Latin America: The Downside of the GM Revolution

By Carmelo Ruiz-Marrero | December 3, 2007

As genetically modified soybeans take over vast tracts in South America and reports flow in of genetic contamination of local corn in Mesoamerica, grassroots resistance to biotech crops has also grown. The protests form part of people's movements across the hemisphere that tie together a rejection of neoliberalism and agribusiness, and call for land reform, food sovereignty, and sustainable agriculture.

Genetically Modified crops: Myth and Reality

It is a common misconception that genetically modified (GM) crops were created to fight world hunger. In reality, the great majority were developed not for increased yields or enhanced nutritional value but for herbicide resistance. This type of agriculture destroys plant diversity—most of the land area in the world devoted to GM crops is planted with only one crop: soy. And this GM soy has been developed by a single corporation, U.S.-based Monsanto, with a single trait in mind: resistance to Monsanto's own Roundup herbicide—hence its name, Roundup Ready. Put another way, GM crops, which have been planted commercially since the mid-1990's, have been developed for the most part with the sole purpose of increasing Monsanto's sales of its seeds and herbicide by allowing it to sell both as an integrated package.

Most of this soy is fed not to people in poor countries but to feedlot cattle in the United States, Western Europe, and China, to make beef that the world's poor cannot afford. The remainder is channeled mostly to industrial uses, such as the manufacture of ink, soap, and glue. The little that's left ends up as soy additives found in over half of all processed foods, such as bread, chocolate, and mayonnaise. Now an increasing portion of the worldwide soy crop is being used to make biodiesel.

Monsanto has very few competitors. The global seed business has become so concentrated in the last two decades that less than half a dozen corporations in the world present any substantial competition. These include the U.S.-based Dupont and Dow Agroscience, and European corporations Syngenta and Bayer Cropscience. Monsanto is not only the biggest corporate player in the GM seed business, it recently became the world's biggest seed company, trailed closely by Dupont. In the mid 1970's there were around 7,000 seed companies and not one of them had even 0.5% of the world market. Nowadays 10 corporations control 49% of the world seed market, and all of them are in the race to develop and commercialize GM varieties.

Sources:

ETC Group, "Las diez compañías semilleras más grandes del mundo," October 2007, http://www.etcgroup.org/es/materiales/publicaciones.html?pub_id=657.

ETC Group, "Oligopoly Inc. 2005," http://www.etcgroup.org/en/materials/publications.html?pub_id=42.

Soy in South America: An Environmental Disaster

Nowhere in the world have the effects of GM crops been felt as intensely as in South America. Soybeans currently take up over 16 million hectares (61,776 square miles) of farmland in Argentina—more than 10 times the area of the state of Connecticut, and over 20 million hectares (77,220 sq. mi.) in Brazil (just over one-fifth of Brazil's total cultivated land and almost a third of the state of Texas). Bolivia and Paraguay together account for at least three million hectares of soy (11,583 sq. mi.). Soybeans are also making significant inroads into Uruguayan agriculture.

Almost all of the soy grown in South America is Roundup Ready (RR, see sidebar). The reason for this has to do with the technological and biological realities of soy farming. Massive soy monocultures are made viable and cost-effective by no-till direct seeding machinery. However, no-till farming creates an ideal environment for weeds, which is why soy monocultures are herbicide-intensive. The development of genetically engineered RR soy seeds allows farm workers to apply Monsanto's Roundup herbicide without worrying about it damaging the soy crop. Therefore, the GM herbicide resistance trait makes soy monocultures commercially viable.

The soy boom, lauded as a success story by landowners, agribusiness, biotechnology corporations, and South American governments, has come at an enormous environmental and social cost.

"Large-scale soybean monocultures have rendered Amazonian soils unusable," according to professors Miguel Altieri and Walter Pengue of the Universities of California and Buenos Aires respectively. "The production of herbicide-resistant soybean leads to

environmental problems such as deforestation, soil degradation, and pesticide and genetic contamination."

"Soy means monoculture and huge mechanized farms," informs GRAIN, an international NGO that advocates the sustainable use of biodiversity. "As a result, soy has done enormous environmental damage, causing the destruction of 21 million hectares of forest in Brazil, 14 million in Argentina, and two million in Paraguay."

The effect of soy farming on soil fertility is severe. In areas of poor soils, fertilizers and lime have to be applied heavily within two years of soy cultivation, say Altieri and Pengue. Throughout the continent, spreading soy production affects land use, environment, and society.

