
[GE Trees at the meeting in Vitoria](#)

The United Nations Food and Agriculture Organization (FAO) reports outdoor field trials of GM trees worldwide in 16 countries. While the majority are located in the United States, there are also GE tree test plots in France, Germany, Britain, Spain, Portugal, Finland, Sweden, Canada, Australia, India, South Africa, Indonesia, Chile and Brazil. China is the only country known to have developed commercial plantations of GM trees, with well over one million trees planted throughout ten provinces.

Most of the research is being focused on Poplars (47%), Pines (19%) and Eucalyptus (7%). The main traits being studied are herbicide tolerance, insect resistance, wood chemistry (including reduction of lignin content), and fertility.

The projected social and environmental impacts from the release of GE trees commercially include the increased native forest conversion to plantations; the increased use of toxic herbicides and pesticides; and the loss of wildlife and water sources. Additionally, the contamination of native forests with engineered pollen from GE trees is predicted to lead to impacts such as the increased susceptibility of native forests to disease, insects and environmental stresses like wind and cold; disruption of forest ecosystems which depend on insects; the exacerbation of global warming due to increased forest mortality; and the loss of forest-based foods, medicines, fuel and traditional cultures. Scientists at Duke University in North Carolina in the US have created pollen models that demonstrate tree pollen traveling for over 1,000 km. Because scientists admit that 100% guaranteed sterility in GE trees is impossible, if GE trees are released into the environment, the widespread contamination of native forests cannot be prevented.

With the exception of China, the most rapid advancement toward GE tree commercialization seems to be taking place in the Americas: in the US, Chile and Brazil.

In Chile, research is being carried out on radiata pine to engineer it for insect resistance by inserting the gene for Bt production. Pine plantations currently comprise 80% of Chile's plantations and the area of land covered by plantations in Chile continues to grow. Industry in Chile has projected a release of Bt radiata pine by 2008. Monsanto Corporation predicted that Chile would be the first country to commercialize GE trees, although China has won that race. Because many of the plantations in Chile are concentrated on the traditional lands of the Mapuche indigenous people, there are widespread health problems in Mapuche communities due to the chemicals used on the plantations and also due to the very heavy pollination from the pine plantations, which completely encircle some Mapuche villages. The introduction of Bt pines into these plantations will greatly exacerbate these health problems.

In Brazil, Aracruz Cellulose and Suzano are involved in research into GE trees. Suzano, which manages over 3,000 square km of timberland in Brazil is partnered with Israel-based CBD Technologies on a project to increase the growth rate of eucalyptus trees. "Regular eucalyptus trees are usually cut down after seven years, during which they grow to a height of 20 meters. Trees treated with CBD can reach that height in 3 years or less," stated Dr. Seymour Hirsch, CEO of CBD

Technologies. CBD and Suzano plan to set up a joint company to market their GE eucalyptus following the completion of their field trials. CBD also insists its fast-growing GE trees will help stop global warming. "A one hectare forest consumes 10 tons of carbon annually from the CO₂ that the trees breathe. Clearly a forest that grows twice as fast consumes twice as much and contributes to the shrinking of the hole in the ozone." [sic]

International Paper, which has 200,000 hectares of land in Brazil is also involved in GE tree experimentation there. In addition, IP is a partner in Arborgen, the world's leading GE tree corporation. The other two partners are Rubicon, based in New Zealand, and US-based MeadWestvaco. Arborgen recently announced that it was shifting its focus from research and development to the marketplace. Specifically, Spokesperson Dawn Parks said Arborgen will be looking to hire a handful of engineers and production workers to design and run machinery capable of turning out larger quantities of the lab-altered seedlings the firm has developed.

Arborgen, headquartered in Summerville, North Carolina in the southeast US, is focusing much of its attention to eucalyptus in Brazil, which Arborgen considers to be its "most important geography." Arborgen has established a Brazilian office and previously projected that they would have full field-testing in place in Brazil by 2005 on customer land.

In 2002 Arborgen hired former Monsanto executive Barbara H. Wells as their new chief executive. She had previously been the vice president for Latin America for Emergent Genetics and prior to that had been commercial biotechnology manager in Brazil, which may explain why Arborgen moved its field trials from New Zealand to Brazil after Wells came on board.

Arborgen is working to develop "improved pulping" [i.e. low-lignin] eucalyptus as well as cold-tolerant eucalyptus. Development of cold-tolerant eucalyptus is of interest for plantations in both Chile and the Southeast US.

