Frankentrees: Genetically engineered tree plantations threaten forests and communities

Photo: STOP GE Trees Campaign

Genetically engineered (GE) trees are being developed to expand the existing disaster of industrial tree plantations. After more than 30 years of research, however, GE trees have only been approved in two countries. Black poplar trees engineered to kill insects have been planted on 450 hectares in China and faster-growing GE eucalyptus trees developed by Suzano subsidiary FuturaGene have been approved for planting in Brazil, though the company claims planting has not yet begun. Other research is being done in Brazil for freeze tolerant and herbicide resistant GE trees. The United States (US) Department of Agriculture has proposed to legalize freeze tolerant GE eucalyptus for planting across the South of the US. In Chile, insect resistant GE trees are being investigated.

The forest products industry claims that GE trees are environmentally friendly. They say they would decrease the quantity of toxic herbicides and pesticides used on plantations, save native forests, mitigate global warming, replace fossil fuels, and even clean up toxic waste sites. But in reality, GE trees will worsen already severe impacts of industrial tree plantations including destruction of biodiversity, depletion of fresh water and soils, accelerated climate change, forced displacement of small farmers, and forest-based and indigenous communities, and serious effects on human health. Profit is the real motivation.

Wind can carry pollen from forests for hundreds of kilometres. The release of GE trees will therefore lead to widespread genetic contamination of native forests and non-GE plantations, bringing along all of their dangerous impacts, including many that cannot be predicted. Offspring of contaminated trees would then themselves become contaminants in a never ending and irreversible cycle.

The False Promises of Genetically Engineered Trees: Lessons from GE Crops

Herbicide-tolerant trees: Genetically engineered (GE) crops, modified to tolerate toxic herbicide applications have resulted in up to three-fold increases in the use of these herbicides. The use of herbicide tolerant GE trees, would have potentially serious consequences for nearby communities. Herbicide-tolerant GE tree plantations would be sprayed from the air, causing the spray to drift into surrounding areas where it could be inhaled. It could also contaminate water and food sources for communities. In GE crops, the use of this trait has resulted in herbicide resistant “weeds” that have led to the use of significantly more toxic herbicides including 2,4-D, the active ingredient in Agent Orange.

Insect-Resistant Trees: Trees engineered to kill insects mean the entire tree is a pesticide. In crops, this has caused the evolution of pesticide-resistant “super-bugs,” which in turn result in the use of additional, more toxic pesticides. These GE trees would also harm beneficial insects – and perhaps other birds and animals that feed on the target insects.

Faster Growing Trees: Trees engineered to grow faster are of obvious benefit to the pulp and paper industry, whose bottom line is tied to fast rotations. Far from helping to take logging pressure off native forests, however, these plantations of fast-growing trees will quickly exhaust groundwater and soils, and accelerate conversion of native forests to new plantations. Escape of the gene for faster growth into forests would allow GE trees to out-compete other trees, and if these GE trees are already non-native and invasive–such as eucalyptus–they could easily crowd out native plants and animals, and impact communities that depend on native forests.

Contrary to industry propaganda, intensification of tree plantations has not helped protect forests, but led to their accelerated destruction. The UN Food and Agriculture Organization, FAO, published a study that found that between 1990 and 2010, the amount of wood harvested per hectare of land increased by 50%, yet the amount of land covered by tree plantations increased 60%.

Not surprisingly, the US has a lead role in the development of this dangerous technology, with US-based ArborGen targeting regions in the US Southeast as well as Brazil for GE eucalyptus plantations.

Southern US forests house an abundance of plant and animal diversity, and pristine watersheds with many species that are found nowhere else in the world. But pressure for wood pellets to fuel European biomass facilities has led to rapid clear-cutting of native hardwood forests in the region. The introduction of ArborGen's GE eucalyptus trees to feed biomass would further accelerate this deforestation.

ArborGen has also emphasized the key role that Brazil will play in their GE tree plans, calling Brazil their "most important geography." From 2002 until 2012, ArborGen's CEO was Barbara Wells, who previously led Monsanto's Roundup Ready soy division in Brazil.

With their potential to devastate ecosystems and communities around the world, and lacking thorough risk assessments, the release of GE trees must be prohibited.

Local resistances against GE tree

In Brazil, Chile, and around the world, rural and indigenous communities rely on intact native forests for their livelihoods, culture, shelter, water, fuel, and food. Plantations cannot meet these needs. In countries where native forests have been removed and industrial monoculture tree plantations developed, biodiversity and indigenous and rural communities pay a heavy price. GE trees, justified as a solution to the increasing demand for wood products will magnify these problems.

In many countries – Chile, Brazil, Indonesia, South Africa – timber plantations got their start or expanded rapidly under authoritarian regimes. However, corporations continue land takeover and plantation expansion under the neoliberal economic paradigms that have flourished in the post-authoritarian years.

In Chile for example, plantation expansion has forced Indigenous Mapuche communities onto poor-quality lands. The communities lose access to water during the summer growing season and must rely on water trucks. Some have lost all access to water. The contamination of ground and surface water by pesticides and herbicides used on the plantations results in rising levels of sickness in their communities. A similar situation is occurring in Brazil in the rural and Indigenous communities where the tree plantations are located.

Since the explosion of the plantations on Mapuche land, poverty rates among these communities have risen dramatically. In Lumaco, one of the poorest regions of Chile, 60 percent of the population lives under the poverty level; 33 percent, in extreme poverty.

Those who oppose the plantations are subjected to political repression. In Chile, Mapuche activists are subjected to “anti-terrorism” laws created by the military to suppress opposition to the dictatorial Pinochet Regime. The use of these laws in Mapuche trials has been widely condemned, including by the Inter-American Court on Human Rights and the UN Special Rapporteur on Human Rights.

At the same time that new GE trees are being pushed in Brazil, the recent coup and takeover of power by right-wing president Temer, the situation of rural, landless and Indigenous communities is becoming increasingly dire.

Organizing against GE trees in Chile, Brazil and the US has been going on since the early 2000s, and in Brazil, thousands of women from La Via Campesina and the Landless movement (MST) have commemorated International Women’s Day on several occasions by destroying eucalyptus and GE tree seedlings, pointing to the important role women have on defending territories and resisting those which threat their livelihoods and communities.

Anne Peterman, anne [at] globaljusticeecology.org

Global Justice Ecology Project, http://globaljusticeecology.org/