Bolivia

"In Bolivia, soybean production is expanding toward the East, and in many areas soils are already compacted and suffering severe soil degradation. One hundred thousand hectares of soybean-exhausted soils were abandoned for cattle grazing, which in turn further degrades the land. As land is abandoned, farmers move to other areas where they again plant soybeans and repeat the vicious cycle of soil degradation," Altieri and Pengue elaborate in their report.

The expansion of soy in Bolivia over the past 15 years has caused the deforestation of over one million hectares, informs the Network for a GM-free Bolivia (Red por una Bolivia Libre de Transgénicos). According to a 2006 document by the Network, which was endorsed by over two dozen civil society organizations, the deforestation rate for soybean planting in Bolivia is almost 60,000 hectares (231 sq. mi.) a year.

"If this deforestation rate continues, the forests in the soy zones run the risk of disappearing. Such is the case of San Julián, one of the main soy-producing municipalities in (the department of) Santa Cruz, where—if the current deforestation continues—its forests will become extinct in less than nine years."

The Amazon Basin

GM soy cultivation also endangers the Amazon region, with its wealth of planetary biodiversity. GRAIN issued a dire warning in 2007: "Unless the Brazilian government takes decisive action to prevent it, soy is likely to take over most of the Amazon basin over the next decade. Within just a few years the relentless advance of the agricultural frontier into the Amazon basin is likely to push the tropical forest over the critical 'tipping point' so that it starts to dry out and turn into savannah. Then, indeed, there will be no stopping the farmers, who will see no reason at all for not making economic use of the moribund forest.

The group points out that loss of the Amazon to soy deforestation contributes heavily to global warming. "As the forest dies, hundreds of thousands of river dwellers, peasant families, and indigenous people will be disinherited, and the world will lose an

Roundup's Toxicity

Although the biotech companies assure that herbicides should not pose public health or environmental hazards if used properly, researchers Miguel Altieri and Walter Pengue state that in practice it is a different story. In large-scale herbicide-resistant GM crops, herbicide is sprayed from airplanes and much of what is sprayed is wasted through drift and leaching. Research shows that glyphosate, Roundup's active ingredient, caused retarded development of the fetal skeleton in laboratory rats; it also inhibits the synthesis of steroids, and is genotoxic in mammals, fish, and frogs. Field dose exposure of earthworms caused at least 50% mortality and significant intestinal damage among surviving worms.

As for human health effects, Roundup has been found to cause dysfunctional cell division that may be linked to cancers, and children born to users of glyphosate had elevated neurobehavioral defects. In Ontario, Canada, epidemiological research found that glyphosate exposure almost doubles the risk of miscarriages in advanced pregnancies. And a French team led by Caen University biochemist Gilles-Eric Seralini discovered that human placental cells are very sensitive to Roundup, and that even in very low doses glyphosate can disrupt the endocrine system.

Sources:

Altieri, Miguel & Walter Pengue, "GM Soybean: Latin America's New Colonizer," Seedling, January 2006, http://www.grain.org/seedling/?id=421.

Independent Science Panel, "The Case for A GM-Free Sustainable World," 2003, http://www.indsp.org/ISPreportSummary.php.

extraordinary biomass, which plays a key role in regulating the global climate. Just as serious, the destruction of the Amazon forest will release some 90 billion tons of carbon into the atmosphere, enough by itself to increase the rate of global warming by 50%."

Paraguay

The human cost of GM soy's "success" has been particularly extreme for the Paraguayan peasantry. Paraguay is the world's fourth largest exporter of soy—soy production quadruped from 1989 to 2006. Soybeans are planted on two million hectares (almost two-thirds of the country's farmland), and soy cultivation is expanding at an estimated annual rate of 250,000 hectares a year (965 sq. mi.).

The Paraguay soy boom came about at the expense of around 90,000 families of peasants and indigenous peoples that were forced off their lands. Those displaced by soy farms end up living in shantytowns on the outer edges of major cities, or squatting in private lands, or resisting eviction. The country can hardly afford to displace and marginalize more people; 85% of Paraguayans live in poverty while 80% of the land is in the hands of the richest 1% of the population.

The government and land owners have responded to the social havoc caused by the expansion of soy with paramilitary violence carried out by the so-called "citizen guard." This extra-official force is composed of approximately 13,000 trained and armed members, and their illegal practices include "break-ins, torture, and detention of those who do not accept the new illegal order that they impose through terror and violence," said the Grupo de Reflexión Rural (GRR), an NGO that tracks and documents the impacts of industrial agriculture, particularly GM crops. "The citizen guard, which works with the complicity of the interior ministry, is linked to land owners and soy growers … and has as its main objective the persecution of campesino leaders."

