

Field test GMF99001 and GMF99005

This report relates to control 7.4 in the field test approval for GMF99001. At present there are no activities related to GMF 99005.

1. The continued viability of the project.

The contained field site in Rotorua continues to be a viable experiment for the study of genetically modified trees.

Trees:

In total there are now 67 genetically modified and 7 unmodified control radiata pine trees on the site (GMF99001).

In one experiment designed to assess the stability of novel gene expression and to assess environmental impacts of genetically modified trees, there are 50 genetically modified *Pinus radiata* and 5 unmodified control trees. This amounts to one less than last year because one tree died as a result of windthrow. This tree was removed and is awaiting incineration according to standard procedures. All remaining plants are healthy and their growth is normal. Total height of the plants is restricted to 5 meters above ground, by pruning.

In a further experiment designed to research reproductive development in pines, 17 genetically engineered radiata pine and 2 unmodified controls are growing on the site. The plants now range in height between 700 mm and 2500 mm. They have established well and are healthy.

Cuttings:

In the last report there were 73 cuttings present on site, growing in small containers in a shade area within the field trial enclosure. In November 2007, 12 cuttings were transferred from the field test site to the Biotron facility in Lincoln, as part of a new environmental impact study. The transfer was approved by MAF and followed Maori protocol. During the year, 15 cuttings developed catkins and were transferred to the GMO house (PC2 containment) for further studies. At present, there are 46 cuttings remaining on the field test site.

Audit:

Biannual audits conducted by MAF have not identified any problems with the trials.

2. Interference with the trial

There has been no human interference with the trial or any of the security equipment. The integrity of the fence is electronically monitored by a security company and any breach of the structure triggers an alarm. Also, the integrity of the fence is verified by visual inspection on a weekly basis.

3. Plan of activities for the coming year

Experiments for the coming year may include:

- Sampling of needle material for studies on the impact of genetically engineered trees on non-target organisms (continued research in collaboration with HortResearch).
- Sampling of total protein from GE plants for studies on continued gene expression for the duration of the trial (in-house experiments).
- Development of a new trial with three replicate plots within the site, using a new set of genetically modified radiata pine trees (this work was initiated more than a year ago and was already mentioned in the report for the year 2006, however no trees were planted in 2007). This trial is a collaborative project between Scion, HortResearch and AgResearch. It will be used to continue studies on the development of native insect populations associated with radiata pine, gene expression and plant performance, and impacts on soil microorganisms. This trial is covered under existing ERMA approval.
- An experiment in collaboration with Lincoln University whereby a PhD student is using some of the cuttings (recently transferred to Lincoln) for studies in the Lincoln Biotron. Root architecture and root exudates will be monitored and compared for genetically modified and unmodified cuttings.
- In the experiment designed to research reproductive development in pines, growth of trees will be monitored.
- Continued monitoring of growth, particularly bud-growth (focusing on reproductive structures) for all genetically modified and unmodified control trees on site.

4. Records on any precocious reproductive structures found.

The trial site was monitored over the year at weekly intervals. An experienced staff member checked every tree for the appearance of vegetative or reproductive buds. No reproductive buds were found on any of the field-planted *Pinus radiata* trees. As an additional precaution, the principal investigator of the trial has regularly checked all trees for the development of reproductive structures, independent from the monitoring regime mentioned above.

A similar weekly monitoring scheme was applied to cuttings on the field test site. Any cuttings developing male reproductive structures (15 in 2007) were transferred to the containment greenhouse for further studies. The development of reproductive structures on cuttings is expected and can be detected easily during monitoring, long before any viable pollen develops.

In summary, this trial continues to be viable and it is used by several research teams in New Zealand for environmental impacts studies. No problems were encountered during the year and MAF audits confirmed compliance of the trial with MAF and ERMA regulations. Scion will continue to make field test material available for environmental studies, and will continue to use the plants for gene expression studies. The results are expected to inform New Zealand's decisions on the deployment of genetic engineering in forestry in the future.