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New Terminator Patent Goes to Syngenta

World's Largest Agrochemical and Seed Enterprise Holds Growing Arsenal of Terminator and Traitor Technologies

Wake-Up Call for CBD's Scientific Body Meeting in Montreal

Syngenta, the world's largest agribusiness firm, was formed on 13 November 2000 with the merger of AstraZeneca and Novartis. The next day the company won its newest Terminator patent, US Patent 6,147,282, "Method of controlling the fertility of a plant." (The patent was issued to Novartis – but the company's intellectual property goes to Syngenta.) With *pro forma* 1999 sales of US \$7 billion, Syngenta is the world's largest agrochemical enterprise, and the third largest seed corporation.

"Syngenta's newest Terminator patent should set off alarm bells for governments concerned about biodiversity and Farmers' Rights," said Julie Delahanty of RAFI. "Some governments and civil society organizations (CSOs) mistakenly assume that the threat of Terminator is diminished. The reality is that the Gene Giants are winning new patents, and Terminator seeds are moving closer to commercialization," warns Delahanty.

"Terminator technology" refers to plants that have been genetically modified to produce sterile seed; it is designed to prevent farmers from saving and re-planting their seed, forcing them to buy new seeds every year. Terminator has been widely condemned as an immoral technology that threatens global food security, especially for 1.4 billion people who depend on farm-saved seed. In 1999, due to mounting opposition to Terminator seeds, both Monsanto (now Pharmacia) and AstraZeneca (now Syngenta) vowed not to commercialize genetic seed sterilization technology.

Syngenta now controls at least six Terminator patents and a host of new patents on genetically modified plants with defective immune systems.

If the Gene Giants get their way, warns RAFI, sterility is just one of many traits that could be controlled by the application of external chemicals. "Traitor" technology or genetic trait-control allows companies to engineer crops that depend on the external application of a chemical in order to develop into fertile, or healthy plants. Using inducible promoter systems, a plant's genetic traits can be turned "on or off" with the application of an external chemical catalyst. RAFI and other CSOs warn that a new generation of chemically dependent plants will be among the next wave of genetically modified crops unless action is taken to ban them.

"Terminator and Traitor seeds are a real and present danger for global food security and biodiversity," said RAFI's Hope Shand. "The Biodiversity Convention's scientific advisors (SBSTTA) meeting in Montreal this week can't afford to let genetic trait control technology – or GURTs – slip beneath their radar." A new report to be released by RAFI this week points out that

Terminator patent portfolios have changed hands in the latest round of industry mergers and acquisitions. RAFI's new report on Terminator technology examines new patents, identifies the Gene Giants who controls them, and offers recommendations to policymakers. Highlights include:

Syngenta's New Terminator Patent: US Patent 6,147,282 is the latest in a series of Terminator patents won by Novartis. The patent describes a complex system for chemical control of a plant's fertility. The application of a chemical inducer can be used to either abolish or restore a plant's fertility.

Syngenta's New Traitor Patents: Civil society organizations (CSOs) are particularly alarmed by Syngenta's new patents which involve the engineering of plants with weakened immune systems. The new patents were identified in October 2000 by Action Aid, Berne Declaration, GeneWatch and the Swedish Society for Nature Conservation.¹ RAFI identified earlier AstraZeneca and Novartis patents for "chemically dependent" plants – dubbed "Traitor" technology by RAFI. If companies can successfully engineer seeds to perform only with the application of a proprietary pesticide or fertilizer, it will reinforce chemical dependencies in agriculture – and both farmers and food security will be held in biological bondage to the Gene Giants.

The inventors claim that they are developing "immune-compromised" plants for research purposes only. But CSOs can not ignore the specter of chemically dependent plants in the hands of the world's largest agrochemical corporation.

Delta & Pine Land Aims to Commercialize Terminator: US-based Delta & Pine Land is the world's largest cotton seed company and jointly holds three patents for Terminator technology with the US Department of Agriculture. According to Harry Collins, Vice-President for Technology Transfer at Delta & Pine Land, the company is continuing research on genetic seed sterilization with the goal of commercializing Terminator seeds.

For SBSTTA's scientific advisors meeting in Montreal, the handwriting is on the wall: Research and development of genetic trait control technology – including Terminator seeds and the development of plants with weakened immune systems– is moving forward. Unless governments take action to ban these technologies, they will be commercialized, with potentially devastating impacts on farmers, biodiversity and food security. If present trends continue, farmers will become trapped in a pattern of biological controls that lead to "bioserfdom." National seed sovereignty will be destroyed, and food security endangered.

Terminator on the Road to Rio+10: SBSTTA delegates meeting in Montreal this week are likely to postpone consideration of Terminator and other genetic trait control technologies in anticipation of a new study now being prepared by FAO, as recommended by the Conference of Parties (COP5) to the Convention on Biological Diversity which met in May 2000. Postponing a decision to ban Terminator is a mistake, but governments will have important opportunities to take action in 2001-2002:

World Food Summit Five Years Later: When heads of state meet 9-15 November 2001 in Rome they should re-affirm the recent findings of FAO's Panel of Eminent Experts on Ethics, which concluded that Terminator seeds are unethical, and recommend that member nations ban the technology.

COP6 – The Sixth Conference of the Parties to the Convention on Biological Diversity meets in The Hague, 8-26 April 2002. After numerous studies on genetic trait control technology, COP6 should ban Terminator as an anti-farmer technology that threatens biodiversity and national seed sovereignty.

UNCED's Rio+10: Over 100 Heads of State meeting in South Africa in June 2002 will have the opportunity to call for a ban on Terminator technology as an immoral application of genetic engineering that threatens biodiversity.

Who Owns Terminator Patents?

Company/Institution (followed by name of original assignee)	Patent Number	Date Issued
Syngenta (Novartis)	US 6,147,282	14 Nov. 2000
Syngenta (Novartis)	US 5,880,333	9 March 1999
Syngenta (Zeneca)	US 5,808,034	15 Sept. 1998
Syngenta (Zeneca)	WO9738106A	16 Oct. 1997
Syngenta (Zeneca)	WO9735983A2	2 Oct. 1997
Syngenta (Zeneca)	WO9403619A2 and A3	17 Feb. 1994
Delta & Pine Land/USDA	US 5,723,765	3 March 1998
Delta & Pine Land/USDA	US 5,925,808	20 July 1999
Delta & Pine Land/USDA	US 5,977,441	2 Nov. 1999
BASF (ExSeed Genetics, L.L.C./Iowa State University)	WO9907211	18 Feb. 1999
DuPont (Pioneer Hi-Bred)	US 5,859,341	12 Jan. 1999
Pharmacia (Monsanto)	WO9744465	27 Nov. 1997
Cornell Research Foundation	US 5,859,328	12 Jan. 1999
Purdue Research Foundation (with support from USDA)	WO9911807	11 March 1999

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RAFI is the Rural Advancement Foundation International with headquarters in Winnipeg, Canada. RAFI is concerned about the loss of biodiversity and about the impact of intellectual property on farmers and food security. www.rafi.org

¹ Warwick, Hugh. "Syngenta: Switching off farmers' rights?" published jointly by Berne Declaration, Swedish Society for Nature Conservation, GeneWatch UK, Action Aid, October, 2000. While this publication identifies many additional patents, some initially identified by RAFI, we categorize only three of the new Novartis patents as "traitor" technologies. These include: US 6,057,490, US 6,091,004, US 6,107,544. (RAFI makes a distinction between those patents that involve primarily male sterility to facilitate making hybrids. We also do not include patents which we classify as more "generic" inducible promoter patents.)