"Given that the agrarian reform is not enforced, many landless peasants exercise their rights through acts of civil disobedience. The state's response has many times been repression and violence, turning protests and grievances into felonies and the poor into

Protesters in Paraguay hold up a sign reading "Soy Kills" in response to the huge monocultures in their country, one of the world's biggest soy producers. Photo: www.grr.org.ar.

delinquents," said Rita Zanotto of Via Campesina, an organization that represents tens of millions of peasants and small farmers worldwide.

Argentina

In Argentina, the RR soy model has been imposed since the 1990's to generate revenue to pay the foreign debt and to supply the demand of European countries and China for livestock feed. The GRR reports, "With this model, Argentina, which once claimed to be the world's granary, today has become a forage republic and doesn't have the capacity to feed its own population, and it cannot solve its huge unemployment problem because its economy is designed to favor the export of raw materials.

"The soy model has depopulated the territory, liquidated rural populations, and destroyed the tradition, culture, and attachment of millions of Argentines to the land. This model has turned our cities into unsafe megalopolises on the verge of collapse. It has razed our native forests, polluted the main basins with toxic agrochemicals, has deteriorated the soils, and is a grave threat to our biodiversity and our phytogenetic heritage."

Venezuela's Contradictory Stance

Venezuelan President Hugo Chávez is the only Latin American head of state opposed to GM crops, a stance that accompanies the Chavez government's land

Biotech Industry Praises Puerto Rico Governor

The Biotechnology Industry Organization (BIO) named Puerto Rico governor Aníbal Acevedo-Vilá "Governor of the Year" during its 2006 annual convention, held in Chicago.

"Among his recent achievements, Gov. Acevedo-Vilá signed an Executive Order making the promotion and development of the biotechnology industry a public policy priority; instituted an inter-agency task force to address permitting issues for biotechnology companies on a fast-track basis; and, signed a proclamation creating the first annual biotechnology week," gushed the BIO in a press release.

"Acevedo-Vilá and his administration have been champions of building a strong bioscience industry presence in Puerto Rico," said BIO Vice President Patrick Kelly. "Not only does Puerto Rico have the third largest biologic manufacturing capacity in the world, but the Commonwealth also has a significant agricultural industry presence. (His) administration has been successful in creating an environment that will lead Puerto Rico into the forefront of the bioscience industry development well into the new millennium."

Data from the U.S. Department of Agriculture show that Puerto Rico has more open-air GM crop experiments per square mile than any jurisdiction in the United States, with the possible exception of Hawaii. "These are outdoor, uncontrolled experiments," said Bill Freese, of Friends of the Earth USA. "These experimental GE (genetically engineered) traits are almost certainly contaminating conventional crops just as the commercialized GE traits are. And the experimental GE crops aren't even subject to the cursory rubber-stamp 'approval' process that commercialized GE crops go through—so I think the high concentration of experimental GE crop trials in Puerto Rico is definitely cause for concern."

Sources:

Biotechnology Industry Organization, "BIO Names Puerto Rico Gov. Aníbal Acevedo-Vilá 'Governor of the Year,'" April 10, 2006, http://www.bio.org/events/2006/media/pr2.asp?id=2006_0410_03.

Ruiz Marrero, Carmelo, "Puerto Rico meca de experimentos con transgénicos," Claridad, September 16, 2004, http://www.biodiversidadla.org/content/view/full/17126.

reform program. Chavez has proposed the Bolivarian Alternative of the Americas (ALBA), an anti-imperialist alternative to the neoliberal Free Trade Area of the Americas and regional and bilateral trade agreements pushed by the United States. The Chavez government has consulted with internationally renowned agroecologists such as Miguel Altieri, and fully supports the concept of food sovereignty championed by Via Campesina and articulated in the 2007 World Forum on Food Sovereignty in Africa.

However, in apparent contradiction with the above, Chavez is an avid supporter of soy monocultures. During a trip to Paraguay in 2006 he proposed a united South American front for the production and consumption of soy. "In some of our countries (soy) grows with ease and is an important oilseed from which one can produce beef, oil, milk, and yogurt, among other foodstuffs," said the Venezuelan president in Asunción, Paraguay's capital. "We must stimulate our own production because the United States subsidizes their crop."

Argentina and Venezuela have an agreement by which Argentina acquires Venezuelan oil in exchange for farm machinery and agricultural technical expertise provided by Argentina's National Institute for Agricultural Research (INTA).

