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Field trials with genetically engineered forest trees: past experiences and future prospects

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It is a common agronomic practice to evaluate new varieties under natural field conditions. This applies to GM plants and for more than 25 years, numerous field trials were set up throughout the world to assess GM trees modified for an array of different traits. In this talk, I will stress some of the knowledge, we gained from these experiments.

While recently a few GM tree events have been authorized for commercial release, in Europe, GM tree field trials remain limited in numbers, mainly because it is becoming increasingly difficult to obtain authorization for a GM tree field trial. This is in sharp contrast with all the experimental results issued from GM tree field trial experiments:

1) phenotypic effects resulting from transgene expression in GM trees grown in the field appear to be stable, albeit variable

2) most field studies have validated earlier observations made under greenhouse conditions, although in some cases the modification of target traits was less obvious in fluctuating field environments, and in a few cases, GM trees had severe growth and developmental penalties

3) non-target effects were consistently within the range of natural variation.

Overall, the European GM tree field trials failed to identify any significant tangible risks. Based on this evidence, it seems appropriate that Europe should now move forward beyond small confined trials to larger scale experiments better fitted to a broader context of evaluation and environmental assessment.