

## **ERMA/MAF meeting - Potential Genetically Modified Maize Incident**

Thursday 29th August 10am – 12.45pm

Present Gerard Clover (MAF), Kevin Currie, Robert Hickson, Helen Gear (ERMA)

Objectives To discuss a strategy for dealing with sites in Gisborne and Pukekohe on which conventional *Zea mays* containing a small proportion of GM seeds is suspected to have been grown for Pacific Seeds over the 2001-2002 season.

### **Legal responsibility**

There was a discussion as to whether action was being taken under the HSNO Act or Biosecurity Act. Gerard Clover stated that he understood that the incident fell under the scope of the HSNO Act and that this was the view taken at the inter-agency meeting on 8 August 2002. Kevin Currie was less sure that this was the case and, since the roles and responsibilities of the two agencies are different under the acts, it was agreed that the position should be clarified. However irrespective of this, it was also agreed that there should be consultation within and between ERMA (including the Authority) and MAF before any decisions on future actions were made.

### **General considerations**

It was mutually agreed that it is important to devise a strategy on how to deal with the crop residue immediately working on the assumption that GM plants had been grown on the sites. Immediately, plans are required to deal with the maize stubble and possibly the grazing. It will only be possible to make plans for the ongoing management of the sites once it is known a) whether GM plants have been grown on these sites and b) if confirmed, the origin of these GM seeds, e.g. either one or both parents.

Gerard Clover explained that there is a small possibility that no GM plants had been grown in New Zealand, e.g. there is a remote chance of a false positive from cross-contamination of the samples. MAF has accredited 2 laboratories to conduct testing for GM seeds: GeneScan and Biogenetic Services. MAF currently has samples of 3 of the 4 original imported parent lines, the 4 parent lines inbred in New Zealand and the 2 hybrids being tested by both laboratories. Final decisions on appropriate control strategies cannot be formulated until the results of these tests are received.

### **Affected sites**

2 areas require consideration

- 1) Devise a strategy to destroy crop residues and thereby limit the movement off site and render genetic material (seed) non-viable. There is no chance of any other plant material establishing a plant capable of reproduction.
- 2) Design a monitoring (inspection) regime to verify that this is achieved and decide how long monitoring is required.

To do this we need to define what the area is to be inspected and whether the GM material could have been spread from the site on which the potentially GM plants were grown. The

site is the area on which the maize was sown and grown. There is a possibility that GM material could have been moved off-site: by seed, by the pollination of other maize crops in the area or by means of Horizontal Gene Transfer (HGT).

### **Physical dispersal of seed**

Seed can be moved off the site by: livestock, birds and rodents, and during transport of harvested seed.

A) Livestock have only been present on 3 of the fields and have now been removed. Seed might have been removed from the site on their feet. No discussion took place to estimate this risk.

B) Birds and rodents may pose a risk in terms of seed spread. There is a decreased probability of the presence of viable seed with distance from the growing site and with time from harvest. Maize seldom, if ever, establishes or flowers in any situation other than in a cultivated and managed plot. In considering this the following monitoring of the sites is proposed:

- The margins of the site to the fence line are checked for the presence of volunteers.
- A further 10 meters to be checked beyond the fence line.
- If volunteers are found within this area of inspection, the monitoring area should be doubled to 20m. If volunteers are present in this area the monitoring area should be again doubled. If further volunteers are found this strategy should be reconsidered.
- Any volunteers found should be disposed of by herbicide or physical removal. To determine the length of time that monitoring is required, evidence needs to be collected about the longevity of seed survival.

C) Inadvertent spread during transport. Seed was removed from the site on the cob which minimises the chance of inadvertent spread. Monitoring should occur at the gateway to the field. If volunteers are found, monitoring should occur along the path/road until a point 100m past the last volunteer sighted.

Pacific Seeds have offered to provide monitoring of all sites initially every 2 weeks and then at monthly intervals. Pacific Seeds will keep records of the inspections and any follow up actions. These records will be made available to MAF and or ERMA for auditing. It was suggested that MAF could inspect the site and the records in late October and early January.

### **Possibility of cross-pollination of adjacent crops**

No other maize crops were grown within the recommended 200m of the majority of the affected crops. This distance is sufficient to ensure that cross pollination is very unlikely.

