

The damaging effects of monoculture tree plantations are being resisted around the world. Timber plantations have occupied large tracts of indigenous and agricultural land and have been responsible for the loss of biodiversity and the pollution and depletion of water and soils. Such plantations are owned by large corporations with little concern for the surrounding communities or environment. Now, the addition of genetically modified (GM) tree plantations can only make the situation worse. This article argues that the development of GM trees needs to be stopped now.

Plantations, GM trees and indigenous rights

ANNE PETERMANN AND ORIN LANGELLE

Around the world people are rising up in opposition to the rampant spread of industrial monoculture tree plantations. In Brazil, plantations are referred to as "green deserts", owing to their reputation for destroying biological diversity. In South Africa they are known as "green cancer," because of the tendency of the non-native eucalyptus trees to escape the plantations, spread wildly into other areas and wreak ecological havoc, and in Chile plantations are called "green soldiers", because they are destructive, stand in straight lines and advance steadily forward.

In November 2005, representatives from organisations and social movements from Australia, Brazil, Chile, Ecuador, India, Indonesia, South Africa, Thailand, Uruguay, Europe and North America gathered in Vitoria, Brazil to advance the international movement against timber plantations

and to strengthen the campaign against genetically engineered trees. The four day meeting was co-sponsored by World Rainforest Movement, Global Justice Ecology Project and the Federation of Social and Educational Assistance (FASE). Issues, strategies and common experiences were discussed in depth.

A common theme that emerged from the meetings was the historical establishment and expansion of timber plantations under authoritarian regimes - for example, in Chile under Pinochet, in Brazil and Indonesia under their military dictatorships, and in South Africa under apartheid. Also common were corporate strategies to continue the expansion of plantations in the neoliberal economies that have flourished in the post-authoritarian years. In some areas, corporations have begun making "deals" with local communities and small poor rural landowners to increase the area covered by





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Newly built house with eucalyptus plantation in background. In Brazil, the state of Espírito Santo has been subjected to the unchecked expansion of eucalyptus plantations. In response, in June 2005 indigenous Tupinikim and Guarani peoples began the process of reclaiming the 11,000 hectares of land that was stolen from them under the military dictatorship and given to Aracruz Cellulose for tree plantations. In open defiance, the community cleared several hectares of the plantation where a village is now being built, using eucalyptus for the poles in their traditional frond huts. They later joined forces in 2005 to take over the nearby Aracruz Cellulose pulp mill for several days, demanding the return of their land.

plantations without having to purchase land. Because fast-growing plantations rapidly deplete soils and groundwater, this strategy enables the companies to easily abandon the land after it is no longer productive. In Ecuador this strategy has allowed foreign corporations to establish plantations in the high-altitude ecosystems that were previously inaccessible. Some communities in Ecuador have signed 25 to 99 year contracts with these companies, agreeing to forgo their rights to use their traditional lands and agreeing to tend the plantations. In exchange, they receive compensation of US\$19 per hectare per year – a price that does not even cover the labour required to work the remote plantations. Some communities in these mountainous regions have begun to rebel, breaking the contracts and burning the plantations.

Chile: Mapuche struggle for justice

Non-native tree plantations are also taking over agricultural land. In the Lumaco region of Chile, plantations are taking over former farmland in the traditional territory of the Mapuche people. Since 1988, plantations in Lumaco increased from 14% of the land to over 52% in 2002. Chile exports 98% of its forestry products to the North and to Asia.

Throughout the country over 2 million hectares of eucalyptus and pine plantations are controlled by only two companies.

As a result of this farmland conversion, Mapuche communities are being forced off of their lands. In some cases, communities are now completely surrounded by plantations. In this region, where water has traditionally been plentiful year-round, the plantations have been depleting the groundwater, leaving the communities dependent on water trucks from the end of spring until the beginning of autumn, and drying up much needed water for agriculture. The contamination of ground and surface water from the toxic pesticides and herbicides used on the plantations are causing rising levels of sickness. The heavy pollination of the pine plantations contaminates water, and causes allergies and skin problems. The rise in land occupied by plantations has also been accompanied by a rise in poverty rates among Mapuche communities. Lumaco is one of the poorest regions of Chile, with 60% of the population living under the poverty line, and including 33% in extreme poverty.

