

Terminator Technology and Farmers' Rights

March 2006

*"Terminator is a direct assault on farmers and indigenous cultures and on food sovereignty. It threatens the well-being of all rural people, primarily the very poorest."*¹ - Rafael Alegría of Via Campesina, a movement representing 142 organizations from 56 countries.

What is Terminator? *Terminator technology refers to plants that have been genetically modified to render seeds sterile at harvest – it is also called Genetic Use Restriction Technology or GURTS. Terminator technology was developed by the multinational seed/agrochemical industry and the United States government to prevent farmers from saving and re-planting harvested seed. Terminator has not yet been commercialized or field-tested but tests are currently being conducted in greenhouses in the United States.*

The aim of Terminator seed technology is to maximize seed industry profits by forcing farmers (small-scale farmers, peasant women and men, rural communities and Indigenous peoples) to return to the commercial seed market every growing season. If commercialized, Terminator would make it biologically impossible for farmers and peasants to save their seeds and breed their own crops. If a farmer loses the ability to save her seed, she cannot continue to select plants that are best adapted to local ecology and community needs. Terminator seeds are sometimes called "suicide seeds." Because of the impact that Terminator would have on the livelihoods of peasants and small-scale farmers, this technology can perhaps best be described as "homicide seeds".

Corporate Technology versus Farmers' Right to Save Seed

Terminator technology offers no agronomic benefits to farmers and peasants, it does not improve the seed. Terminator is designed explicitly to stop farmers from saving and re-using seed. Terminator undermines Farmers' Rights, most importantly the right to save seed which is critical for peasants in the North and South. Terminator would ensure a corporate stranglehold on seeds and result in higher seed prices at a time when farmers are experiencing the worst income crisis in history and are being forced to leave the land in record numbers.

Farmers have been saving seed from their harvest for 12,000 years. According to the United Nations, over 1.4 billion people, mainly poor peasant farmers, depend on farm-saved seed and seeds exchanged with their neighbors as their primary seed source.² Farmers and peasants do not simply "save" seed, they are innovative plant breeders who select seeds and adapt their plants to specific farming conditions. In many societies, cultures and communities it is women who save seed, selecting the best seeds every year.

Since most of the world's poor farmers live in marginal farm environments (e.g., poor soils, little rainfall) and do not have money to buy commercial seeds, fertilizers and pesticides, they depend on plants that survive and produce under adverse conditions, year after year. In the process, farmers are stewards of genetic diversity. It typically takes many generations for farmers to develop crop plants with traits suited to particular local ecological conditions, such as soils, rainfall, temperature, altitude, and to meet specific community nutritional, medicinal and cultural needs.

Resource-poor farmers in the tropics and sub-tropics not only produce 15 to 20% of the world's food supply,³ they also maintain diverse crop varieties that are a source of genetic diversity for plant breeders worldwide. If farmers and peasants lose the right to save seed they lose the ability to select seed and adapt crops to their unique farming conditions. If farmers eat or abandon their traditional seeds in the process of adopting Terminator seeds, centuries of crop genetic diversity could be lost forever.

If commercialized, Terminator could erode the farmer and community-based practice of developing seed adapted to local conditions and would therefore increase crop uniformity and the vulnerability of communities to crop failure. Farmers could become dependent on corporate seeds and the inputs needed to grow them, increasing the vulnerability of farming communities.

When the US seed company Delta & Pine Land (D&PL) and the United States Department of Agriculture won their first joint patents on Terminator in 1998, then-President of D&PL, Murray Robinson, said that his company's genetic seed sterilization technology could someday be used on over 400 million hectares worldwide. He also said that the technology would provide seed companies with a "safe avenue" for introducing proprietary products into giant, untapped seed markets such as China, India and Pakistan.⁴ D&PL explains that, "These patents have the prospect of opening significant worldwide seed markets to the sale of transgenic technology in varietal crops in which crop seed currently is saved and used in subsequent seasons as planting seed."⁵ Terminator would allow commercial seed companies to capture an entirely new customer base of farmers and peasants who currently save, adapt and use their own seed – a move that could force many farmers into debt. For subsistence-level farmers who unknowingly plant second generation sterile seeds, the technology could mean food shortages and/or loss of livelihood.

In the past, Delta & Pine Land has depicted peasants and small-scale farmers in the South as backward, lazy and uninformed about the "benefits" of new technology. At a United Nations Food and Agriculture Organization meeting in 1998, D&PL's Harry Collins reflected the corporate seed industry's ignorance about the realities of subsistence farming and farm-based food security in his written remarks:

"The centuries old practice of farmer saved seed is really a gross disadvantage to third world farmers who inadvertently become locked into obsolete varieties because of their taking the 'easy road' and not planting newer, more productive varieties."⁶

Hybrid seeds have typically also ensured a market for corporate seeds because farmers do not commonly re-plant hybrid seed since the seed does not "breed true" (hybrids will not perform as well when saved and replanted). However, Terminator technology is not the same as hybrid seed technology - hybrids can germinate in the second generation. Also, whereas hybrid seeds deliver, at least theoretically, the

benefits of hybrid vigor and increased yields, Terminator seeds offer no agronomic benefits to farmers.