Rubicon CEO Luke Moriarity in his July 2005 address to shareholders emphasized the critical role Brazil plays in Arborgen's commercialization of GE trees. He emphasized the potential of GE low-lignin eucalyptus plantations in Brazil. "...by reducing the amount of lignin actually produced by the tree itself, a huge reduction in the total cost of wood-pulping can be achieved. Pulp operators can be expected to pay a significant premium for successful low-lignin treestocks."

He went on to calculate the potential profit that could be made, "the value accruing annually to the treestock provider is [projected to be] some 38 million US dollars post tax. Repeating this level of sales year after year, without any assumed growth in market share, or penetration into other markets, translates into a value for this one product of some 475 million US dollars post tax."

He continued in this vein, "however when you begin to look at the possibilities more closely you can see that the value potential is actually huge. Rather like human health, although much lower profile, the annual unit sales of forestry seedlings are well into the billions, recur every year, and span the globe. And unlike human health, where competition is intense, there are no global competitors to ArborGen in this space. Of course, ArborGen is still some years away from selling commercial product, so naturally the equity market discounts this prospective value fairly aggressively at present. However, as the chart behind me illustrates, as ArborGen continues successfully along the commercialisation path - as it has done to date - we can expect this "time to market" discount to decrease, and the value of ArborGen to ramp up accordingly."

In conclusion he stated, "So I hope that illustrates the nature of this undertaking, and gives you some

insight into its huge potential. As the saying goes - "it is only a matter of time."

Researchers working on genetic modification of trees surveyed for their opinions about risks associated with GM trees raise two concerns most often: environmental threat of escape of GM pollen or plants into native ecosystems and forests and their impacts on non-target species; and negative public perceptions of GM trees. This well-founded concern about public reaction to GE trees provides an important strategic opening for the campaign to stop GE trees.

In the US and Canada, thirteen national, regional and local organizations have come together as the STOP GE Trees Campaign, whose goal is to ban genetically engineered trees. To accomplish this goal, the group builds economic disincentives, social pressures and legal barriers against GE trees. Their activities include public education, community organizing, media outreach and distribution of a new documentary video on GE trees ("A Silent Forest: The Growing Threat, Genetically Engineered Trees"), narrated by Dr. David Suzuki.

Global Justice Ecology Project is also reaching out to organizations and movements around the globe who are fighting plantations in regions where GE research and development is occurring, in order to provide information about this looming threat and offer support for efforts to prevent the introduction of GE trees into plantations. GJEP has established its first pilot program in Chile with the Mapuche group Konapewman that coordinates efforts to reclaim traditional Mapuche lands and oppose threats such as industrial timber plantations and GE trees. GJEP plans to use the experiences from this pilot program in their effort to reach out to additional communities and groups in other regions threatened by GE trees.

Internationally GM tree and forest protection groups have spoken at United Nations meetings around the world about the threat from GM trees. Groups such as the Peoples Forest Forum of Finland, Global Justice Ecology Project of the United States, World Rainforest Movement and Friends of the Earth International have spoken at the UN Forum on Forests in both Geneva and New York City to inform delegates of the dangers GM trees pose to native forests around the world.

With little to no indication of help, however, from either the UN Forum on Forests or the U.N Convention on Climate Change, the international GE trees campaign is now turning to the United Nations Convention on Biological Diversity (CBD) to see what kind of international regulations on GM trees might be achieved through the CBD.

Even the UN Food and Agriculture Organization seems to be in favor of such international regulations. Their July, 2005 report on GM trees concludes,

"new biotechnologies, in particular genetic modification, raise concerns. Admittedly, many questions remain unanswered for both agricultural crops and trees, and in particular those related to the impact of GM crops on the environment. Given that genetic modification in trees is already entering the commercial phase with GM populus in China, it is very important that environmental risk assessment studies are conducted with protocols and methodologies agreed upon at a national level and an international level. It is also important that the results of such studies are made widely available."

Internationally renowned geneticist Dr. David Suzuki points out that

"We have no control over the movement of insects, birds and mammals, wind and rain that carry pollen. GM trees, with the potential to transfer pollen for hundreds of miles carrying genes for traits including insect resistance, herbicide resistance, sterility and reduced lignin, thus have the potential

to wreak havoc throughout the world's native forests. GM trees could also impact wildlife as well as rural and indigenous communities that depend on intact native forests for their food, shelter, water, livelihood and cultural practices.

“As a geneticist, I believe there are far too many unknowns and unanswered questions to be growing genetically engineered plants—food crops or trees—in open fields. GM trees should not be released into the environment in commercial plantations and any outdoor test plots or existing plantations should be removed.”

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