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Rural Advancement Foundation International
www.rafi.org | rafi@rafi.org

News Release – 12 May 2000

Terminator on Trial

Nairobi Biodiversity Meeting Must Ban Terminator or “Precautionary Principle” will become a “Post-Mortem” Critics Warn

1999 saw at least **seven new Terminator patents**, and more than one **field trial** of genetic use restriction technologies (GURTs). Governments meeting at COP5 in Nairobi (15-26 May) must act decisively to ban Terminator and call for a moratorium on field testing and commercial sale of GURTs. “This is the litmus test for the CBD’s much-touted ‘precautionary principle’ and the Biosafety Protocol negotiated last January,” Silvia Ribeiro of RAFI warns, “If the Convention can’t agree on an all-out ban of the Terminator as a blatant threat to biodiversity, then it can’t be trusted and the Protocol shouldn’t be ratified.”

Terminator Two Years Later: At the Fourth Conference of Parties (COP4) to the Biodiversity Convention held in Bratislava in May 1998, governments, civil society organizations (CSOs), and media were stunned to learn about a newly patented technology owned by the U.S. government and a U.S.-based cotton seed company for the genetic engineering of plants to produce sterile seeds. The technology, dubbed “Terminator” by RAFI, is designed to maximize seed industry profits by forcing farmers to buy seed from the Gene Giants, rather than using seed from the previous year’s harvest. Terminator has been widely condemned as a threat to biodiversity as well as food security because over 1.4 billion people – primarily the South’s poor farmers - depend on farm-saved seeds.

Seven New Terminator Patents in 1999

#	Company/Institution	Patent Number	Date Issued
1	Delta & Pine Land/USDA	U.S. 5,925,808	20 July 1999
2	Delta & Pine Land/USDA	U.S. 5,977,441	2 Nov. 1999
3	Novartis	U.S. 5,880,333	9 March 1999
4	Pioneer Hi-Bred (DuPont)	U.S. 5,859,341	12 Jan. 1999
5	Cornell Research Foundation	U.S. 5,859,328	12 Jan. 1999
6	ExSeed Genetics, L.L.C./Iowa State University (Zeneca holds a minority stake in ExSeed Genetics)	WO 9907211	18 Feb. 1999
7	Purdue Research Foundation (with support from USDA)	WO 9911807	11 March 1999

(Note: A brief technical description and summary of each patent is available and can be found on RAFI’s web site: <http://www.rafi.org>)

Since COP4, genetic seed sterilization has become an industry-wide goal. A variety of techniques for genetic seed sterilization are being developed by multinational seed and agrochemical corporations – the “Gene Giants” - as well as public sector institutions. With Terminator, the targeted trait relates to seed sterility, but Terminator is just one type of genetic trait control technology. The so-called trait-specific T-GURTs (genetic use restriction technologies) have the potential to affect a variety of other traits; the goal is to turn a plant’s genetic traits “on” or “off” with the application of an external chemical. If companies can successfully engineer seeds to perform only with the application of a proprietary pesticide or fertilizer, for example, it will reinforce chemical dependencies in agriculture that are costly and dangerous for farmers, food security, and the environment.

When delegates to COP5 meet in Nairobi to study the recommendations made by CBD’s scientific advisors (the Subsidiary Body on Scientific, Technical and Technological Advice - SBSTTA), they will read that GURTs “are not likely to be commercialized in the near future” and that no field trials have been conducted. **SBSTTA’s conclusions are woefully outdated and dangerously misleading.** In 1999, seven new Terminator patents were awarded to industry and public sector researchers, and at least one company, AstraZeneca, conducted field trials on genetic trait control technology (GURTs) in the UK. Beyond these seven, at least 43 patents have been issued for inducible gene control systems, or genetic trait control technology, and patent owners include virtually all of the Gene Giants or their subsidiaries: Aventis, Bayer, Dupont, Monsanto, Novartis, and Zeneca among others. (Please refer to RAFI background paper for more details, <http://www.rafi.org>).

