



**RAFI**

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## **Genetic Seed Sterilization is "Holy Grail" for Ag Biotechnology Firms**

**NEW PATENTS FOR "SUICIDE SEEDS" THREATEN  
FARMERS AND FOOD SECURITY WARNS RAFI**

The Rural Advancement Foundation International (RAFI), a Canadian-based rural advocacy organization, announced today that it has uncovered over three dozen new patents describing a wide range of techniques that can be used for the genetic sterilization of plants and seeds. "The patents reveal that engineered seed sterility is not an isolated research agenda - it's the Holy Grail of the ag biotech industry," says Pat Mooney of RAFI. The disclosure follows on the heels of a controversial patent unveiled last year, christened the "Terminator" by RAFI, that continues to generate worldwide protest and debate because it renders farm-saved seed sterile - forcing farmers to return to the commercial seed market every year. The Terminator patent is jointly owned by the US Department of Agriculture and a Monsanto subsidiary, Delta & Pine Land Co.

"The notorious Terminator patent is just the tip of the iceberg," explains RAFI's Mooney, "Every major seed and agrochemical enterprise is developing its own version of suicide seeds," he adds.

"We've uncovered dozens of patents that disclose new and more insidious techniques for genetic sterilization of plants and seeds - and even animals," says Edward Hammond of RAFI. "Novartis, AstraZeneca, and Monsanto are among the Gene Giants who have sterile seeds in the pipeline, while others like Pioneer Hi-Bred, Rhone Poulenc, and DuPont have technologies that could easily be turned into Terminators." The primary goal of several of the the newly patented techniques is to sterilize seed so that farmers cannot save and re-plant seed.

A number of the patents use benign-sounding technical terms such as "controlled gene expression" linked to "inducible promoters" to describe their sterilization techniques. Other patents describe "killer genes" that destroy pollen, or "GRIM proteins" that do the same to invertebrates or even mammalian cells. A patent owned by Astra/Zeneca candidly admits that their sterilization processes "are not desirable per se."

**Sterile Seeds: Why Worry?** "These technologies are extremely dangerous," explains RAFI's Mooney, "because over 1.4 billion farmers - primarily poor farmers in Africa, Asia and Latin America - depend on farm-saved seed as their primary seed source. If they can't save seed, they can't continue to adapt crops to their unique farming environments, and that spells disaster for global food security."

"Genetic seed sterility is not about improving the productivity or quality of crops, it's a quest to increase seed industry profits," adds Mooney, "First and foremost, these technologies are intended to force farmers to buy seed every season and to take still more crop production control away from farmers."

**A Platform for Inducing Chemical Sales:** The new generation of patents goes beyond the genetic neutering of crops. The patents reveal that companies are developing suicide seeds whose genetic traits can be turned on and off by an external chemical "inducer" -- mixed with the company's patented agrochemicals. In the not-so-distant future, we may see farmers planting seeds that will develop into productive (but sterile) crops only if sprayed with a carefully prescribed regimen that includes the company's proprietary pesticide, fertilizer or herbicide. The latest version of Monsanto's suicide seeds won't even germinate unless exposed to a special chemical, while AstraZeneca's technologies outline how to engineer crops to become stunted or otherwise impaired if not regularly exposed to the company's chemicals. RAFI calls it "Traitor Technology."

**Sound far-fetched?** Not according to Novartis (a Swiss life industry giant), whose patent (US 5,789,214) describes a process for chemically regulating a number of developmental processes in plants -- such as germination, sprouting, flowering, fruit ripening, etc. The patent specifically mentions that the chemical regulator can be applied to plants in combination with a fertilizer or herbicide. "If the companies can genetically program suicide seeds to perform only with the application of proprietary pesticide or fertilizer,

it means they will increase sales of their patented agrochemicals and other proprietary inputs," explains Edward Hammond of RAFI. "Chemically-dependent suicide seeds are a dazzling technological achievement and a brilliant marketing strategy, but it's grim news for farmers and the environment," concludes Hammond.

**From Biosafety to BioSerfdom:** "We'll be hearing plenty of industry arguments in favor of engineered seed sterility and Traitor Technologies, but the ultimate goal," says Pat Mooney of RAFI, "is not breeding benefits or biosafety, but bioSerfdom."

"If Traitor technologies are developed for commercial sale," predicts RAFI's Mooney, "farmers will be forced to surrender control of their seed supply and the Gene Giants will ultimately dictate what the farmer grows, how to grow it, and where to sell it. Seed sterility is not about insuring quality or productivity, it's a power grab pure and simple," concludes Mooney.

"The seed and agrochemical industry will argue that engineered seed sterility is highly beneficial to the environment because it will eliminate the problem of horizontal gene transfer - it will prevent cross-pollination and thus the escape of engineered genes from transgenic plants to nearby weeds or wild relatives," explains Hope Shand of RAFI. There is concern that transgenic plants could pass genes on to wild plant relatives - thus creating "superweeds" that could wreak havoc on the environment. Suicide seeds could put to rest the specter of genetic pollution, and it conveniently offers a "green" rationale for acceptance of genetic seed sterility. The industry will also argue that suicide seeds prevent pre-harvest crops from sprouting prematurely, and that it will decrease the cost of producing hybrid seeds. Finally, industry will argue that they can't continue to develop new, more productive varieties for agriculture unless they get a fair return on their investment.

No matter what rationale is used by the Gene Giants to engineer social acceptance of seed sterility, the technology is unacceptable to growing numbers of civil society organizations around the world who are calling for Terminator Technologies to be banned by governments. According to RAFI, the easiest way to ban Terminator is for national patent offices to reject Traitor claims on the legal grounds of *ordre public* (against public morality).

The specter of genetic seed sterilization is so serious that Terminator technologies will be debated at several United Nations bodies, including UN Food and Agriculture Organization in April, the Convention on Biological Diversity in May, the UN Commission on Science, Technology, and Development in May.

A RAFI report to be released later this week, "Traitor Technology" provides an in-depth analysis of the seed sterility patents. For this study and a detailed chart of patent claims, visit RAFI's homepage at: <http://www.rafi.org>

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