Many of the world's most important crops - such as wheat, rice, soybeans and cotton - have not been successfully hybridized on a large scale. In theory, Terminator technology could give the seed industry the ability to "genetically neuter" all of the world's crops, creating greater dependency on corporately owned seeds and their companion chemicals. Engineering seed sterility into the world's major food crops is a logical goal for the multinational seed industry because around three-quarters of the world's farmers routinely save seed from their harvest for re-planting the following season.⁷

Sterility Genes Could Contaminate Farmers Fields

Terminator genes can move via pollen in the first generation to contaminate neighbouring fields of open pollinated crops, passing on sterility genes and resulting in unexpected yield losses for farmers. Terminator seeds could also be unintentionally introduced through seed markets if mixing and contamination occur.

Farmers who depend on humanitarian food aid risk devastating crop losses if they keep food aid grain that contains Terminator genes for re-planting. In many societies farmers do not differentiate between grain for food and grain for planting. Farmers frequently use grain supplied as food aid, for seed.

Farmers would be unable to identify Terminator genes in their crop and seed supply until after planting the seed, and discovering that the seed does not germinate. Sterile seeds could translate into significant yield losses. Over time, persistent yield losses could force farmers and peasants to stop growing certain crops, crops that may be important to family and community food security, lucrative market crops or crops that are useful in rotation with others.⁸ If farmers buy Terminator seeds, they may eat or abandon their traditional seeds without realizing that their new crop will render seeds sterile in the second generation.

It would be virtually impossible for farmers' to seek compensation for contamination as there would be little chance of proving that Terminator genes were at fault. The costs in time and money of legal suits are also burdensome for farmers and they face great odds in legal challenges against powerful corporations.

Farmers who find their seed contaminated with Terminator genes could lose trust in their own seed stock. If contamination is persistent, farmers could lose their traditional and local varieties and be forced to abandon their own seed that is adapted to local conditions and community needs. Loss of traditional varieties and decline in breeding would also threaten the practice and retention of traditional and local knowledge.

Canadian farmer Percy Schmeiser was forced to abandon his decades-old canola breeding when Monsanto's Round-up Ready seed blew onto his land. Monsanto claimed that Schmeiser violated the company's patent and took Schmeiser to court. (www.percyschmeiser.com)

Terminator and Dangerous New Genetically Modified Crops

"Terminator will be used to justify the perverse genetic modification of food crops to produce pharmaceutical and industrial compounds. The so-called 'pharma crops' will ultimately contaminate food crops as no control system is perfect."

- Terry Boehm, National Farmers Union, Canada.

Biotechnology corporations are promoting Terminator as a way to stop unwanted contamination with genes from genetically modified (GM) plants but Terminator would need to be 100% effective to be used for this purpose and examinations thus far expose an unreliable system with many vulnerabilities.⁹ But the industry is desperate to calm fears about genetic contamination because it threatens to stop field trials of new genetically modified trees and pharmaceutical crops.

Terminator for Corporate Patent Enforcement

"The new technique is to protect U.S. technology and seed patents,"

- Melvin Oliver, United States Department of Agriculture scientist and Terminator inventor.¹⁰

Terminator technology is designed to enforce corporate patents by keeping farmers from saving and re-using seeds over which corporations claim intellectual property. Delta & Pine Land, a US-based company developing Terminator seeds, refers to its method of genetic seed sterilization as the "Technology Protection System" because it is designed to protect their technology from farmers who would otherwise save and re-plant the company's seed, without paying every time.

Terminator offers the perfect solution for Monsanto and other giant seed corporations that seek exclusive monopoly control over GM seeds and traits. Monsanto is vigorously suing farmers in the United States and Canada for allegedly infringing patents by saving seeds that contain Monsanto's proprietary genes.¹¹ If commercialized, Monsanto and other biotechnology corporations would use Terminator as a biological means of preventing farmers from "unauthorized" re-use of patented seed. Seed sterility secures a much stronger monopoly than patents since, unlike patents, there is no expiration date and no need for lawyers.

The seed industry is attempting to win acceptance for Terminator by pitting farmers in the North against farmers in the South. The industry argues that farmers in countries that do not recognize the seed industry's patents on genetically modified seeds are unfairly competing with farmers in the North. In countries where patent protection is weak or nonexistent, farmers can get access to patented seeds without paying royalties to corporations (namely Monsanto). A new brochure by Delta & Pine Land claims that genetic seed sterilization "will insure farmers a more level playing field" because Terminator seeds would not germinate if re-planted – thus eliminating the problem of farmers saving patented seed that is obtained outside of the commercial market.