The GRR has been closely watching Venezuela's flirtation with soy, and has repeatedly warned that soybean monocultures are incompatible with land reform, food sovereignty, and environmental protection, and make penetration by GM seed practically inevitable. The organization points out that INTA was formed after the 1955 coup that overthrew Perón to promote U.S.-style industrial agriculture along with associated inputs such as pesticides, synthetic fertilizer, and more recently, GM seeds.

GRR notes the prominent role of Argentinean soybean czar Gustavo Grobocopatel in selling Chávez the "soy miracle." Grobocopatel, president of Grupo Los Grobo, Argentina's leading agribusiness corporation, frequently travels to Venezuela and organized the Expo Barinas farm equipment fair there in 2005.

"We are convinced that the technologies that Argentina takes to [Venezuela] through INTA and agribusiness personalities, are elements that will end up favoring and empowering the sectors that are most reactionary, and antagonistic to the agrarian revolution, and its orientation toward local and peasant production," declared GRR in April 2007. "That a person such as Grobocopatel proclaims his links to the Bolivarian revolution is enough motive for us to worry and raise our voice in defense of Venezuela and its people and our common future." The GRR has

repeatedly tried to communicate its concerns to the Venezuelan government but to no avail so far.

Mexico: The GM Invasion

Since the 1990's many scientists had warned that GM crops cannot be contained. Once planted in the open, they said, these would uncontrollably spread either through pollination or seed dispersal, with potentially unpredictable and irreversible consequences. "Seeds will be our only recourse if the prevailing belief in the safety of genetic engineering proves wrong," advised the Union of Concerned Scientists.

"Heedlessly allowing the contamination of traditional plant varieties with genetically engineered sequences amounts to a huge wager on our ability to understand a complicated technology that manipulates life at the most elemental level. Unless some part of our seed supply is preserved free of genetically engineered sequences, our ability to change course if genetic engineering goes awry will be severely hampered." Biotech companies repeatedly assured that such genetic contamination would never happen.

But in 2001, University of California researchers Ignacio Chapela and David Quist reported in the scientific journal *Nature* that traditional varieties of corn in rural southern Mexico had been genetically contaminated with GM corn traits.

The main culprit was the North America Free Trade Agreement, which entered into effect in 1994. NAFTA turned Mexico into a net importer of corn, with almost all imports coming from the United States. From being self-sufficient in corn, the country went on to become the United States' second biggest corn importer, buying 11% of its exports in 2000.

Approximately 75% of the U.S. corn harvest is genetically modified. GM corn began to be planted commercially in the United States soon after NAFTA came into effect. Mexican environmentalists and scientists worried that the flood of corn coming from across the border contained GM seeds, which could contaminate their country's invaluable agricultural seed heritage.

The Mexican government responded to these concerns in 1998 by imposing a moratorium on the planting of GM corn. The following year it formed CIBIOGEM, an interagency committee to enforce the moratorium and investigate any issues related to GM crops. But the ban did not prohibit importing GM corn. In 1999 Greenpeace activists took samples of U.S. corn shipments being unloaded in Mexican docks. Lab tests turned out positive for GM content.

Corn covers one-fifth of U.S. crop land, far more than any other crop. According to the U.S. Grains Council, the United States produces about 44% of the world's corn—more than China, the European Union, Brazil, Argentina, and Mexico combined. Iowa alone produces about as much as the European Union. Corn also receives far more federal subsidies than any other crop. One-fifth of the U.S. corn harvest is sold abroad, and according to the Institute for Agriculture and

Food Sovereignty

Food sovereignty is the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. It puts the aspirations and needs of those who produce, distribute, and consume food at the heart of food systems and policies rather than the demands of markets and corporations. It defends the interests and inclusion of the next generation. It offers a strategy to resist and dismantle the current corporate trade and food regime, and directions for food, farming, pastoral, and fisheries systems determined by local producers and users.

Food sovereignty prioritizes local and national economies and markets and empowers peasant and family farmer-driven agriculture, artisanal fishing, pastoralist-led grazing, and food production, distribution, and consumption based on environmental, social, and economic sustainability. Food sovereignty promotes transparent trade that guarantees just incomes to all peoples as well as the rights of consumers to control their food and nutrition. It ensures that the rights to use and manage lands, territories, waters, seeds, livestock, and biodiversity are in the hands of those of us who produce food. Food sovereignty implies new social relations free of oppression and inequality between men and women, peoples, racial groups, social and economic classes, and generations.

Source: The Nyeleni Declaration, written collectively by more than 500 representatives from more than 80 countries, of organizations of peasants/family farmers, artisanal fisherfolk, indigenous peoples, landless peoples, rural workers, migrants, pastoralists, forest communities, women, youth, consumers, and environmental and urban movements participating the World Forum for Food Sovereignty in the village of Nyéléni in Sélingué, Mali, in February 2007, http://www.nyeleni2007.org/spip.php?article290.

