could seek to hold Aventis responsible for the failure to segregate.

So far, three multi-million dollar recalls of taco shells found by anti-GMO activists to contain StarLink maize have been announced by the Kraft, Safeway and Western Family companies, while the US Food and Drug Administration has posted a recall on 297 brand-name maize products. StarLink is costing Archer Daniels Midland (ADM) at least $10,000 a day for extensive testing and monitoring of maize shipments at its processing plant in Decatur, Illinois. Elevators whose shipments test positive for StarLink are losing as much as $15,000 or more in extra freight costs as well as lower prices from the animal feed operations that eventually accept them. Maize futures prices have slipped on the Chicago Mercantile Exchange based on fears that the continuing StarLink maize controversy will hamper the potential to make good on ambitious targets for U.S. maize exports.

Who will pay for all of these economic disruptions? Attorneys in the US are preparing for massive liability litigation, as affected parties all sue each other seeking recovery of their damages. Because StarLink's registration with the EPA was limited to animal feed and industrial use, injured parties could seek to hold Aventis responsible for the failure to segregate. Many farmers claim that Aventis failed to advise them of the requirement to sell their StarLink crops only for animal feed and other uses than human consumption. Others claim the company failed to warn them of the need to plant 660-foot buffer zones of non-StarLink maize around their StarLink fields, to avoid genetic pollution. Cross-pollination between adjoining crops could constitute actionable trespass where StarLink's DNA invades neighbouring fields and deprives non-StarLink producers, especially those who are certified organic, access to markets. No doubt anticipating an onslaught of lawsuits, Aventis is attempting to get farmers to sign a notice, backdated to April 2000, indicating they were aware of the segregation obligations; those who do not sign may not be eligible for the buy-back program underwritten by US taxpayers.

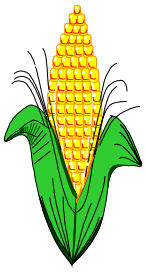
However, the situation also opens markets for non-StarLink producers, an opportunity that other agricultural countries are striving to fulfil. Japan, which usually buys about 30 percent of US maize exports worth some $1.5 billion, has asked the US to ensure that shipments do not include StarLink. Some Japanese companies, however, are looking elsewhere - to China, South Africa and Argentina - for supplies, even if it has to pay a premium price. The European Union, too, is questioning whether the US can distinguish between approved and non-approved products. The US has sent delegations to both Japan and Europe to try to calm importers' concerns about Starlink contamination.

Last year, the world's first global class action suit was filed in US federal court against Monsanto and other agribusiness corporations on

behalf of all farmers everywhere. The suit contends that Monsanto hastened the introduction of genetically engineered organisms into markets without sufficiently assessing environmental or human health impacts, and that the corporations deliberately sought to create a cartel in order to monopolise the global maize and soybean markets. The suit is brought by a coalition of prominent law firms specialising in anti-trust litigation on a contingency basis, meaning they will only be paid if they win. A victory would hold Monsanto and the other companies liable for environmental damages, negative consequences to public health, and any costs incurred by farmers around the world resulting from genetic contamination.

Need for a Biosafety Liability Regime

The Cartagena Protocol on Biosafety foresees that Parties should endeavour to complete the development of rules on liability and compensation for damaged caused by GMOs "within four years", but it could take years to reach an agreed regime. But ironically, it may be the private sector that cannot wait. According to Swiss Re Life and Health, one of the giant Swiss insurance companies, "Genetic engineering is changing the risk profiles of the pharmaceuticals, agricultural and nutritional sectors permanently, without it being possible to predict the risk potential… the decisive factor is not whether it is dangerous, but rather how dangerous it is perceived to be."



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Numerous international agreements have been negotiated to deal with liability and compensation that may be caused by other risky business. For example, in the case of oil pollution at sea, liability rests with the private sector, backed up by an international oil pollution compensation fund. In the case of nuclear damage, the duty to compensate rests on the operator of the nuclear installation, exonerating all other parties who may have been involved in the development of this high-risk form of energy. The Convention on International Liability for Damage Caused by Space Objects places the liability on States, but only for personal injury and not damage to or loss of property. Under the Basel Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and their Disposal (Basel Protocol), the liability lies with the carrier, shipper, or other party found to be at fault. Where fault cannot be proven, strict liability is placed on the exporter for transportation incidents or on the disposer should damages occur after receipt. All potentially liable parties are required to carry insurance, bonds, or other financial guarantees covering liability in advance.

Do any of these models properly allocate the liability for environmental, human health or socio-economic damage that may be caused by GMOs? In cases in which signatories properly implemented the Biosafety Protocol and damage resulted nonetheless, there may be one answer. What about cases in which signatories may not properly follow the global biosafety rules? And what about cases involving non-parties?

