
Genetically Engineered Trees

No Solution to Climate Change



Introduction to Genetic Engineering

What are GMOs?

Genetically modified organisms (GMOs) are living organisms that have been genetically engineered (GE or sometimes called genetically modified) in the laboratory to have new characteristics.

Genetic Engineering

Genetic engineering directly changes the genetic makeup (DNA) of an organism, bypassing normal plant or animal reproduction to create new characteristics.

Genetic engineering includes techniques that make changes to DNA by inserting genetic material from the same, similar, or totally unrelated organisms, or, with genome editing, by introducing genetic material that acts as an “editor” to change DNA.

GE Trees

Trees are being genetically engineered to have new traits

- Faster growth
 - Insect and disease resistance
 - Herbicide tolerance
 - Altered wood composition
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None of these GE trees are legal in the United States yet, but in the US and Canada, researchers are requesting approval to plant a GE disease-resistant American chestnut tree in the wild.



GE American Chestnut

Researchers at SUNY-ESF have engineered blight resistance into the chestnut with a suite of genes including an antibiotic resistance gene and an Oxalate Oxidase enzyme (OxO) gene, derived from wheat.

Proposal to use this GE tree to replace or “restore” the American chestnut species that has been widely decimated by a blight disease.

GE Poplar

Genetically engineered to grow faster and store more carbon, with the aim to make it profitable for carbon markets.

It is also engineered to resist decay - supposedly making the wood suitable for carbon storage in wood products (construction materials, furniture, etc.).

Engineering decay by making a tree toxic to microbes and fungi raises the potential for toxic impacts to insects, mosses, lichens and ferns as well as soil microbiomes fundamental to healthy forest ecosystems.

Deadwood and decaying organic matter are fundamental to nutrient recycling and biodiversity in forest ecosystems.

Environmental Risks

- Contamination
 - Impossible to locate or monitor
 - Long life-cycle
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Public Health Risks

- People living near GE tree plantations could face health risks from the use of toxic chemicals on tree plantations, which would be greater if the trees were engineered to tolerate herbicides.
 - If the trees are genetically engineered to be insect resistant, the pollen will contain insecticidal properties and could trigger asthma or allergic reactions.
 - Tree nuts, such as GE American chestnuts, would need long-term assessments for food safety.
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**GLOBAL WARMING
REAL PROBLEM.
PLANTATIONS & GET TREES
FALSE SOLUTION**

SC 354 TL

Whisper

SUZUKI

Genetically Engineered Trees & the Climate Crisis

Forests & Climate Mitigation

The science is clear that halting destruction of forests, which includes respecting the territorial rights of communities and peoples who depend on forests, is among the most effective, proven, and available means of removing carbon from the atmosphere.

Undisturbed forests with diverse species, rich intact soils and deadwood store far more carbon than industrial tree plantations.

Despite this established science, the tree biotechnology industry and its allies are capitalizing on the climate crisis to promote their GE trees as a climate “solution,” arguing their GE trees will sequester “more carbon.”



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Additionally, GE trees are being designed specifically to be cut on short rotations and to provide a rapid supply of wood to forest-related sustainability initiatives and policies.



Could GE Trees Exacerbate Climate Change?

Worsen Impacts of Climate Change

Every year forests are destroyed to expand industrial tree plantations. These land use changes worsen climate change, destroy natural habitats, and threaten the lives, livelihoods, and cultures of forest-dependent and Indigenous peoples and communities.

Trees that are genetically engineered to grow even faster can actually reduce biodiversity, speeding extinctions and making ecosystems far less resilient.

In addition, eucalyptus and pine plantations are extremely flammable and have contributed to deadly firestorms. Fast growing eucalyptus trees also deplete groundwater and soils. In Chile, Indigenous Mapuche communities near tree plantations have lost access to water.





GE Trees ≠ Climate Justice

GE Trees ≠ Climate Justice



GE Trees ≠ Climate Justice

Equity and justice must be the foundational basis of any genuine or effective strategy for tackling the climate crisis.

Genetically engineered trees are not a climate solution. They are a dangerous distraction, and a threat to forests and communities that will worsen the climate crisis rather than fix it.



**TAKE
ACTION TO
STOP GE
TREES!**

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