Costa Rican "GM-Free Zones"

Three cantons (municipalities) in Costa Rica have declared themselves GM-free zones. These GM-free declarations are the product of "the brave decision of municipal councils and the valuable work of community organizations," said Fabián Pacheco of the Central American Alliance for Biodiversity Protection. "[This] work goes beyond resisting the introduction of GM organisms to make a profound call for the promotion of agroecological practices, of good nutrition, and the construction of communities truly free of corporate conceits that try to control everything, free to choose what's best for the inhabitants of the region."

Pacheco added that "The struggle against GM organisms permits us to build the bases of the resistance against the new agroindustrial model that destroys the food sovereignty of local communities."

Source:

Pacheco, Fabián, "En Defensa de Nuestras Semillas: Territorios Libres de Transgénicos," Revista Biodiversidad, Sustento y Culturas, July 2007.

Trade Policy, sells internationally at 13% below the cost of production, undercutting foreign producers.

According to Oaxacan indigenous leader Aldo González, "The contamination of corn is a sad fact that we cannot ignore. It is a deep wound that puts all of humanity at risk and only benefits large transnational corporations that want to impose on us a model of consumption that privileges their interests ... For the indigenous peoples of Mesoamerica, corn is our blood. Without corn we are nothing."

"The pollution was no chance act, but a well thought-out and conscious strategy which simply took a little while to play itself out," accused GRAIN. "None could deny that the natural course of any seed is inevitably to spread. That is what makes a seed a seed. Nor could anyone deny that maize is naturally an open pollinator. Any farmer knows that. Put a genetically-modified maize variety into a highly diverse, maize-intensive small-farmer area and it will be just a matter of time for the new variety to join the pool and for contamination to occur."

In view of the genetic contamination of Mexican corn, biotech industry consultant Don Westfall spoke perhaps a little too candidly when he let out that "The hope of industry is that over time the market is so flooded that there's nothing you can do about it. You just sort of surrender."

The industry and its advocates engaged in a persistent and prolonged campaign to discredit Chapela and Quist and to pressure *Nature* magazine, where their study was published, to retract it. Faced with a barrage of criticism from pro-industry scientists, *Nature* published in its April 4, 2002 issue, an editorial note on the Chapela-Quist study stating that "evidence available is not sufficient to justify the publication of the original paper." Biotech advocates celebrated the editorial note but they neglected to mention the editorial in *Nature*'s June 27, 2002 issue, which said that the Chapela-Quist study "was not formally retracted by its authors or by *Nature*."

The Mexican government moratorium on GM corn planting has remained in place, but biotechnology corporations and their local allies, like Agrobio, are pressuring for the approval of plantings for "experimental purposes." Their rationale is contained in a proposal called the Teacher of Corn Project. Critics allege that this project is deeply flawed and scientifically unsound, as the proposed studies do not cover controversial subjects like GM corn's effect on biodiversity or local corn varieties. They point out that the experiments in question would take place in carefully controlled experimental settings that bear no relation to real world situations. The studies "do not even take into account the enormous multiplicity of factors that exist in the real environment of Mexico or its enormous cultural diversity," says Silvia Ribeiro. Furthermore, they claim that the proposed measures to prevent contamination are so complicated, cumbersome, and hard to verify that they would not be viable in actual corn production situations.

According to Ribeiro, the real agenda of the Teacher of Corn Project is to accelerate and further the process of genetic contamination and to use the "experiments" as a stepping stone to approval for commercial GM corn production. "There is no country in the world with GM crops that has not been contaminated. The contamination is inevitable and therefore intentional. It serves corporate interests by creating de facto situations so that everyone has to accept GM crops."

Small Farmers Fight Back

Sustainable Soy?

In March 2005, an international multistakeholder conference on the impacts of soy monocultures took place in the Brazilian city of Foz do Iguaçu, near the Paraguayan and Argentinean borders. The conference, organized by the World Wildlife Fund (WWF), had the full participation of agribusiness interests and sought not to counter the expansion of soy but to establish sustainability criteria for increased production. Its organizers intended to put these environmental guidelines to the test in Argentina's "100 million-ton harvest" project, an initiative of Fundación Vida Silvestre, WWF's local chapter in Argentina. A harvest that large would require 10 million additional hectares (38,610 sq. mi.) to be added to soy production.