Three sites were less than 200m of adjacent crops:

- 1) Ormond Valley, Gisborne
- 2) Harrington Road, Gisborne
- 3) Fields 22 and 32, Pukekohe

However there were other forms of separation at each site including temporal separation, mulched buffer rows and hedges between the fields. There is no possibility of cross-contamination unless either of the male parents were GM. The monitoring programme will therefore be formulated after the test results are available.

Kevin Currie suggested that independent agronomic advice should be obtained on the possibility of cross-pollination. Helen Gear to approach Alan Hardacre, Crop and Food, Palmerston North, regarding this advice.

### **Horizontal Gene Transfer**

Robert Hickson expressed the opinion that there is now evidence to indicate that this is most unlikely. He will produce a document to support the stance that the possibility of HGT in relation to this incident does not pose a significant risk. If this is confirmed no strategy will be required to prevent HGT or monitor areas that may have been affected by HGT.

### **Immediate Management of Maize Sites.**

#### **Uncultivated Sites**

Gisborne sites have all been mulched, disced and ripped with deep tine cultivators. Volunteers germinated but were all destroyed by cultivation and frosts. No immediate concern.

Pukekohe, 13 sites of which 11 not cultivated since harvest. Important that cultivation occurs as soon as possible. May be preferable to bury and incorporate seed and material by ploughing but practical considerations mean that mulching and discing of the stubble will be possible first. This will ensure all seed is in contact with the soil to decrease the chance of spread by birds or rodents and to promote germination to allow for destruction of the volunteers. The company has suggested 4 cultivations before the sites are drilled. Kevin Currie proposed that we request Pacific Seeds and associated companies to mulch the stubble as soon as possible and incorporate the organic material by discing, and to dispose of any resultant volunteers by ploughing or if this is not possible using herbicides. A site strategy for the entire season will be formulated once the final test results become available. Gerard Clover would like the companies to be informed of this approach tomorrow and for the information to be made public as soon as possible.

Immediate strategy to be undertaken:

- Stubble mulch site and disc to incorporate material
- Once volunteers germinate preferably cultivate by ploughing to destroy volunteers or if this impossible herbicide applied to remove volunteers

#### **Grazing of sites that have been grassed**

Gerard Clover confirmed that during his visit to the sites that there was no evidence of maize volunteers on the grassed sites. All sites had been cultivated, maize seed present was likely to have germinated, the area was cultivated a second time, grass seed drilled and the area grazed. All stock have currently been removed from the sites. No apparent risks could be identified for stock that may consume this grass but no decision was taken.

#### **Burn Sites**

Waste was returned from the processing plant to the boundary of several of the Pukekohe sites for burning. Gerard Clover reported that there is evidence of volunteers at the margins of the fire sites. It was decided that the company be requested to remove these by applying herbicide.

#### **Future Cropping**

Pacific Seeds have proposed that the sites will be resown after cultivation is complete; the cultivations they have proposed were outlined in detail in the meeting on 28 August 2002. The crops the company has suggested would be appropriate are:

- Pukekohe – Pasture Grass, Peas, Potatoes, Seed maize
- Gisborne – Pasture Grass, Squash, Seed maize

ERMA questioned whether seed maize was an acceptable follow on crop. The company states that the cultivations before planting would enable control of the vast majority of volunteers, any volunteers emerging after inbred lines of maize were planted would be easily identified and destroyed because they would most likely fall outside the drilled rows and the difference in plant vigour between inbred and hybrid maize would allow easy identification of volunteers and therefore roguing. Alan Hardacre to be asked for comment on whether this could be reliably achieved.

### **Communication**

The communications departments of MAF and ERMA have discussed the situation and MAF is to be primarily responsible for media communications. Media releases should be released under a joint ERMA / MAF heading after consultation with communication managers. Important to relay decisions to Pacific Seeds regarding stubble mulching and cultivation of sites as soon as possible, preferably Friday 30 August.

### **Actions from the meeting**

- MAF/ERMA to clarify whether action is being taken under the HSNO Act or Biosecurity Act.
- MAF to convey immediate site management requirements to Pacific Seeds once consultation complete.
- ERMA to prepare a document detailing the chances of Horizontal Gene Transfer.
- ERMA to advise position on site management options following Authority's board meeting.
- MAF/ERMA meeting to be arranged after receipt of final tests to discuss ongoing management of the sites.
- ERMA to commission a report from Dr Alan Hardacre (Crop & Food) concerning the effectiveness of temporal isolation to prevent cross pollination of adjacent *Zea mays* crops, viability of *Zea mays* seed, and the possibility of controlling volunteers from last season's crop if inbred lines were grown to produce seed.