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HASTINGS

Operation
“Cracked maize”

Field Inspections
2004 – 2005

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AGRIQUALITY OPERATIONAL REPORT

PROGRAMME:	2004-HSNO-01 Operation Cracked Maize – Field Inspections
LOCATION:	North Island
COVERING PERIOD:	November 2004 – January 2005
DATE OF REPORT:	15 June 2005
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1. Executive Summary

Field inspections were carried out in Northland, Bay of Plenty, Waikato, Poverty Bay and Hawke's Bay, within three weeks of emergence of the replanted crop, which followed the maize of concern covered by this operation.

Where the replanted crop was maize, plants were assumed to be volunteers¹ if they did not conform to: the maize planting patterns, colour, size, growth habit, or if in clusters. Any maize plants emerging subsequent to the replanting of a non-maize crop were also assumed to be volunteers.

There were a total of seven paddocks where volunteer plants were found to be present. Additionally one suspect plant was removed from another paddock bringing the total in which volunteers were considered to be found to eight. Of these, one was located on the Bay of Plenty, one in the Waikato, two in Poverty Bay and four in Hawke's Bay. In each of the former seven cases, it appeared the volunteers were the result of the burial of whole or part cobs with intact kernels. This occurred where individual cobs were not cleanly harvested as result of; wet soil conditions, lodging of crop before harvest, or in one case a tight turning situation at the headlands. Grain remaining on or above the ground surface immediately after harvest was removed rapidly by either bird-life or stock.

It was confirmed that any volunteer plants that did emerge were destroyed preventing these plants from flowering and / or setting cobs. Elimination of volunteer plants was achieved by one of the following methods: removal by pulling out by hand, mechanical cultivation, or herbicide spraying using Round-up[®].

¹ The term "volunteer" refers to the seedlings from the previous crop.

2. Field Inspections

As a result of an investigation by MAF it was identified that the maize of concern was planted for grain, silage or green feed in the following growing areas; Northland, Bay of Plenty, Waikato, Poverty Bay and Hawke's Bay. Maize planted for grain was harvested in these areas using standard industry methods with additional conditions imposed for cleaning gear, transportation and storage. These conditions included: segregated storage, devitalisation of grain, post harvest field inspections and follow-up visits.

In each of the regions where the maize had been planted, field inspections were carried out within three weeks of emergence of the new crop. The new crop was easily discerned from the volunteers in the few cases they were present, due to the regular planting patterns (refer figure 2). Any plants not conforming to these patterns were assumed to be volunteers. Where volunteer plants were found they were mainly a result of the burial of whole or part cobs and were mostly multiples (bunches) as can be seen in figure 3. Although not seen in these inspections, other indications of volunteer plants include differences in:

- plant colour
- size, as a result of differing germination dates or
- growth habit, such as either more erect or drooping plant shape.



Figure 2. Close up of typical plants at the time of inspection

Figure 3. Larger plants with some weed growth present



Figure 4. Volunteers still attached to cob, having emerged as a group of plants.

2.1 NORTHLAND

In Northland there was only one paddock with the maize and this was replanted in ryegrass for the winter, then maize the following growing season.

One of the conditions imposed was that all grain that left this paddock was to be processed, and that none of the un-harvested grain left the property. Traditionally this farmer has allowed the collection of any un-harvested cobs. To prevent this, the residue was mulched after the harvest, using a flail mower to destroy any remaining cobs. The paddock was replanted in ryegrass, grazed off, sprayed with herbicide, cultivated twice, then replanted in a maize grain crop for processing. The farmer confirmed that there had been no emergence of volunteers at any stage.

The field inspection was carried out by an AgriQuality Inspector on 16 November 2004, after the emergence of the replanted maize grain crop. This crop was about 10cm high with no volunteers present, and the paddock was described as very clean. Three sides of the paddock were in grazed pasture and free of volunteers, however if any volunteers had germinated they would have been eaten off. The adjacent paddock on the fourth side had been sprayed with Round-up[®] in preparation for planting maize grain also intended for processing. As a result there was no live plant material in this adjacent paddock.

2.2 BAY OF PLENTY

In the Bay of Plenty there were 10 paddocks with designated maize.

