forest GUILD

Policy Statement:

Transgenic Trees

At this time, the Forest Guild opposes introduction of transgenic trees into forest ecosystems or use in field situations posing a risk of introduction into forest ecosystems.

Transgenic trees, a product of bio-technology, are organisms genetically modified, or engineered, to manifest specific traits through the insertion of DNA from other species, both plant and non-plant.[1] Such traits include increased resistance to herbicides or forest pests, increased growth rates, and compositional change such as lignin reduction. Currently, there are five broad categories of potential application of transgenic trees: basic and applied research, commercial production, bio-remediation, ecological restoration, and response to epidemics. Transgenic trees are touted as having potential to help meet projected demand increases for wood products, through increased growth and productivity and decreased cost of wood fiber production. However, transgenic trees also pose a wide range of challenges and possible threats that remain inadequately addressed, at present. Challenges and risks include:

1. Genetic drift and ecosystem disturbance. Tree species are predominantly undomesticated. Thus the potential for cross-pollination between transgenic and natural trees, and therefore for drift of genetic mutations into adjacent wild and even cultivated non-transgenic populations can be high. The possibility of genetic drift is particularly high in the case of tree species that pollinate via the wind. Genetic drift from genetically engineered species to wild varieties has already been documented in the case of corn, which is an almost thoroughly domesticated plant. The expansion of traits such as insect and fungal resistance, or low lignin content, into semi-natural and natural forests, may have ramifications for endemic populations of insects and fungi and hence for ecosystem processes predicated upon such components. Transgenic mutations may also undergo further distortion in a non-controlled setting with potential effects that are even more unpredictable.

2. Obstacles to effective monitoring. Because changes in ecosystem characteristics influenced by tree species often become apparent only over time spans of decades or longer, monitoring may only yield effective results after significant investments and/or impacts have occurred. Moreover, given the considerable uncertainty and ignorance concerning impacts, monitoring may not be appropriately focused and may therefore not identify unfolding changes. Monitoring will also be expensive, and the history of monitoring indicates that agencies charged with the task often lack the money, staff time and resources to carry out even basic tasks. Moreover, actually tracking and measuring possible changes of which we are aware, such as genetic drift into natural populations, which would require the use of marker genes, is enormously and perhaps prohibitively difficult.

[1] Transgenic trees are a product of bio-technology, which includes a wide range of techniques and products that are not considered in this statement.

3. Constriction of economic options for timber producers. Transgenic trees, as a form of patented bio-technology, could exacerbate the negative effects of increasing concentration of productive capacity within a globally narrowing group of timber corporations. These negative effects could include reduced access to markets for producers, including small private landowners, growing natural or non-transgenic stock, whose timber does not meet specifications tied to transgenic trees, or coercive supply agreements[2] such as those that have occurred in the context of bio-engineered agricultural seed.

4, Regulatory inadequacy. Current regulatory programs fail to address adequately the complex nature of transgenic trees. Programs such as National Environmental Protection Act and Animal and Plant Health Inspection Service generally focus on issues of direct human health and pest populations. Because issues such as genetic drift do not fit the "problem profile" of regulatory programs, it is unclear the extent to which these programs can preclude threats from materializing or do anything about them once they do occur.

Substantial advances have already been made in enhanced tree growth and quality with traditional breeding approaches. In conjunction with other factors, including the failure of projected demand increases for wood products to materialize in recent years[3], these advances have resulted in the provision of desired volumes and qualities of wood products. Traditional approaches pose far less risk and uncertainty than transgenic tree breeding. It is the experience of Guild foresters that, for commercial purposes, non-transgenic tree species work excellently in a context of good forest management with minimal risk to native ecosystems.

A number of conditions must be met before any introduction of transgenic trees into non-research settings and commercial applications. Informed and substantial public discussion and policy development must take place. Such discussion and public policy must address reduction of per capita and overall demand for wood products as a central component.[4] In addition, regulatory systems must be designed with clear definitions and procedures that fit potential problems. Systems must be flexible and adaptive to new understanding concerning impacts. Monitoring programs must also be developed that specifically address the potential problems posed by transgenic trees, capture uncertainty to the extent possible, and are financially and organizationally sustainable. Finally, liability for restoration and reparation in the case of damage caused by the use of transgenic trees must be adequately and clearly defined. At present, none of the conditions discussed above have been met. Hence, the Guild believes that any application of transgenic tree technologies beyond a research context[5] at this time is unwarranted and presents unnecessary and unacceptable risks.

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[2] For example, it could be illegal for landowners to employ seed from transgenic trees for natural regeneration. Instead they might have to procure new seedlings.

[3] David Brooks, USDA Forest Service PNW Research Station Markets and Values Research Team, conference presentation "Biotech Branches Out," Atlanta Georgia, December 2001.

[4] With respect to wood products, demand reduction is not to be equated with the substitution of materials such as stone, plastic, or steel for wood fiber. Demand reduction means a decrease in the per capita and overall consumption of material goods. This issue will be addressed in a separate Guild policy statement.

[5] Discussion continues within the Guild's membership on the appropriateness of research on transgenic tree technologies (i.e. whether research should be conducted, whether it should be restricted to a restoration and/or forest health focus, and if it is to be conducted, with what safeguards). Some members believe that GMO research is not appropriate while other members believe that the identified risks and challenges cannot be addressed and potentially overcome without GMO research.