IN BRIEF

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The Terminator Technology

INTRODUCTION

For a number of years, the biotechnology industry has explored means other than patents to protect its investments in research and development. Among those means, genetic use restriction technologies (GURTs) prevent or limit the duplication of biological material developed by biotechnology. For example, in the seed industry, such technologies are designed to stop the spread of genetically modified (GM) traits to other plants or second generations of seeds. The "Terminator" technology was one of the first GURTs to attract public attention because of its potential effect on the agriculture industry.

THE TECHNOLOGY

The Terminator technology was patented in the United States by Delta & Pine Land Company (D&PL) and the United States Department of Agriculture (USDA) in 1998. This technology produces GM plants that can grow to maturity but produce seeds that will not germinate if replanted. Controversy started as soon as the discovery was made public. Because such plants produce sterile seeds, farmers would be forced to buy seeds year after year without the possibility of using part of their harvest to plant their fields.(1) Concerns have also been expressed that the technology could accidentally be transferred to other plants or crops and have a disruptive effect on biodiversity and the environment.

In 1999, Monsanto announced it would not use the technology,(2) and other seed companies followed suit. Since then, new technologies have been developed with the same goal of controlling the expression of a plant's genetic trait. Those technologies include:

- switching on the desired GM trait only when the appropriate (proprietary) chemical is applied on the crop, and
- destroying all the foreign DNA in the seeds of the plant, making the plant GM-free (also called the "Exorcist" technology).

CANADIAN POLICY

Canadian policy with regard to the use of the Terminator technology and other GURTs is explained in a response, published in August 2004 to a petition under the *Auditor General Act*.(3) Under the current legislation, any seed with the Terminator technology would be subject to the same regulatory and scientific review as any other GM plants. If deemed safe for human consumption and the environment, the seed could be commercialized. Currently, Canada's system for registering new crop varieties does not take into account social or economic factors, such as the implications of the technology for farmers.(4)

The response also indicated that "[n]either Health Canada nor the [Canadian Food Inspection Agency] has reviewed or authorized any novel products containing the 'terminator gene,' and [Agriculture and Agri-Food Canada] has no current plan to license the technology. 'Terminator genes' are not used in any commercial seed varieties available in Canada." Nevertheless, in October 2005, D&PL and the USDA obtained a patent in Canada for the Terminator technology. They obtained a similar patent in the European Union a few weeks later. This could be the first step for companies to seek regulatory approval for crops containing the technology.

INTERNATIONAL DEBATE

Public opposition to GURTs prompted parties to the United Nations Convention on Biological Diversity to adopt a *de facto* moratorium on the future development of these technologies. In 2000, the Conference of the Parties (COP) to the Convention

recommended that GURTs should not be approved for field testing until justified by appropriate scientific data.[5]

In February 2005, during a meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA – a subsidiary body to the Convention on Biological Diversity),[6] parties discussed a report by a scientific advisory panel that called for a ban on field trials of GURTs.[7] During these discussions, Canada, along with New Zealand and Australia, indicated that the report did not reflect the consensus and recommended allowing countries to conduct stringent field-testing of GURTs on a case-by-case basis. Canada indicated that field trials should be considered to provide needed scientific data; thus, it did not support a categorical ban on Terminator technology field trials. The SBSTTA could not reach a consensus on the scientific panel report and finally recommended that the Conference of the Parties reaffirm its decision of 2000.[8]

The parties to the Convention discussed the SBSTTA's recommendations, including its previous decision on the development of GURTs, at its 8th Ordinary Meeting in Brazil at the end of March 2006. The parties rejected the idea of "case-by-case" assessments of GURTs and reaffirmed the COP decision of 2000.

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(1) In industrialized countries, this practice is widespread for self-pollinated crops like wheat, but not so for crops like corn because the use of hybrid varieties requires farmers to buy seeds every year to maintain yields. In developing countries, the practice is widely used for all crops since farmers do not have the resources to purchase hybrids every year.

(2) Monsanto tried to no avail to merge with D&PL and never actually had control of the technology.

(3) Minister of Agriculture and Agri-Food, Minister of the Environment, Minister of Health, Minister of Industry, *Response of the Federal Departments and Agencies to the Petition Filed April 7, 2004 by a Resident of Canada under the Auditor General Act: Social, Health and Environmental Concerns of Genetic Engineering*, August 2004.

(4) During the 2003 debate on the possible introduction of GM wheat in Canada, several proposals were made, notably by the Canadian Wheat Board, to modify the regulatory approval system for new plants. Proposals included making an assessment of trade, economic and agronomic consequences of the introduction of the new variety before registering it. For more information, see Frédéric Forge, *Genetically Modified Wheat*, PRB 03-32E, Parliamentary Information and Research Service, Library of Parliament, Ottawa, February 2004.

(5) Conference of the Parties to the Convention on Biological Diversity, Decision V/5, section III, 2000.

(6) The SBSTTA reports regularly to the COP on all aspects of its work. Its functions include the provision of: assessments of the status of biological diversity; assessments of the types of measures taken in accordance with the provisions of the Convention; and responses to questions that the COP may put to the body.

(7) SBSTTA, *Advice on the report of the ad hoc technical expert group on the genetic use restriction technologies*, February 2005.

(8) SBSTTA, Recommendation X/11, 10th meeting of the SBSTTA, Bangkok (Thailand), February 2005.