

Genetically Engineered Trees

Brazil and all Parties Must Abide by COP decision IX/5 (1)

Genetically engineered (GE/GM) trees represent a particular kind of threat to biodiversity, forest ecosystems and to indigenous peoples and local communities. However, FuturaGene, a biotechnology firm owned by Brazilian pulp and paper company Suzano, has asked for authorisation to release GE eucalyptus on a commercial scale. Will Brazil take into account COP decisions on GE trees such as the strict application of the precautionary approach? Or will the Brazilian authority CTNBio follow its 100% track record of approvals and ignore decision IX/5(1) ?

Suzano claims that trees genetically modified for fast growth, such as their GE eucalyptus trees, will require less land and hence protect the natural forest. This is clearly a myth. It is, for example, well documented that over the past decades (increases in growth rates of plantation trees) has resulted in the rapid expansion of plantations, not the opposite. According to the UN Food and Agriculture Organization between the years 1990 and 2010, the average yield of wood from plantations doubled, yet the amount of land occupied by those plantations increased over 60% from 97 million to 153 million hectares¹.

Summary of the issue

Transgenic trees released on a large scale will inevitably and irreversibly invade and/or contaminate native forest ecosystems and the CBD COP-9 decision calling for application of the Precautionary Approach regarding transgenic trees must be adhered to.

The potential effects of commercial release of transgenic trees include the impacts from the plantations themselves, and the impacts on forest ecosystems into which transgenic trees escape. Such impacts are likely to include destruction of biodiversity, loss of fresh water, desertification of soils, collapse of native forest ecosystems, and major changes to ecosystem patterns. There would also be impacts on Indigenous and forest dependent communities including forced displacement, loss of livelihoods, foods and food sovereignty, medicines, culture and shelter, as well

as impacts on human health. Despite all of these potentially devastating consequences, thorough social and ecological risk assessments of transgenic tree release have still not been done.

On the specific qualities and ecosystem contribution of trees and forests.

Trees are an integral part of complex systems (forests), which play essential roles in managing water supply and rainfall, carbon sequestration and also climate regulation. Trees are an essential component of many ecosystem functions and services and in their own right an important part of global biodiversity.

Trees, unlike field crops, are largely undomesticated and a major element of complex ecosystems (forests), also providing habitats and food for animals, plants and fungi, including symbiotic partners (eg mycorrhiza). Field crops, on the other hand, are highly domesticated and are part of often tightly controlled cropping systems, with reduced or minimized interaction with other organisms (plant, animal, fungi or bacteria). Unlike most agricultural plants, forest trees can persist and thrive in unmanaged ecosystems and thus they can easily spread into areas for which they were not necessarily intended.

Pollen, seed and other reproductive plant material are dispersed over long distances

For example, G. Sing et al. (1993) found pine pollen in Northern India more than 600km from the nearest pines. Pollen models created in 2004 by Duke University researchers demonstrated pollen from native forests in North Carolina in the U.S. travelling in air currents for more than 1,200km north into eastern Canada. Birch pollen was found to travel 9-20 hours by south-eastern air-masses from central Europe to Finland and Scandinavia. Trees have developed a multitude of strategies to have their seeds dispersed either by abiotic means, such as wind or water, or by biotic means, mostly animals including humans. Trees, especially forest trees, produce large quantities of seeds, including eucalyptus.

¹ <http://www.fao.org/docrep/013/i1757e/i1757e.pdf>, Table 5.5, page 94

GE trees therefore cannot be regulated only at the national level. Transboundary contamination of native forests with transgenic traits is virtually inevitable. Commercial release of GE trees must be addressed at the international level.

On becoming an alien invasive species

The desirable characteristics of many cultivated plants are similar to those of invasive species: such as tolerance of poor soils and lack of water and ability to grow in marginal or degraded land. The spread of invasive alien species depends on two basic things: the characteristics of the species or the variety itself (which may change over time) and the ecosystem into which it spreads. Some eucalyptus are already known to be invasive and some are not. GE eucalyptus are recognised to have the potential to become invasive alien species, but it may take many years or generations before a species demonstrates itself as such. Epigenetic factors are thought to play a role in such development.

International regulation based on the precautionary principle is vital

National boundaries are no obstacle to the spread of GE trees and their risks and impacts. This is why decisions on GE trees should never be on the national level alone. The potential for unintended transboundary movement as well as the risks for global ecosystem functions were at the heart of the debates at COP 9 in Bonn and resulted in decision IX/5 (1) – urging parties to strictly apply the precautionary approach and not to authorise the environmental release of GE trees until research can show that any possible negative impact can be ruled out, including impacts on the livelihoods of indigenous and local communities.

This international CBD decision has to be followed up and implemented at the national level. Parties, in particular Brazil, where a commercial application to release GE trees is pending, must recall this decision and the fulfil the obligations it confers, when dealing with GE trees.

Further information:

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Websites and documents:

Potential Ecological and Social Impacts of Genetically Engineered Trees

<http://econexus.info/publication/potential-ecological-and-social-impacts-genetically-engineered-trees>

Campaign to Stop GE trees - <http://stopgetrees.org/>

World Rainforest Movement - <http://wrm.org.uy/>

- GE Trees Research: a Country by Country overview – 2014 Update: <http://wrm.org.uy/books-and-briefings/ge-tree-research-a-country-by-country-overview/>

- Bulletin issue 206 on “Bio”-economy and GE Trees: <http://wrm.org.uy/bulletin/current/>

- Protest letter against the petition of Suzano in Brazil for commercial approval GE eucalyptus: <http://wrm.org.uy/all-campaigns/campaign-to-stop-ge-trees-sign-on-statement-to-support-the-call-by-brazilian-and-latin-american-groups-to-reject-genetically-engineered-eucalyptus-trees/>

The decision IX/5 (1) of the UN CBD Conference of the Parties from 2008 states [emphasis added]:

The Conference of the Parties, Urges Parties to:

- (r) Reaffirm the need to take a precautionary approach when addressing the issue of genetically modified trees;
 - (s) Authorize the release of genetically modified trees only after completion of studies in containment, including in greenhouse and confined field trials, in accordance with national legislation where existent, addressing long-term effects as well as thorough, comprehensive, science-based and transparent risk assessments to avoid possible negative environmental impacts on forest biological diversity; [1]/
 - (t) Also consider the potential socio-economic impacts of genetically modified trees as well as their potential impact on the livelihoods of indigenous and local communities;
 - (u) Acknowledge the entitlement of Parties, in accordance with their domestic legislation, to suspend the release of genetically modified trees, in particular where risk assessment so advises or where adequate capacities to undertake such assessment is not available;
 - (v) Further engage to develop risk-assessment criteria specifically for genetically modified trees;
 - (w) Note the results of the Norway – Canada Workshops on Risk Assessment for emerging applications for Living Modified Organisms (UNEP/CBD/BS/COP-MOP/4/INF/13);
 - (x) Welcome the decision of the fourth meeting of the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol to establish an Ad Hoc Technical Expert Group on Risk Assessment and Risk Management that is also mandated to address the issue of genetically modified trees;
 - (y) Collaborate with relevant organizations on guidance for risk assessment of genetically modified trees and guidance addressing potential negative and positive environmental and socio – economic impacts on the conservation and sustainable use of forest biodiversity associated with the use of genetically modified trees;
 - (z) Provide the available information and the scientific evidence regarding the overall effects of genetically modified trees on the conservation and sustainable use of biological diversity to the Executive Secretary for dissemination through the clearing-house mechanism;
- [1]/ Where applicable, risks such as cross-pollination and spreading of seeds should be specifically addressed.