Terminator would be particularly useful for Monsanto in Latin America where the corporation is having major difficulties collecting royalties because farmers are planting and re-using GM soybean seeds without paying the company. Although acreage of GM soy continues to rise in Brazil and Argentina, this is not translating into profits for Monsanto. Monsanto suspended seed sales in Argentina January 2005

because it could not secure a royalty payment agreement with the government.

The bottom line is that Terminator technology is a threat to all farmers and peasants, both rich and poor, in the South and North alike. The industry strategy to pit farmers in the North against farmers and peasants in the South is a perverse tactic that aims to obscure the fact that corporations are the only ones who will benefit from genetic seed sterilization. All farmers and rural peoples will see escalated seed costs and further erosion of their economic wellbeing. Northern farmers know all too well that seed dependency on corporations comes at a very high cost. The North is not prospering and the perpetual farm income crisis is indicative of how little benefit is derived from leaving corporations to mind the seeds.¹²

Corporate Control and Seed Industry Consolidation Means Fewer Choices for Farmers

In response to critics, the seed industry often points out that farmers will not be forced to buy Terminator seeds – and that farmers will choose to buy Terminator seeds only if they offer advantages to the farmer. Given consolidation in the corporate seed industry, however, the reality is that farmers have increasingly limited choices. Today, the top 10 seed companies control half of the world’s commercial seed sales.¹³ One company, Monsanto, accounted for almost 90% of the total GM crop area worldwide in 2004. Monsanto also controls 41% of the global maize market and over one-fourth of the commercial soybean market (both conventional and GM seed). If Terminator is commercialized, seed companies will be quick to incorporate Terminator traits into all commercial varieties. Ultimately, this means fewer choices for farmers.

Farmers with limited resources often face political and economic pressures from seed sellers, government authorities and market demands. In most countries and communities seed and agrochemical companies have significant political and economic power, especially compared to that of farmers and peasants who are often politically marginalized and have limited land and resources. A defining feature of poverty is lack of choice. In many countries, government rules, extension programs and commercial credit require farmers to grow certain crop varieties. Additionally, political pressures and the power of local seed dealers can all conspire to restrict farmers’ choices.

Combined with intellectual property regimes, national seed laws and a sharp decline in public plant breeding programs, Terminator technology would enable corporations to control the first link in the food and agricultural production chain – the seed.

Today, the campaign to ban Terminator is a part of the global struggle to maintain and support Indigenous, peasant and farmer-controlled seed systems and food sovereignty.

¹ ETC group, “Statements Against Terminator,” www.banterminator.org

² Food and Agriculture Organization of the United Nations, “The State of the World’s Plant Genetic Resources for Food and Agriculture (Background Documentation prepared for the International Technical Conference on Plant Genetic Resources),” FAO, Rome, 1996.

³ Ibid.

⁴ Bill Freiberg, “Is Delta and Pine Land’s Terminator Gene a Billion Dollar Discovery?” *Seed and Crops Digest*, March/April, 1998.

⁵ Delta & Pine Land, Securities and Exchange Commission 10-K Form, 2003. p. 6.

⁶ Harry B. Collins, Delta & Pine Land, “New Technology and Modernizing World Agriculture,” distributed at United Nations Food and Agriculture Organization meeting 1998.

⁷ The statistic on the practice of farm-saved seed: Geneflow, “On-Farm Conservation,” International Plant Genetic Resources Institute, Rome, 1998, p. 10.

⁸ In Saskatchewan Canada, organic canola farmers are suing Monsanto and Bayer because widespread GM contamination has made it impossible for them to grow organic canola. Organic farmers have now lost this market crop and can no longer use it in rotation.

www.saskorganic.com/oapf/

⁹ Dr. Ricarda Steinbrecher, “Why V-GURT (Terminator) fails the requirements as a biological containment tool for biosafety”, submission to SBSTTA10, EcoNexus, February 2005.

www.econexus.info

¹⁰ Ethirajan Anbarasan, “Dead-end seeds yield a harvest of revolt”, *UNESCO Courier*, 1999.

¹¹ Centre for Food Safety, *Monsanto vs US Farmers*, United States, January 2005.

www.centerforfoodsafety.org

¹² National Farmers Union (Canada), “The Farm Crisis, Bigger Farms, and the Myths of ‘Competition’ and ‘Efficiency’” November 20, 2003. www.nfu.ca

¹³ ETC Group, “Global Seed Industry Concentration – 2005,” ETC Communiqué, September/October 2005.

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