Urgent Action Required: “Civil society organizations in Nairobi will be demanding that COP5 take action to ban Terminator,” says Silvia Ribeiro. “With seven new Terminator patents in 1999 alone, research on Terminator and Trait (genetic trait control) is moving full speed ahead, and commercialization of suicide seeds is the clearly stated goal,” Ribeiro adds, “If the CBD waits for the next study on Terminator –scheduled for COP6 –it will be an inquest not an investigation.” According to RAFI:

- Private and public sector institutions won at least *seven new* Terminator patents in 1999.
- Delta & Pine Land, the world’s largest cotton seed company, vows, “We’re moving ahead to commercialize it [Terminator].” The company now shares three Terminator patents with the U.S. government.
- Despite massive protests, the U.S. Department of Agriculture (USDA) supports and defends its anti-farmer research on suicide seeds, and, despite its own denials, has advanced two more Terminator patents with Delta & Pine Land, the world’s largest cotton seed company.
- The Gene Giants, as well as public sector institutions, won many more patents for the closely-related technique of genetic use restriction technology (GURTs) -- the use of an external chemical “inducer” to switch on or off a plant’s genetic traits.
- AstraZeneca conducted field trials on genetic trait control technology (Trait technology) in the UK in 1999. According to industry sources, it is not the first company to do so.

Terminated Trust: After Monsanto (responding to a proposal from the Rockefeller Foundation) and AstraZeneca publicly vowed not to commercialize suicide seeds last year, governments and CSOs were lulled into thinking that the threat had subsided. “We can’t trust the Gene Giants,” RAFI’s Ribeiro warns, “Without governmental action to ban Terminator, these technologies will be commercialized, with disastrous consequences for farmers, food security and biodiversity.”

“Corporate commitments to disavow Terminator are meaningless in light of recent takeovers,” adds Julie Delahanty of RAFI. “Monsanto and AstraZeneca have each merged with other companies since they pledged not to commercialize suicide seeds,” she says.

- On December 2, 1999 Novartis and AstraZeneca announced they would spin-off and merge their agrochemical and seed divisions to create the world’s biggest agribusiness corporation – to be named “Syngenta.” Although Novartis states that it “has a long-standing policy that we will not use genetic use restriction technology to prevent seed germination,” the company won a new Terminator patent in 1999.
- On December 19, 1999 Monsanto announced that it will merge with drug industry giant Pharmacia & Upjohn to create a new company, named Pharmacia, with combined annual sales of \$17 billion. The new entity has not announced its policy on Terminator as yet.

Earlier this year, RAFI wrote to the Chief Executive Officers (CEOs) of six major Gene Giants who currently hold Terminator and/or Traitor patents asking them to clarify or re-state their position on Terminator seeds, especially in light of recent mergers. Novartis, AstraZeneca, Aventis, and Monsanto responded – DuPont and BASF have not. Dow Agrosciences, which to RAFI’s knowledge does not currently hold Terminator or Traitor patents, has also not replied.

“We aren’t reassured by the responses we’ve received,” explains RAFI’s Ribeiro. Take AstraZeneca, for example. On February 24, 1999 the R&D Director of Zeneca wrote, “Zeneca is not developing any system that would stop farmers growing second-generation seed, nor do we have any intention of doing so.” When RAFI wrote to AstraZeneca earlier this year, the company confirmed that its policy remains the same, but it could not say what might happen in light of its merger with Novartis: “Accordingly, the issues which you raise cannot even be considered until after completion [of the merger],” Dr. Evans wrote to RAFI on 21 February 2000. AstraZeneca insists that it is not developing any technologies that prevent farmers in developing countries from saving seed, yet it has a minority stake in a U.S.-based company, ExSeed Genetics, that won a new Terminator patent on 18 February 1999.