At the Vitoria meetings, Lucio Cuenca B., National Coordinator for the Observatorio Latinoamericano



Children playing near the entrance of Galdino dos Santos, an encampment of the MST. Sign reads "Plantations of Eucalyptus are not Forests". The Brazilian landless workers' movement had also taken over a portion of a plantation owned by Aracruz Cellulose, removed the non-native trees and built their camp, complete with a well, a community space and a very elaborate system of non-hierarchical decision-making. The camp is named Galdino dos Santos, for an indigenous chief who had been murdered two years before in a racist attack.

de Conflictos Ambientales (OLCA) in Santiago, Chile explained the impact of the plantations on the Mapuche communities:

"The loss of territorial space, exacerbated by the strong impact and environmental degradation caused by the expansion of the plantations, have opened up a conflict between the Mapuche community, the forestry companies and the government..."

"The response by the State has been to provide favourable legal and social conditions to enable the forestry companies to fulfil their production goals and continue their expansion. On the one hand, repression and criminalisation [of Mapuche resistance to plantations], on the other... rerouting subsidies formerly aimed at the large forestry companies towards small farmers and indigenous land owners...[that] oblige former farmers to convert to forestry activities. Thus the strategy for expansion becomes more complex, operating through political and economic blackmail that leaves no alternatives."

As Mapuche people have risen up against the plantations, they have been subjected to mounting state repression, including the use of anti-terrorism

laws left over from the Pinochet Regime.

On January 16 of this year, Michelle Bachelet was elected Chile's first female president. Her centre-left coalition mixes socialist ideology with free-market economics and Bachelet supports the highly criticised Free Trade Area of the Americas. Cuenca expects Bachelet's government to maintain the pro-forest industry policies of the previous administration. He states, "The Bachelet government is presented as continuity of the Lagos administration, which in our opinion has been environmentally regressive. All the progress we had made with institutions, environmental awareness and citizen participation suffered an important reversal in these last six years."

The Mapuche struggle to reclaim traditional lands from pine and eucalyptus plantations and toxic pulp mills is also heating up over a proposal by CELCO, a Chilean pulp and paper corporation, to dump their pulp mill effluent directly into the Pacific, south of Mapuche lands. The placement of this discharge pipe would contaminate the coastline with dioxins and other toxic organochlorines that result from the paper-bleaching process. Ironically, CELCO made this proposal to assuage environmental organisations who expressed outrage





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Logging truck roles over bridge near Chol Chol (Chile). Many indigenous Mapuche lands are surrounded by eucalyptus and pine plantations..

when CELCO's pulp mill discharge destroyed a nature reserve, removing an entire population of the rare black-necked swans.¹

Brazil: communities rise up against plantations

In Brazil, the state of Espírito Santo has been subjected to the unchecked expansion of eucalyptus plantations. In response, indigenous Tupinikim and Guarani peoples began the process of reclaiming the 11,000 hectares of land that was stolen from them under the military dictatorship and given to the multinational company Aracruz Cellulose for tree plantations. In open defiance, the community cleared several hectares of the plantation to build a village, using eucalyptus for the poles in their traditional frond huts. In 2005 the indigenous people took over the nearby Aracruz Cellulose pulp mill for several days, demanding the return of their land. Their story has inspired movements against plantations all over the world and spurred the "Vitoria Statement" which emerged from the international plantations meetings in Brazil.

Not far away, an encampment of Brazil's landless workers' movement, the MST (Movimento dos Trabalhadores Rurais Sem Terra) has also taken over a portion of a plantation owned by Aracruz Cellulose, removed the non-native trees and built

their camp, complete with a well, a community space and a very elaborate system of non-hierarchical decision-making. The camp was named Galdino dos Santos, for an indigenous chief who had been murdered two years before in a racist attack.

On 20 January 2006, the Tupinikim and Guarani community was violently evicted from the lands they had retaken from Aracruz Cellulose. Following a ruling by a Brazilian federal judge in favour of Aracruz Cellulose on 7 December 2005, 120 federal policemen from the Command for Tactical Operations invaded the indigenous settlements, driving out the inhabitants and injuring thirteen. Police shot at indigenous people from helicopters, and used Aracruz Cellulose bulldozers to destroy the villages. Later on 20 January, the 7 December judicial decision was suspended. Residents of the community have begun the process of rebuilding.

