

Assessing risk of purchasing Genetically Modified Organisms (GMOs) for compliance with the Annex 2 of the FSC Controlled Wood Standard FSC-STD-40-005 for wood sourced in the United States

Draft for Public Comment

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SUMMARY

This guidance paper was developed to help FSC certificate holders and other stakeholders in the U.S. understand the goals and methods to comply with the new Controlled Wood Standard (FSC-STD-40-005). This paper addresses assessing the risk of inclusion of Genetically Modified Organisms (GMOs) and making risk assessments regarding wood sources.

This paper is divided into two sections.

1. The Introduction provides the interpretation of the goals of the standard and an overview of how risk can be assessed.
2. The second section provides guidance and tools for determining levels of risk associated with GMO use.

The second section is divided into three parts: 1) the Criterion, as written in the standard; 2) the Essentials, a summary of the important components of the section; and 3) Background, a deeper look at the available sources and examples of their utility.

1. INTRODUCTION

The FSC Controlled Wood standard is an international measure to ensure that wood used by an FSC-certified company does not include unwanted wood sources. From a perspective addressing GMOs, FSC certification ensures that controlled wood does include any organism that has been genetically modified using means other than traditional breeding and hybridizing programs.

Compliance with the Standard is done by risk assessment. Wood that comes from areas where there is little risk of it being a GMO can be determined to be “low risk” and thus acceptable to use with the FSC label. Wood that comes from areas where GMOs are used poses a risk to including them in labeled products. Certificate holders must develop a verification program to demonstrate that their wood sources are “low risk.”

There is a single synthesis document that provides an up to date (as of 2004) map of forest GMO (Genetically Modified Organisms) activities. It generally suffices for review of primary research sources. At this point the only commercial user of GMO trees is China and only a single species, *Populus nigra* (Black Poplar, Lombardy Poplar). Since it

is purportedly uncontrolled, this species should be flagged regardless of its source in China.

Identifying a country as an area of forest GMO activities does not necessarily define a region as high risk. The Controlled Wood risk criteria identify an area as high risk if commercial use of a tree species is used. If no commercial use is in place and licensing is required for commercial use, then countries where experimental trials are taking place can be identified as low risk.

2. DETERMINING RISK OF GMO FIBER IN FSC-LABELED PRODUCTS

The Standard:

Criterion 5. The district of origin may be considered low risk in relation to wood from genetically modified trees when one of the following indicators is complied with:

- a) There is no commercial use of genetically modified trees of the species concerned taking place in the country or district concerned. OR
- b) Licenses are required for commercial use of genetically modified trees and there are no licenses for commercial use OR
- c) It is forbidden to use genetically modified trees commercially in the country concerned. Criterion 3.1. Forest management activities in the relevant level (eco-region, sub-eco-region, local) do not threaten ecoregionally significant high conservation values.

The Essentials:

The COC certificate holder must demonstrate that there is no (or low risk of) GMO fiber used in their products with FSC labels. This can be demonstrated with documentation of the country of origin and species information. Currently, this means demonstrating that the labeled products contain no Lombardy poplar (*Populus nigra*) sourced from China.

The use of GMO tree species is closely followed and although many countries have tested insertion of genes into tree species, currently only China has plantations for commercial purposes and this only includes one species, Lombardy poplar (*Populus nigra*). This species has been altered with the toxin gene of *Bacillus thuringiensis* (Bt) to prevent herbivory. More than ten countries, including the U.S. and Canada have active field tests of GMO forest trees.

The current definitive source of information on GMOs and their use in the forestry sector is: FAO, 2004. Preliminary review of biotechnology in forestry, including genetic modification. Forest Genetic Resources Working Paper FGR/59E. Forest Resources Development Service, Forest Resources Division. Rome, Italy.

At this time, there are very few problems for COC certificate holders in the U.S. to demonstrate compliance with this part of the standard. The use of GMOs in the future may be quite different. There is much research and activity on genetic alteration of pine, eucalyptus, spruce, poplar, oak, and acacia. Additionally, research is initiated on beech, balsam fir, Douglas fir, birch, chestnut, and larch/tamarack. It is important to keep up to date with these endeavors and to provide documentation of current GMO wood production.

Background:

A Genetically Modified Organism is defined in the standard:

Genetically modified organism (GMO). Biological organism which has been induced by various means to consist of genetic structural changes (FSC Principles and Criteria, Feb 2000).

International groups have general consistency regarding the term GMO to ensure that it is not confused with hybrids, cultivars, and breeds, which are derived from traditional breeding programs – not direct manipulation of genes. A GMO is an organism that has been transformed by the insertion of one or more genes (called transgenes) (FAO 2001). Genetic modification does not include traditional breeding or natural hybridization, i.e. GM trees cannot be obtained through conventional tree breeding methods. Because of this, the formulation and use of GM trees in applied forestry has increasingly drawn attention from the scientific and non-scientific communities as there is concern about the potential impacts on human health, the environment and the international trade (FAO 1999, 2002).