Hundreds of protesters from Argentina, Brazil, and Paraguay convened outside the hotel where the "Sustainable Soy Roundtable" was taking place and denounced the initiative as a farce intended to greenwash massive soybean production that could never be made sustainable. Under the pretext of conserving regions high in biodiversity, WWF seeks to "legitimize the expansion of industrial monocultures of GM soy and the introduction of feedlot cattle and dairy production," accused the protesters in an open letter. The signers described the roundtable as a strategy of "green" capitalism to satisfy market demand abroad and service the illegitimate external debt, while ignoring domestic food demand.

The letter goes on to denounce the "100 million-ton harvest" for implying "war against indigenous and campesino communities that are resisting the advance of industrial corporate agriculture."

The Roundtable continues to meet in various locations in the Southern Cone, although its organizers now call their concept "Responsible Soy." They aim to formulate a system of certification for the environmentally and socially responsible production of soy. Their objectives include improvement of labor conditions, responsible use of agrochemicals, respect for the land rights

Are Bt crops reliable and safe?

The GM corn in the market today is either herbicide-tolerant (Roundup Ready), or of the insect-resistant Bt variety, or of stacked-gene varieties that combine both Roundup Ready and Bt genes. Bt crops, which also include cotton, contain a gene, taken from the Bacillus thuringiensis (Bt) bacterium, that codifies the secretion of an insecticidal toxin. Farmers planting Bt crops are supposed to benefit, as they would not need to spray pesticides for pests like the corn borer. But, are these crops performing as advertised? Are they environmentally safe? The data available are cause for concern.

A USDA Economic Research Service study carried out in 1999 showed no statistically significant difference in pesticide use between Bt and non-Bt crops. In fact, it found that in the Mississippi Delta, significantly more pesticides were sprayed on Bt crops. But the greatest problem is the development of pest resistance to the Bt toxin, warns UC Professor Miguel Altieri, "No serious entomologist questions whether resistance will develop or not. The question is, how fast?"

Bt crops can also harm beneficial insects and adversely affect soil ecology. The harmful effects of Bt crops on beneficial insects were documented at least as far back as 1999, when research led by Charles Losey of Cornell University discovered that Bt corn pollen was toxic to monarch butterflies under laboratory conditions. Losey came under withering attack by pro-industry scientists, but his critics ignore that subsequent research confirmed that Bt crops are indeed hazardous to "non-target" species.

"The potential of Bt toxins moving through insect food chains poses serious implications," warns Altieri. "Recent evidence shows that the Bt toxin can affect beneficial insect predators that feed on insect pests present on Bt crops ... the toxins produced by the Bt plants may be passed on to predators and parasitoids via pollen. No one has analyzed the consequences of such transfers on the myriad of natural enemies that depend on pollen for reproduction and longevity.

"Research has shown that Bt crops adversely affect ladybugs that eat Colorado potato beetles, a major potato pest, and lacewing larvae that fed on pests that were fed Bt corn had a strikingly high mortality rate. Furthermore, the Bt toxin persists in the soil for months, by binding to clay and soil particles. It has been found to persist for as long as 234 days."

Sources:

Altieri, Miguel, "Genetic Engineering in Agriculture: The Myths, Environmental Risks, and Alternatives," (Second Edition), Food First Books, 2004.

Independent Science Panel, "The Case for A GM-Free Sustainable World," 2003, http://www.indsp.org/ISPreportSummary.php.

Violence Erupts in Paraná

The saga of the MST's occupation of the Syngenta illegal GM farm in Santa Tereza do Oeste continued for many months after the March 2006 UN meetings. MST militants and anti-GMO activists celebrated when IBAMA, Brazil's environmental agency, fined Syngenta $500,000 for violating the country's biosafety law. The law forbids planting GM crops within 10 kilometers of a natural protected area, in this case the Foz do Iguaçu national park. Via Campesina proposed turning the field into a center for research and production of agroecological seeds. Paraná governor Roberto Requião supported the occupation and ordered the expropriation of Syngenta to establish there an agroecology research facility.

The company turned to the courts and got a temporary injunction against the expropriation plus an eviction order against the squatters. Then on October 21, 2007 armed gunmen allegedly hired by Syngenta violently evicted them. In the process they wounded many and murdered 34-year-old Valmir "Keno" Mota de Oliveira, father of three.

The MST, Via Campesina, and countless civil society organizations in Brazil have condemned these deeds and are demanding that Syngenta take responsibility for the killing, that it be held accountable for its environmental crimes, that it give up its experimental plot, and leave the country.