Research into GM trees

"We have no control over the movement of insects, birds and mammals, wind and rain that carry pollen and seeds. Genetically engineered 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 ecological havoc throughout the world's native forests. GE trees

1 - WWF, 2005, *Pulp mill devas-tates swan sanctuary in Chile*, <http://sixters.notlong.com>



New film (DVD) about GM trees

A Silent Forest: The Growing Threat, Genetically Engineered Trees, Narrated by David Suzuki

"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. GE trees should not be released into the environment in commercial plantations and any outdoor test plots or existing plantations should be removed. The rush to apply the ideas of genetic engineering is absolutely dangerous because we don't have a clue what the long-term impact of our manipulations is going to be." David Suzuki

This documentary, which is eloquently presented by David Suzuki, looks at various aspects of the research and growing of GM trees. The film is able to communicate effectively what is a fairly complicated message by interviewing a variety of people and providing an easy-to-understand overview of the subject. And at only 45 minutes it is able to do this relatively quickly, so is perfect for showing to others.

The documentary is available in DVD format on the internet from: <http://www.customflix.com/207574> or else contact Global Justice Ecology Project: PO Box 412, Hinesburg, VT 05461, USA, +1 802 482 2689, info@globaljusticeecology.org

could also impact wildlife as well as rural and indigenous communities that depend on intact forests for their food, shelter, water, livelihood and cultural practices.”

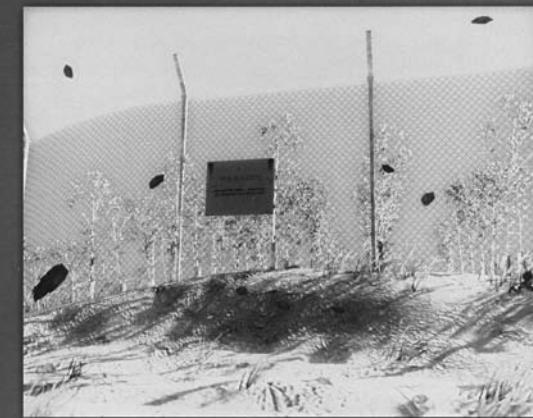
David Suzuki, The Suzuki Foundation

Building on the experiences of movements against genetic engineering and monoculture tree plantations, non-governmental organisations, social movements, scientists, indigenous groups, farmers, foresters and others are raising the call for a global ban on the commercial release of GM trees into the environment. Such a release is predicted inevitably and irreversibly to contaminate native forest ecosystems, which would themselves become contaminants in an endless cycle. The potential effects of the commercial release of GM trees include the destruction of biodiversity and wildlife, loss of fresh water, desertification of soils, collapse of native forest ecosystems, major changes to ecosystem patterns and a severe impact on human health. Despite all of these predictably disastrous consequences, thorough risk assessments of GM tree release have not been done.

China is the only country so far with plantations of GM trees. Here there are widespread and undocumented plantations of GM poplar engineered to produce the bacterial toxin *Bacillus thuringiensis* (Bt) which have been planted in close

A Silent Forest

THE GROWING THREAT,
GENETICALLY ENGINEERED TREES



Narrated by Dr. David Suzuki, an award-winning scientist and environmentalist, and host of *The Nature of Things*. *A Silent Forest* exposes the threats posed by the introduction of genetically engineered trees into our environment. The film breaks down complex scientific concepts while detailing the dangerous impacts genetically engineered trees will have on human health, native forests, forest-dwelling indigenous peoples, and wildlife.

proximity to conventional poplar plantations. They have been planted because the conventional poplar plantations they planted as part of a massive reforestation programme became infested with insects (being particularly prone as monocultures often are), so rather than take a new direction by planting a mixture of species, they took the advice of the FAO and the money of the UNDP and engineered insect-resistant Bt poplars that have been widely planted throughout 10 provinces. So widely planted, in fact, that no one knows where they are. Experiments carried out by the Nanjing Institute of Environmental Science found contamination of conventional poplars with the Bt gene already occurring.²

Elsewhere, GM tree research, which includes growing GM trees in test plots outside, is moving rapidly forward particularly in Brazil and Chile. The technology is also being developed in India, South Africa, Indonesia, the US and several countries in Europe.