Nine of these paddocks were replanted in maize the following growing season. The replanting of one paddock was delayed due to approximately 20 volunteer clumps sprouting across the 7 ha paddock. This paddock had been sprayed with Round-up[®] prior to the field inspection. The clumps, which varied from yellow to brown and in one case green but yellowing, were removed and checked to confirm the effectiveness of the herbicide treatment. This paddock was the last one to be harvested the previous season, had experienced some problems with lodging, and was the only paddock that hadn't been cleaned up by stock immediately after harvest. Field inspections in early December confirmed the other eight paddocks were free of volunteers.

The remaining paddock was replanted in pasture for grazing, which eliminated the likelihood of volunteers growing and reaching maturity.

Field inspections of nine of paddocks in the Bay of Plenty were completed on 3 December 2004.

2.3 WAIKATO

In the Waikato there were three paddocks with the maize. Each of these was replanted in either silage or a maize grain crop intended for processing.

The harvest (26 –28 June 2004) of the first of these paddocks was not completed as a result of extremely wet soil conditions due to parts of the paddock being very low lying. In August, when soil conditions improved a proportion of the remaining un-harvested crop was mulched and cultivated. After several inspections, from June to September, it was confirmed that the lowest lying parts of the paddock, covering 1.25 – 1.5 ha, were still too wet to harvest. However most of the kernels in these areas had been removed by this stage due to a high resident duck population.

A subsequent inspection carried out 22 November 2004 found that germination of volunteers had occurred in the un-harvested areas. There were numerous yellow, weak growing volunteer plants, all confined to this area. As the soil in the low-lying area remained too wet for machinery, this area was still neither cultivated nor replanted, and contained volunteer plants. Round-up[®] was used to eliminate all the volunteer plants.

At the time of this inspection the balance of the paddock had been cultivated and replanted in the silage variety 36H36, and was free of any volunteers. Due to the late planting, the farmer advised that the crop would be used for maize green feed silage to ensure a harvest before the paddock became too wet again as a result of the following autumn rains.

The second paddock in the Waikato region was planted in another silage variety; 36B08 between 22 - 28 October 2004. The third paddock was planted with N48K2 a grain variety and confirmed free of volunteers on 29 October 2004.

Field inspections in this region were completed during 9 December 2004.

2.4 POVERTY BAY

In the Poverty Bay there were seven paddocks with designated maize. Four of these were replanted in maize, and the remainder in buttercup squash and one in kiwifruit.

During inspections volunteers were found in two of these paddocks.

On 26 November 2004 while arranging for an inspection one grower informed the inspector the first paddock comprising 19 ha contained approximately 50 cobs/clumps of volunteers. The paddock was sprayed using Round-up prior to emergence of buttercup squash. When the paddock was inspected on 14 December 2004, three viable maize plants were still present. These were removed by hand.

The second paddock was planted in maize and had approximately 40 clumps at one end of this 20 ha paddock when inspected on 2 December 2004. The grower was cultivating by hand (push hoe) to remove volunteers when revisited on 24 December 2004. A subsequent inspection on 11 January 2005 confirmed there were no remaining volunteers.

Field inspections in the Poverty Bay region were completed on 11 January 2005.

2.5 HAWKE'S BAY

In the Hawke's Bay there were 13 paddocks with designated maize. Eight of these were replanted in maize, and the remainder in buttercup squash, sweet corn, or pasture.

Three paddocks had volunteers, although another paddock had one suspect plant that was removed as a precaution.

The first paddock, which was replanted in buttercup squash, was under 2 ha, and had approximately 100 volunteers located in the tight turning spots on the perimeter of the paddock. These were removed by hand at the time of inspection. At a subsequent visit on 12 December 2004 it was confirmed that no volunteers remained. During this visit the grower informed the inspector that the pre-emergence herbicide had been missed, and as a result two mechanical cultivations, plus one hand cultivation had been carried out instead.

In the second paddock five cobs had sprouted, which were removed at the time of the inspection on 2 December 2004. Otherwise the paddock was free of volunteers.

Harvesting in the third paddock proved to be difficult due to wet conditions. The harvest was abandoned, leaving two areas totalling approximately 40 m² of un-harvested maize in the paddock. When soil conditions improved the remainder of the crop was de-vitalised by mulching using a tractor-mounted silorator.

The paddock was replanted in maize for grain on 14 November 2004. When the field inspection was carried out on 2 December 2004, volunteers were found and removed (ref. figure 4). The volunteer plants were spread across an area of approximately 15m² were located at the margins of the two areas that were previously mulched and were the result of buried cobs (ref. figure 3). The paddock was mechanically cultivated and side dressed three weeks later as part of the normal management practice.

Figure 5. Photo showing size of volunteers at stage of removal.