Sources:

Kenfield, Isabella, "The Struggle for the Expropriation of Syngenta: Showdown Between the Social Movements and Agribusiness in Brazil," Znet, January 7, 2007, http://www.zmag.org/content/showarticle.cfm?SectionID=48&ItemID=11795.

Kenfield, Isabella, "Brazilian Governor Moves to Expropriate Land From Agribusiness Multinational Syngenta," Znet, December 8, 2006, http://www.zmag.org/content/showarticle.cfm?ItemID=11580.

Ribeiro, Silvia, "Syngenta: Milicias privadas y asesinatos," La Jornada, October 27, 2007, http://www.jornada.unam.mx/2007/10/27/index.php?section=opinion&article=023a1eco.

of local peoples, and to make soy production compatible with the conservation of biodiversity, water, and soil. But so far the Roundtable has yet to come up with concrete proposals.

"The Roundtable is one grand publicity bluff," said Javiera Rulli of Base Investigaciones Sociales, a Paraguayan NGO. "They have been at it for almost three years and they have achieved nothing."

Terminating Terminator Seed: Victory in Curitiba

The biotechnology lobby had a major setback in a series of United Nations meetings that took place in southern Brazil in March 2006. The first of these was the Conference on Agrarian Reform and Local Development in Porto Alegre, which was followed shortly by the conference of the Biodiversity Convention and the meeting of the Biosafety Protocol, both in the city of Curitiba. These UN meetings addressed—directly or indirectly—the issues of control over seeds and land. Furthermore, Biosafety Protocol specifically addresses the liabilities and hazards of GM organisms and products.

The biggest bone of contention at Curitiba was the use of so-called "Terminator seeds." These seeds produce sterile plants, leaving farmers with no recourse but to buy seed every year. The Biodiversity Convention had a de facto prohibition on the use of this technology since 2000, but GM seed companies hoped to overturn the ban at the Curitiba meeting.

"Terminator technology is an assault on the traditional knowledge, innovation, and practices of indigenous and local communities," said Debra Harry of the Indigenous Peoples Council on Biocolonialism, and member of an expert group that examined the potential impacts of Terminator seed on indigenous peoples, smallholder farmers, and farmers' rights.

Harry added, "Field testing or commercial use of sterile seed technology is a fundamental violation of the human rights of indigenous peoples, a breach of the right of self-determination."

"Terminator poses a threat to our welfare and food sovereignty and constitutes a violation of our human right of self-determination," asserted Mariano Marcos Terena of Brazil on behalf of the International Indigenous Forum on Biodiversity in January 2006.

A month before the UN meetings in Brazil, over 300 organizations declared their support for a global ban on Terminator technology, asserting that sterile seeds threaten biodiversity and will destroy the livelihoods and cultures of the 1.4 billion people who depend on farm-saved seed. The organizations, from every region

of the world, included peasant movements and farm organizations, indigenous peoples' organizations, civil society and environmental groups, unions, faith communities, international development organizations, women's movements, consumer organizations, and youth networks.

The Curitiba and Porto Alegre meetings turned into a fiasco for the biotech lobby because both locations were swamped by protesters. "Without asking permission, the 'wretched of the earth,' through the voices of thousands of Brazilian peasants, landless rural workers, people displaced by dams, and those affected by timber and GM soybean plantations, took to the stage at the UN conferences held in Porto Alegre and Curitiba," said Silvia Ribeiro of the ETC Group, a Canada-based NGO. "With the serenity and strength of those who have truth on their side, armed with seeds, maize, banners, and songs, these people astounded the diplomats of the world, reminding them that there is a real world out there beyond the negotiating tables, and enraged the directors and lobbyists of transnational corporations."

The days were marked by militant direct action and civil disobedience. Women of Via Campesina celebrated March 8, International Women's Day, by destroying a laboratory and nursery of cloned pines of the Aracruz corporation in protest against encroaching tree plantations. Tree plantations cause social and environmental damage similar to those of soy monocultures.

As meetings and protests took place in Curitiba, activists of Via Campesina and the MST, Brazil's landless people's movement, seized a farm in Santa Tereza do Oeste, in the state of Paraná, where Syngenta had illegally planted GM corn and soybeans in the buffer zone of the Iguaçu National Park.

Meanwhile in Porto Alegre, protesters cut off access to the Agrarian Reform Conference for four hours and succeeded in getting their declaration, "Land, Territory, and Dignity," included as an officially endorsed conference document.

At one point in the Biodiversity Convention a procession of women of Via Campesina entered the plenary hall carrying signs in different languages demanding a ban on Terminator. An enraged Delta & Pine biotechnology company employee called on security guards to intervene but the chairman announced that the protesters' concerns would be taken into account. The vast majority of the plenary session participants rose and applauded the women.