In Chile, research is being carried out to engineer Radiata pine (*Pinus radiata*) for insect resistance by inserting the gene for Bt toxin production. Pine plantations currently comprise 80% of Chile's plantations. Industry is also looking at transforming eucalyptus to be cold-tolerant. This would greatly expand the range of future eucalyptus plantations,

2 - Chris Lang, China: Genetically modified madness, *WRM Bulletin* 85, August 2004, grain.org/research/?id=175



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Mapuche community member holding eucalyptus seedling recently dusted with pesticide near Chol Chol (Chile).

currently confined to warmer climates. Chile hopes to become the world's leading exporter of GM tree seedlings for plantations around the world.

In Brazil, Aracruz Cellulose, Suzano, International Paper and Arbogen are all involved in research into genetically engineered trees. Suzano, which manages over 3,000 square kilometers of timberland in Brazil, is partnered with Israel-based CBD (Cellulose Binding Domain) 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 metres. [Our] trees ... can reach that height in 3 years or less", stated Dr Seymour Hirsch, CEO of CBD Technologies. The company also insists its fast-growing trees will help stop global warming. In a confusing assertion, Dr Hirsch states, "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."

Arbogen is the world's leading GM tree corporation and has partnered Rubicon (New Zealand), MeadWestvaco (US) and International Paper (US). Arbogen, itself from the US, is focusing much of its attention on Eucalyptus in Brazil, which Arbogen considers to be its "most

important geography". Arbogen has established a Brazilian office and previously projected that they would have full field-testing in place in Brazil by 2005 on customer land. However, the current status of these test plots is not known.

Arbogen is working to develop "improved pulping" (i.e. low-lignin) eucalyptus as well as cold-tolerant eucalyptus. Recently, Arbogen announced that it was shifting its focus from research and development to the marketplace and planned to hire engineers and production workers to design and run machinery capable of producing larger quantities of the engineered seedlings they have developed.

Rubicon CEO Luke Moriarity in his July 2005 address to shareholders emphasised the critical role Brazil plays in Arbogen's commercialisation of GM trees and the economic potential of establishing GM low-lignin eucalyptus plantations there.

"...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... 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



The Vitoria Declaration

In support of the struggles of local peoples against large-scale tree plantations

A statement was issued on 24 November 2005 in Vitoria, Espírito Santo, Brazil at an international meeting on building support for local communities against large-scale tree plantations and GM trees. This meeting was co-sponsored by World Rainforest Movement, FASE-ES and Global Justice Ecology Project.

You can read the statement online at <http://www.globaljusticeecology.org/?name=getrees&ID=370>. Also read the article "Voices in the green desert" on page xx, which provides more information about Via Campesina's struggle against corporate eucalyptus plantations.

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 Arbogen in this space.”

GM trees and human health

The potential impact of GM trees on human health is virtually unstudied. It is only possible to get an idea, therefore, by looking at studies of GM agricultural crops.

Pollen

Dr Terje Traavik of The Norwegian Institute of Gene Ecology reported on findings in 2004 that an entire village in the Philippines living adjacent to genetically engineered Bt maize fields showed symptoms of “respiratory, intestinal and skin reactions and fever,” during the time that the maize plants were pollinating. He found, “Antibodies in the human blood show that these people have been exposed to Bt toxin during the last few months.”³ Since this information was released there have been a further five unexplained deaths. A final report from Traavik is still to be published.

Numerous other studies have also raised the alarm about the potential impacts of Bt toxin on human health. Some studies found that Bt toxin has an amino acid sequence that is significantly similar to known allergens.⁴ Other studies found that Bt causes an immune response in the body and that ingestion of Bt is capable of changing the permeability of the intestines.⁵ Because the immune response from inhaling the Bt toxin has been found to be greater than when it is ingested, engineering trees to produce Bt toxin could be very dangerous. Pines are known for the large amounts of pollen they produce, spreading pollen for hundreds of kilometres. Plantations of pines that produce Bt pollen could potentially lead to widespread health problems.

