

Field test GMF99001 and GMF99005

This report relates to control 7.4 in the field test approval for GMF99001 and 99005.

1. The continued viability of the project.

Currently there are 51 genetically modified *Pinus radiata* growing at the contained field site. Along with these transgenic plants, there are 5 *Pinus radiata* non-transgenic controls. All plants are healthy and their growth is normal. Total height of the plants is restricted to 5 meters above ground.

Additionally, 17 genetically engineered radiata pine and 2 non-engineered controls were planted on the site in September 2006. These plants are modified for additional copies of the radiata pine Leafy-like gene (PRFLL), a gene involved in reproductive development. They also contain the *nptII* selective marker gene which was used in the laboratory to identify genetically modified trees. The plants are between 50cm and 200cm height above ground.

Further, cuttings, taken at various dates in 2004 and 2005 from field test plants, are growing in small containers in a shade area within the field trial enclosure. At present, there are a total of 73 cuttings. 8 cuttings were transferred to the GMO containment house in August 2006, and 54 cuttings were transferred to the containment facilities at Hortresearch in October 2006.

Plants in the field test are being used for gene expression experiments and as source material for environmental impact studies.

Cuttings remaining on the site are planned to be used for a new experiment in collaboration with the University of Lincoln.

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

The project continues to be viable.

2. Interference with the trial

- Rabbits have again been an issue during the year, however, they have not interfered with the trial plants and have been destroyed by shooting or poisoning. At present there is no evidence for any more rabbits present on the site. Note that rabbits cannot leave the area because of the fence buried to a depth of 1.5 meters.
- There has been no human interference with the trial or any of the security equipment. The integrity of the fence is electronically monitored and any breach of the structure is logged and leads to an alarm reported to a security company online. 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 trial is a collaboration between Scion and 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.
- A new experiment is set up in collaboration with Lincoln University. A PhD student will use some of the cuttings for studies in the Lincoln Biotron. Root architecture and root exudates will be monitored and compared for genetically modified and non-modified cuttings.
- Continued sampling of soil in regular intervals for studies of impacts of genetically modified pine trees on microbial populations (in collaboration with Agresearch).
- A new trial using 17 genetically modified and 2 control radiata pine trees recently planted within the trial site from the Scion GMO glasshouse will be used to assess growth characteristics and gene expression in pines modified with a reproductive development gene (PRFLL).
- Continued monitoring of growth, particularly bud-growth (focus on reproductive structures).

4. Records on any precocious reproductive structures found.

The trial site was monitored over the year in 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. No precocious reproductive structures were recorded on trees this year. 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. Eight cuttings developed male reproductive structures and were transferred to the containment glasshouse for further studies. The development of reproductive structures on cuttings is expected and such structures can easily be detected during monitoring, long before any viable pollen develops.