And despite massive protest in the United States, the U.S. Department of Agriculture won two new Terminator patents in 1999. “We were shocked to discover USDA’s new patents (jointly owned by Delta & Pine Land), because when RAFI met with USDA officials on two occasions last year, they assured us that there were no more patents in the works,” explains Julie Delahanty of RAFI.

“Obviously, we’re not getting the straight story from industry or the U.S. government,” adds Delahanty. “The growing portfolio of Terminator patents speaks for itself – intergovernmental action is required to ban Terminator as a threat to food security, biodiversity and sovereignty,” concludes Delahanty.

Environmental Eugenics -- The “Green” Gene Defense: CBD delegates meeting in Nairobi can expect a barrage of pro-Terminator arguments – especially those that are cloaked in ‘green,’ environmentalism,” warns Ribeiro. The biotech industry and U.S. government regulators are now arguing that engineered seed sterility is beneficial because it could be used to mitigate the problem of horizontal gene transfer in transgenic (genetically engineered) crops. In other words, proponents claim that engineered sterility offers a built-in safety feature because if genes from a genetically engineered Terminator crop escape into the wild, the seed produced from unwanted pollination will not germinate. There is growing evidence that genes from transgenic plants can escape and create “superweeds” that could

wreak havoc on the environment. In essence, this kind of pro-Terminator argument is an admission that genetically engineered crops are *not* environmentally safe. “Delegates at COP5 must remember that biosafety at the expense of food security is an unacceptable trade-off, asserts RAFI’s Silvia Ribeiro.”

COP “in” or “Cop Out”? Many CSOs conclude that banning the Terminator is a crucial test for the Precautionary Principle and the credibility of the admittedly dubious Biosafety Protocol. “Governments will never face a more cut-and-dried issue,” Ribeiro concludes, “If they don’t have the intestinal fortitude to ban this technology then they won’t have the guts to enforce their Biosafety Protocol.”

- **COP5 should recommend that, in accordance with the Precautionary Principle, Terminator technology should be banned and that genetic trait control technologies not be approved by Parties for field testing or commercial use.**
- **COP5 should recommend that Parties take action to reject Terminator and Traitor patents on the basis of public morality, both through national legislation and by invoking the public morality clause of WTO’s Trade-Related Intellectual Property agreement (TRIPs). TRIPs’ Article 27.2 allows the exclusion from patenting of inventions contrary to ordre public or morality; this explicitly includes inventions dangerous to human, animal or plant life or health or seriously prejudicial to the environment.**
- **COP5 should request that the Ad Hoc Working Group revising the 1972 Biological and Toxin Weapons Convention (BTWC) undertake a study of Terminator/Traitor technologies as a possible violation of Article 1 of the Treaty. The BTWC, ratified by 144 countries, bans the development and production of biological weapons.**

COP5 delegates are invited to attend a CSO briefing on Terminator technology in Nairobi. Time and place to be announced.

For further background on Terminator and Traitor patents, please refer to RAFI’s new report, “Terminator Two Years Later: A Report Prepared in Preparation for the Fifth Conference of Parties to the Convention on Biological Diversity, 15-26 May 2000, Nairobi, Kenya” available on RAFI’s web site: <http://www.rafi.org>

FOR FURTHER INFORMATION:

Silvia Ribeiro, silvia@rafi.org

Julie Delahanty, julie@rafi.org

Both can be reached during the COP 5 at the Panafric Hotel in Nairobi (May 15-26 only)
Tel: 254 2 716 688; Fax: 254 2 715 566

RAFI (The Rural Advancement Foundation International) is an international civil society organization based in Canada. RAFI is dedicated to the conservation and sustainable use of biodiversity, and to the socially responsible development of technologies useful to rural societies. RAFI is concerned about the loss of agricultural biodiversity, and the impact of intellectual property on farmers and food security.

RAFI International Office, 110 Osborne Street, Suite 202, Winnipeg, Manitoba, R3L 1Y5 Canada
Tel: 204 453-5259 Fax: 204 925-8034 email: rafi@rafi.org <http://www.rafi.org>