Glyphosate

Trees are engineered to resist glyphosate-based herbicides (such as Monsanto's RoundUp) which allows for competing weeds amongst the trees to be sprayed liberally. Glyphosate is known to persist for a long time and is commonly found as a contaminant in rivers. Charles Benbrook, formerly of the National Academy of Sciences, found use of glyphosate-resistant crops resulted in 300–600% increase in the use of the herbicide. Other studies have found that glyphosate exposure significantly increased the risk of late term spontaneous abortions and have also found an association between glyphosate use and the cancers non-Hodgkins lymphoma and multiple myeloma.⁶

Like Bt, glyphosate has also been found to be much more dangerous when inhaled than when orally ingested. This is important since glyphosate is commonly sprayed from the air, where it can drift onto nearby communities.

GM trees and the environment

Due to the universally accepted problems of cross contamination with wild species, industry claims that GM trees will be engineered to be sterile. Therefore, it is claimed, trees engineered for insect resistance, glyphosate tolerance, reduced lignin, and faster growth will not be able to spread these traits into native forests. However, it is generally accepted that 100% guaranteed sterility in trees is impossible due to the complexity of reproductive systems. This unreliability in the sterility technology could even possibly lead to the cross-contamination of sterile traits to native trees with potentially appalling consequences for the environment. Sterile trees provide no fruit, seeds, nuts, nectar or food for wildlife or communities. In reality, sterility is a lose-lose scenario – if trees engineered for sterility are released, the consequences of cross-contamination from trees in which the sterility fails, however few, could have devastating consequences, and if trees are not sterile, cross contamination of the original

3 - Traavik T, *Bt-Maize During Pollination May Trigger Disease in People Living Near the Cornfield*, Norwegian Institute of Gene Ecology, 2004, terjet@genok.org
<http://nazareso.notlong.com>

4 - See for example: Bernstein et al, Immune responses in farm workers after exposure to *Bacillus thuringiensis* pesticides, *Environmental Health Perspectives*, 1999, 107(7): 575-582



5 - See for example: Vazquez-Padron, R I et al, Cry1Ac protoxin from *Bacillus thuringiensis* sp. kurstaki HD73 binds to surface proteins in the mouse small intestine, *Biochemical and Biophysical Research Communications*, 2000, 271, pp 54-58

6 - See for example: De Roos AJ et al, Cancer incidence among glyphosate-exposed pesticide applicators in the agricultural health study, *Environ Health Perspect*, 2005, 113, 49-54 and Savitz D A, Arbuckle, Kaczor D, Curtis K M, Male Pesticide Exposure and Pregnancy Outcome, *Am. J. Epidemiol.*, 2000, 146, pp 1025-36.



Via Campesina and the MST demonstrate to delegates arriving by bus at the Convention on Biological Diversity in Curitiba, Brazil in March 2006. The demonstrators were protesting the possibility of lifting the ban on "terminator technology". At this meeting industry and many governments were using genetically engineered trees as an excuse to lift the ban on "terminator technology." They failed and the ban is still in effect.

GM traits would spread quickly. In addition, some studies have found that the sterility technology itself causes serious unintended side effects such as mutations and genome scrambling.⁷

The potential impact of these escaped GM tree traits into native forests include:

- contamination with the insect resistance gene, which would disrupt forest ecosystems for which insects are an integral component;
- contamination with the low-lignin gene resulting in forest trees that cannot resist insects, disease or environmental stresses like wind;
- escape of the gene for faster growth leading to GM trees out-competing native trees and plants for light, water and nutrients and leading to soil depletion.

In 1993 the *New Physiologist* published a report entitled, "Pollen-Rain from Vegetation of Northwest India",⁸ that had found pine pollen in northern India more than 600 km from the nearest pine trees. Pollen models created in late 2004 by Duke University researchers⁹ demonstrate pollen from native forests in North Carolina in the US travelling in air currents more than 1,400 km north into eastern Canada. The potential for widespread transboundary contamination by genetically engineered tree plantations is high, requiring that GM tree release be prevented at the international level.

Even the United Nations seems to concur with this assessment. In July 2005 the United Nations

Food and Agriculture Organization (FAO) published a report entitled "Preliminary Review of Biotechnology in Forestry Including Genetic Modification".¹⁰ In it, over half of GM tree researchers surveyed reported the environmental threat of escape of GM pollen or plants into native ecosystems and forests and their impacts on non-target species as a major concern. The FAO's report 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."

