Sweden: Research into GE trees risks irreversible damage to forests

Professor Ove Nilsson is the star of genetically engineered tree research in Sweden. Nilsson and his research team at the Umeå Plant Science Centre won the race to identify the gene that controls plants' flowering allowing them to produce genetically engineered trees which flower in weeks, instead of years. In 2005, the journal Science declared it one of the most important discoveries of the year.

"Finding the start button for tree flowering means that we understand the underlying molecular processes. It means that we can press the start button instead of awaiting the natural course of things. In this way we can get trees to flower when we want them to," Nilsson explains in an interview with Eva Krutmeijer on the Linnaeus300 website.

Selective breeding of trees takes many generations, especially with cold climate trees such as spruce and aspen, which flower after 10 to 15 years. One of the reasons that eucalyptus is so popular as a plantation tree species is that it flowers in two or three years, allowing rapid breeding for characteristics such as fast growth and straight stems.

Nilsson's quick flowering trees allow him to work on producing faster growing trees for cold climates. Nilsson argues that faster growing trees and trees which will grow in colder climates are needed to meet increasing demand. Nilsson doesn't even consider the possibility of reducing consumption. "The only way we are going to cope with rising demand is increase forest productivity," he told the Sydney Morning Herald in July 2007.

Nilsson isn't really talking about increasing "forest productivity". He's talking about increasing productivity from industrial tree plantations. The fast growing eucalyptus plantations that Nilsson admires have dried out streams and lowered water tables, leaving local communities without water supplies in many countries in the South. Faster growing trees in cold climates would also need more water. Faster growing tree monocultures have already replaced many native forests and other ecosystems in Europe and North America. Growing GE trees for biofuel, another area of interest for Nilsson, would require vast areas of land - land which is often already in use for food production, for example.

In recognition of his research, Nilsson will be awarded the Marcus Wallenberg Prize in Autumn this year. The prize indicates who will benefit from Nilsson's research - the pulp and paper industry and the biofuel industry. The Marcus Wallenberg Prize was set up in 1980 by Stora Kopparbergs Bergslags, now pulp and paper giant Stora Enso. The prize is named after Marcus Wallenberg, a banker, industrialist and chairman of Stora's Board of Directors. While the Marcus Wallenberg Prize claims a focus on "Sustainability of renewable resources", it also "recognizes efficiency improvements, cost improvements, the opening of new markets and the underlying research".

Nilsson isn't worried about the risks of genetically engineered trees. He claims that his GE fast-flowering trees will only be planted in sealed greenhouses. Once he has produced high yielding trees, the flowering gene can be bred out and the trees to be planted will not contain any foreign genes.

But Nilsson's activities are not limited to laboratory research. He is a board member of SweTree Technologies, a Swedish biotechnology company. The company specifically aims to provide products and technologies "to improve the productivity and performance properties of seedlings, wood and fiber" for the pulp and paper industry. Also on the board of SweTree Technologies is Björn Hägglund, a former Deputy CEO at Stora Enso and a board member of the Marcus Wallenberg Foundation. Hägglund is the chair of the board of WWF Sweden, which could explain why we don't hear much criticism of GE trees from WWF Sweden.

SweTree Technologies was formed in 1999 as a joint initiative of the Foundation of Technology Transfer (Innovationsbron) in Umeå and the company Woodheads AB. Innovationsbron aims to profit by commercialising Swedish research and innovation. Woodheads AB was formed to handle the intellectual property from 44 researchers at the Umeå Plant Science Centre and the Royal Institute of Technology in Stockholm. SweTree Technologies' website boasts that it has "the right to all innovations in plant and forest biotechnology emanating from the members of Woodheads".

SweTree Technologies is working on trees genetically engineered for increased biomass growth, increased fibre length and to produce wood that is easier to pulp (with more easily extracted lignin content). Three Swedish forestry companies (Sveaskog, Bergvik Skog and Holmen) are part-owners of SweTree Technologies. Clearly the GE trees developed by SweTree Technologies will not remain in greenhouses. Once GE trees are planted it is inevitable that they will cross with trees in forests. The impacts are unknown and irreversible.

Nilsson has a vision of the future: "Trees will be 'tailor-made', clearly earmarked for their end uses. Examples of these are fast-growing porous trees for the pulp industry, trees with long wood fibres for the paper industry, slow-growing trees for furniture manufacture." In reality this means vast monocultures of genetically engineered trees. It has nothing to do with sustainability or concern for the environment. It is about profit for industry.

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