It will be years before the parties to the Cartagena Protocol on Biosafety negotiate a liability regime. The experience with StarLink suggests it would be prudent to begin the effort immediately. Meanwhile, existing international law provides ample scope for States to seek compensation and otherwise defend themselves from StarLink contamination and resulting economic dislocation.

(Kristin Dawkins, Institute for Agriculture and Trade Policy, www.iatp.org)

Why Africa must not accept biotechnology in agricultural systems

In the last Mailout (Vol. 6, Issue 6, 15.09.00), we reproduced a letter, published in the Washington Post, from the Nigerian Minister of Agriculture and Rural Development extolling the virtues of agricultural biotechnology. Below is the reaction of Friends of the Earth Togo to the position of the Nigerian Minister for Agriculture and Rural Development concerning biotechnology

No one can deny that plant varieties grown today are the result of the slow and patient work of peasants over the centuries. It is they who started by domesticating, then selecting and crossing existent varieties to obtain new ones better adapted to their needs. It is also they who, every season, kept back part of the harvested seed for replanting and thus preserved for us, from harvest to harvest, a fabulous heritage.

The Convention on Biological Diversity (CBD), which came into force in December 1993 and has been ratified by more than 170 countries, requires signatories to protect and maintain the rights of communities, farmers and indigenous peoples concerning their natural resources and traditional knowledge systems (Art. 8j and 10 of the Convention). The CBD also stipulates that the benefits arising from commercial use of natural resources and communities' traditional knowledge will be shared equitably.

The Convention thus explicitly recognises the intrinsic value of community knowledge systems, and gives more importance to the use and conservation therefore than it does to systems used and commercialised by multinational companies.

Despite this fact, Mr. Hassan Adamu, Minister for Agriculture and Rural Development of Nigeria, published an article in the Washington Post of 11.09.2000 encouraging the introduction of biotechnology into the agriculture of developing countries, Africa in particular.

According to Mr. Adamu, agricultural biotechnology is a solution to end the suffering endured by millions of Africans, principally children, as a result of malnutrition and starvation. While protesting against those who oppose agricultural biotechnology, he lists its strong points:

"*Agricultural biotechnology, whereby seeds are enhanced to instil herbicide tolerance or provide resistance to insects and disease, holds great promise for Africa and other areas of the world where circumstances such as poverty and poor growing conditions make farming difficult. Fertiliser, herbicides, pesticides, machinery, fuel and other tools that richer nations take for granted as part of their farming regimen are luxuries in poorer countries. Moreover, the soil in tropical climates, or in areas with inhospitable weather; can not be farmed successfully in the more traditional ways".*

Friends of the Earth Togo believes that this politically correct argument hardly stands up to examination of the facts since transgenic varieties currently commercialised by multinational companies have been developed to meet the needs of farmers in developed countries, not those of developing countries. The truth is that a majority of transgenic plants contain a herbicide-tolerant gene, which is far from being a priority for countries in the South. Even if research is starting to be undertaken to develop genetically modified seeds resistant to salinity or to drought, the long-term results are far from conclusive. It is not by chance either that GM seeds are generally the products of large-scale cultivation (maize, soya, etc.) destined for export and/or for animal feed, rather than food crops eaten every day by peasants.

We wish also to remind Mr. Adamu of two points:

- Biotechnology companies are not always honest, in particular regarding their real objectives which are none other than a mad race for profit and for patents.
- The complexity of the science involved, the degree of technicality, and the cost can only marginalise peasant farmers while giving the advantage to those who are the most well off.

It is not therefore agricultural biotechnology, which is going to solve the problems of hunger throughout the world.

What Friends of the Earth Togo proposes is that the strategy to combat hunger must be part of a sustainable development process which incorporates a number of measures: cancelling the debts of southern countries, redistribution of land to small peasant farmers, adoption of techniques adapted to local conditions which respect the environment, increase of foreign aid.

As far as Mr; Adamu is concerned, the above proposal:

"could be the result of the well-meaning but extremely misguided attempts by European and North American groups that are advising Africans to be wary of agricultural biotechnology. They claim to have the environment and public health at the core of their opposition, but scientific evidence disproves their claims that enhanced crops are anything but safe".

On the contrary, bearing in mind that Friends of the Earth's campaign against agro-biotechnology is based on the experiences, knowledge and opinions of scientists, farmers and non-governmental organisations which are developing throughout the world different agricultural models which rely on local knowledge rather than on imported and expensive technologies.

Friends of the Earth Togo calls on African countries to resist the use of agricultural biotechnology as long as there is evidence, which confirms the real risks of this technology. FoE is surprised to see an African minister encouraging the use of agro-biotechnology without having secured concrete guarantees from the multinational companies concerned which are the sole players in this market.

Today more than ever it is vital to invoke the Precautionary Principle against the introduction of biotechnology in Africa. A single word has to be enforced: caution.

(Bernard Hakizimana, FoE Togo)

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