International agreement in Curitiba

Over 20–31 March 2006 during the United Nations Convention on Biological Diversity's Eighth Conference of the Parties (COP-8) in Curitiba, Brazil, Global Justice Ecology Project, the STOP GE Trees Campaign and EcoNexus worked with Global Forest Coalition, World Rainforest Movement, Friends of the Earth International, and a host of other NGOs in pursuit of a CBD moratorium on the release of genetically engineered

7 - See for example: Wilson A, Latham J, Steinbrecher R, *Genome Scrambling - Myth or Reality? Transformation-induced mutations in transgenic crop plants*, Technical report, Econexus, 2004, <http://www.econexus.org>

8 - Singh G et al, Pollen-rain from vegetation of Northwest India, *New Physiologist*, 1993, 72: 191-206.

9 - Katul G, *Spatial Modeling of Transgenic Conifer Pollen, a presentation at Landscapes, Genomics and Transgenic Conifer Forests*, The Nicholas School of the Environment and Earth Sciences, Duke University, November 2004, dukenov2004.notlong.com

10 - FAO, Preliminary review of biotechnology in forestry, including genetic modification, *Forest Resources Development Service Working Paper FGR/59E*, 2004, <http://rewerlie.notlong.com>

Going further:

Global Justice Ecology Project provides information on plantations and GM trees including actions being taken by indigenous communities. <http://www.globaljusticeecology.org>

Latin American Network against Monoculture Tree Plantations provides links to the many active national organisations fighting monoculture tree plantations. <http://www.wrm.org.uy/plantations/RECOMA.html>

Chris Lang website <http://chrislang.blogspot.com> closely linked to the World Rainforest Movement

The Chris Lang website brings together a number of articles on monoculture plantations and GM trees, with several articles from Asia

(GE) trees and a global review of their risks.

As a result of this effort, on 22 March 2006, during the opening round of discussion of the CBD's Forest Biological Diversity Working Group, delegates from ten countries raised the call for a global moratorium on the release of GE trees. Several others called for a global risk assessment. Only Canada and Australia called instead for a compilation of existing information on the technology.

Efforts ultimately paid off with a CBD declaration which states, in part:

“The Conference of the Parties, Recognising the uncertainties related to the potential environmental and socio-economic impacts, including long-term and trans-boundary impacts, of genetically modified trees on global forest biological diversity, as well as on the livelihoods of indigenous and local communities, and given the absence of reliable data and of capacity in some countries to undertake risk assessments and to evaluate those potential impacts, recommends parties to take a precautionary approach when addressing the issue of genetically modified trees.”

This is a significant accomplishment in the campaign to stop GM trees. When the CBD recommends parties take a precautionary approach, this is a direct reference to the Precautionary Principle, which is enshrined in the CBD. If followed, this recommendation acts as a de facto moratorium against GM trees since the precautionary principle demands proof of both a need for GM trees and their safety, before they are released. There exists neither. Therefore the above mandate by the CBD provides a powerful political position from which to oppose the release of GM trees around the world. While the US is not a party to the CBD, this mandate will provide important leverage for the “STOP GE Trees Campaign” in the US to oppose GM trees there.

Too many unknowns

The release of GM trees in large plantations around the world brings up far too many unanswered questions. People simply do not understand the long term implications of planting GM trees. Already indigenous communities, environmentalists and many others have rejected the planting of large monoculture timber plantations. The rush to plant GM trees, led purely by profit, is a very dangerous step which will certainly need to be stopped.



Anne Petermann



is the Co-Director Global Justice Ecology Project and Steering Committee Member Stop GE Trees Campaign, which she co-founded in September 2003. She is the Steering Committee Chair for the Stop GE Trees Campaign.

Petermann has presented the dangers of GE trees at United Nations meetings around the world, including the UN Forum on Forests, the UN Framework Convention on Climate Change and the UN Convention on Biological Diversity.

Orin Langelle

is the Coordinator of the STOP GE Trees Campaign and Co-Director of Global Justice Ecology Project.

He founded ACERCA (Action for Community & Ecology in the Regions of Central America) in 1998. A delegation he led to southeast Mexico in April 1999 uncovered what were believed to be genetically engineered tree test plots. Langelle helped launched a campaign on the issue and wrote a chapter on GE trees for the book Redesigning Life.

