

# QUEENSLAND DEPARTMENT OF PRIMARY INDUSTRIES

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## TOMATO TRANSIT ROT CONTROL TRIALS, 1965-66

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### SUMMARY

Promising results against *Alternaria* transit rot were obtained with soluble dithiocarbamate fungicides applied to green-pack tomatoes prior to transit.

### Introduction

The Bowen tomato-growing area annually supplies southern markets with fresh fruit during the late winter and spring months. Fruit is harvested green and is transported by rail in louvred wagons, during which time it is subjected to 2-4 days of variable and sometimes hazardous storage conditions. Ripening after sale is sometimes slow and uneven and losses from fungal decay of both ripe and green fruit may be heavy.

In preliminary trials in 1965, maneb and diram dips gave significant reduction in the incidence of transport rot, whereas maneb dust gave no control. Dipping in maneb left an undesirable visible deposit.

In 1966, two trials were designed to test maneb and diram again and to compare them with nabam, mancozeb and mezineb.

### Materials and Methods

The dipping treatments were as follows:—

Trial 1		Trial 2	
1. Diram	2 pt/100 gal	1. Diram	2 pt/100 gal
2. Diram	4 pt/100 gal	2. Mancozeb	2 lb/100 gal
3. Maneb	2 lb/100 gal	3. Maneb	2 lb/100 gal
4. Nabam	1 lb/100 gal	4. Mezineb	2 lb/100 gal
5. Nabam	2 lb/100 gal	5. Nabam	2 lb/100 gal
6. Control		6. Control	

Mancozeb was used as "Dithane M45", mezineb as "Antracol", and nabam as "Dithane A40".

Each trial consisted of four randomized blocks, with one carton (25 lb) of fruit per unit of treatment. "Agral LN" non-ionic wetting agent was used with all treatments and controls. Following treatment, the fruit was air-dried before being placed in the cartons. The variety used was a local selection known as Lane's Cross.

In trial 1 the fruit was held at Bowen for assessment. It was stacked under polythene film for 6 days at a relatively constant temperature around 73°F to encourage fungal decay.

In trial 2 the fruit was railed to Brisbane for storage and assessment. It was held in a polythene-covered concrete bin during the ripening period of 16 days. A thermograph record showed that the temperature of the stack remained at 70±3°F. The stack was turned inside out every 2–3 days to minimize positional effects. Fruit was hand-sorted 10, 14 and 19 days after treatment, normally ripening and decayed fruit being removed and weighed.

### Results

At the end of the 6 days' storage period in trial 1, 37% of the fruit had ripened. Treatments 1 and 5 contained significantly fewer lesions than the controls, but preference between treatments could not be established.

The weight of rotted fruit (expressed as a percentage of total weight) that was removed by hand-sorting during the storage period in trial 2 is given in Table 1.

**TABLE 1**  
Trial 2: WEIGHT OF ROTTED FRUIT AS PERCENTAGE OF TOTAL WEIGHT

Treatment	Mean Percentage	Significantly better than
1. Diram .. ..	24.20	4*, 6†
2. Mancozeb .. ..	32.61	6†
3. Maneb .. ..	24.85	4*, 6†
4. Mezinab .. ..	35.57	6†
5. Nabam .. ..	10.84	1*, 2†, 3†, 4†, 6†
6. Control .. ..	52.73	

\* Significant at 5% level.

† Significant at 1% level.

All treatments in trial 2 reduced transit rot. Nabam gave outstanding results; it was followed by diram and maneab.

The soluble fungicides left no visible deposit on the fruit, whereas the insoluble materials did.

### Discussion

*Alternaria tenuis* auct. was the chief cause of fruit rot in both trials. Spores of the fungus were borne in chains amongst a dense growth of dark aerial mycelium. A high proportion of infections developed adjacent to the stem scar. Fruit spot or nail head spot (*A. tomato*) was not observed. Isolated instances (3 fruits) of black mould (*Rhizopus* sp.) were noted.

During 1966, maneb dipping was used as a standard practice by a number of growers. Commercial control of fruit spotting was very good but residue adhering to the fruit was a slight problem. In one experimental shipment to the Sydney market under commercial transport conditions, a scalding of the tissues around the stem scar was observed on diram-and nabam-treated fruits. However, no rots occurred. The scalding and possibly other problems will have to be resolved before widespread use of post-harvest fungicide treatments can be recommended.

Application of soluble dithiocarbamate fungicides to green pack tomatoes prior to transit to southern markets offers a good prospect of control of the Bowen tomato transport rot problem.

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