The FSC has determined that the use of GMOs is to be avoided in all products containing the FSC label. FSC's reasoning for this is that there is little known of the risks of creating and cultivating GMO plants and trees. For example, airborne tree pollen is known to be able to travel hundreds of miles – therefore there is risk of gene transfer from GMO plantations to native trees. With this consideration and a lack of evidence that traditional breeding systems can not achieve necessary productivity increases in fiber production, FSC takes a precautionary approach to the use of GM trees.

The following is excerpted from: FAO, 2004. Preliminary review of biotechnology in forestry, including genetic modification. Forest Genetic Resources Working Paper FGR/59E. Forest Resources Development Service, Forest Resources Division. Rome, Italy. Available online: <http://www.fao.org/docrep/008/ae574e/AE574E00.HTM>

- *Populus nigra* for insect resistance. It was first reported (Tian et al. 1993) that the toxin gene of *Bacillus thuringiensis* (Bt) was successfully inserted into the genome of *Populus nigra* through *Agrobacterium tumefaciens*. It is estimated that one million GM *P. nigra* trees have so far been propagated and used in the establishment of plantations (i.e. about 300 ha of commercial plantations should have been established using GM materials; Su et al. 2003a). However, the accurate area of GM plantations cannot be assessed because of the ease of

propagation and marketing of GM trees and the difficulty of morphologically distinguishing GM from non-GM trees. A number of individual nursery-men at markets declare that their planting materials are GM trees produced through high-tech, for a higher price. Consequently, a lot of materials are moved from one nursery to another and it is difficult to trace them.

Forest GM Activities of the World

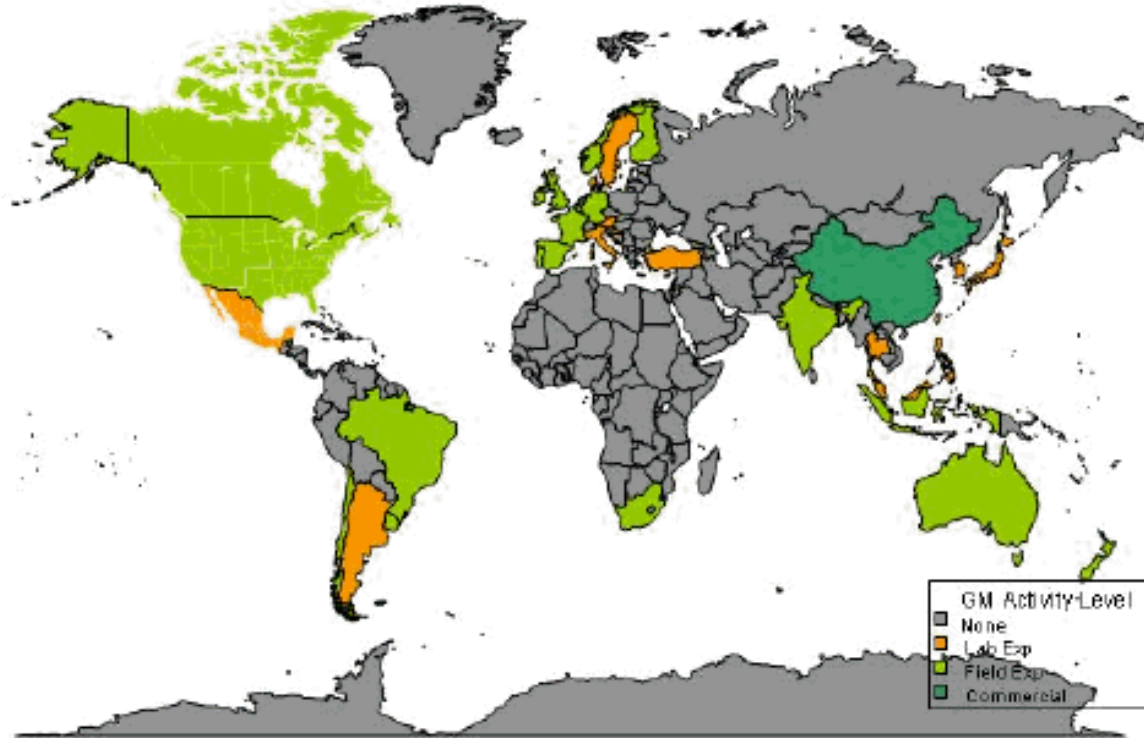


Figure 1. This map was produced by FAO, 2004. Preliminary review of biotechnology in forestry, including genetic modification. Forest Genetic Resources Working Paper FGR/59E. Forest Resources Development Service, Forest Resources Division. Rome, Italy. The gray-shaded areas represent no GM activity levels, the orange areas indicate lab experiments, the light green (including the U.S.) areas indicate field experiments and the dark green (China) indicates commercial plantings.