In the end, civil society held the upper hand, as the moratorium on Terminator technology was maintained and upheld, much to the consternation of the biotech industry and its lobbyists.

"The rainbow of daily protests by Via Campesina at the entrance to the convention center, the simultaneous events in Brazil and other countries by hundreds of civil society organizations coordinated by the international Ban Terminator Campaign, the speeches by youth and indigenous leaders (including delegates sent by the Huichol people of Mexico and the Guambiano people of Colombia specifically to speak on the issue), the parallel events held by the Brazilian NGO and Social Movements' Forum, all together finally overturned [the pro-Terminator push], to the despair of the transnational corporations and the countries committed to ending the moratorium, the United States, Canada, Australia, and New Zealand," said Ribeiro.

"This is a momentous day for the 1.4 billion poor people worldwide who depend on farmer-saved seeds," said Chilean peasant leader Francisca Rodriguez of Via

"Syngenta: Peasant Killer," reads the banner held at a march against the agribusiness transnational in Chile in November 2007. Photo: GRAIN.

Campesina. "Terminator seeds are a weapon of mass destruction and an assault on our food sovereignty.

"Terminator directly threatens our life, our culture, and our identity as indigenous peoples," said Viviana Figueroa of the Ocumazo indigenous community in Argentina on behalf of the International Indigenous Forum on Biodiversity. "Today's decision is a huge step forward for the Brazilian Campaign against GMOs," said Maria Rita Reis from the Brazilian Forum of Social Movements and NGOs, "This reaffirms Brazil's existing ban on Terminator. It sends a clear message to the national government and congress that the world supports a ban on Terminator."

The MST and the Via Campesina Seed Campaigns

Brazil's Landless People's Movement, the world's biggest land squatters' movement, is in the vanguard of GM-free ecological agriculture in the Americas. Its Bionatur seeds network develops and distributes diverse GM-free seeds and runs community seed banks that preserve agricultural biodiversity and keep germplasm out of the hands of agribusiness corporations. In the words of MST spokesman Joao Pedro Stedile, "If we lose our seed heritage, conquering land and capital will not serve us in any way."

Bionatur is "a fundamental instrument for the construction of a new agricultural model, based on agroecology, reconstruction of the landscape, promotion of peoples' food security and food sovereignty, and recovery of the productive capacity of soils," according to *Informativo do MST*, the movement's newspaper. The network was born in 1997 as an outgrowth of COOPERAL, one of the MST's many farming co-operatives, which was seeking alternatives to the corporate-controlled and environmentally unsound industrial agriculture model favored by large "*latifundista*" landowners.

In its two decades of existence, the MST has provided over 22 million hectares of land to two million poor Brazilians. There they have established 5,000 settlements. The movement's land seizures cannot be properly termed civil disobedience or law-breaking, since Brazil's constitution obligates the government to distribute land to the poor. There are currently approximately 150,000 landless Brazilians affiliated with the MST that are living in temporary roadside barracks waiting to get land.

As a member of Via Campesina, an international small farmers' movement with millions of members worldwide, the MST is an active participant in its Seeds Campaign. The Campaign "has deep meaning for farmers and indigenous peoples, and it gives a prominent role to women," says Francisca Rodríguez of Chile, one of Via Campesina's founders. "It strengthens the concept of Food Sovereignty and transforms it into a commitment to action. The campaign helps integrate the various aspects of agriculture, but also weaves in issues related to labor, value systems, and campesina culture. That returns some of our humanity to us, providing strength to face the hardship involved in all of this."

"Agriculture has been transforming us into machines that work harder than before, suppressing the creativity that used to characterize the farming process. Technology subjugates and annihilates people, and knowledge at the service of capital dehumanizes science. How do we stop this all-encompassing madness, which leads to extermination instead of progress? When I look at the seed campaign, being part of Via Campesina makes more sense: building this alternative way. I see the campaign as part of that great road that we are building around the world."

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For More Information:

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http://www.banterminator.org

Biodiversidad en América Latina
http://www.biodiversidadla.org

ETC Group
http://www.etcgroup.org

GRAIN
http://www.grain.org

Grupo de Reflexión Rural
http://http://www.grr.org.ar

Independent Science Panel
http://www.indsp.org

MST
http://www.mstbrazil.org

Red por una América Latina Libre de Transgénicos
http://rallt.org

Soy Kills
http://www.lasojamata.org/

World Forum on Food Sovereignty
http://www.nyeleni.org

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