## WANNEROO PINE COUNT - PINJAR P76

L. MATHEWS

The count was conducted in mid November 1976 to achieve the following objectives:

1. To sample each days planting to correlate with weather.

2. To examine the difference, if any, in results between different planters.

3. To compare 2 year old stock with 1 year old stock.

To do this a single row of pines was sampled for approximately 200 m then by switching to the next row to sample a different planter. After four individual rows had been sampled (i.e. 800 m approximately) the counter crossed back into the first row and continued the same pattern until the end of the rows.

This gave several sample lines for each of the 4 planters and a good average for the days planting. Each sample run was approximately 3 km long and represented 1 days planting.

### HIGHLIGHTS OF MORTALITY COUNT RESULTS

The overall percentage of deaths was 15.2% an increase of more than 10% on previous years.

Virtually without exception 80% of the deaths were due to shallow planting i.e. not deeper than 5 cm above nursery level. This combined with long dry spells during the planting operation was the major reason for the failure.

1. Daily results compared to weather. Also see graph.

The highest percentage of deaths for any day was 33.1% on the 8th July.

This would undoubtedly be due to the long dry spell following that date.

In comparison the lowest percentage of deaths for any day was 1.62%. This occurred on the 20th July, the first planting day after the above period. Good rain fell on this day, and crews were fresh after a 3 day break off the planting. It is possible that of the 4 planters sampled the majority were more experienced.

2. Comparison of Different Planters

For this comparison the best individual average was compared to the worst individual for each day. It was assumed that the best individual was the more experienced planter. Four individuals were sampled for each days planting.

Over the whole planting period the average death for the best planters was 7.3%.

The average death for the worst planter was 22.5%. i.e. The inexperienced planters have a mortality rate of 15% more than the best individuals.

This affects the overall average deaths. For example on 22nd July the daily average was 13.81% deaths. If the area sampled for the worst planters was ignored the daily average would be 8.3%.

Theoretically if that single inexperienced planter was replaced with an experienced planter the total mortality rate would drop 5% for that day. Of the 8 planters on that day only 3 or 4 could be considered as experienced.

3. Comparison of 1 and 2 year old stock.

The first trial of 2 year old pinaster stock were poorer quality plants than is expected to be supplied in future.

There was very little difference in height growth in the trial, however, it appears as though 2 year old stock have a better survival rate.

RESULTS: 1 year old
First planter average 9.7% deaths for day.
Second planter average 3.52% deaths for day.

2 year old
First planter average 0.32% deaths for day.
Second planter average 1.27% deaths for day.

The above samples are directly along side each other, there is some suspicion that the planters on 1 year old were not as experienced as the 2 year old planters and this will have some bearing on the results.

The second trial area of 2 year old stock appears much more healthy than the first and more noticeable in the field compared to 1 year olds. This is no doubt due to a better quality of stock.

Mortality rates in the second trial area averaged 5.45% and ranged from 1.8% to 7.4% between different planters.

Two year olds may have a better survival rate and there is no evidence to suggest that they are any worse off than 1 year olds. In this case there should be little reason why unused 1 year old stock cannot be held over for the next planting season. This is possible using various techniques to limit the size growth in the nursery.

SUMMARY MORTALITY

From the results of the pine count, it appears that there are several contributing factors which have caused the 1976 planting mortality rate to be high.

These are:

1. Shallow planting.

In general 80% of the failed plants have been planted too shallow. However, quite a number of plants obviously planted shallow have survived and are very sturdy. This supports the statement made at the planting post mortem that in previous years we have got away with planting shallower than recommended because of good planting conditions, this leads on to the next reason for failure.

2. Dry Planting Season

During a period of 18 days (in which only 5 mm of rain was recorded in the field) a reliable estimate of 71,000 plants failed - 9 of the 18 days were planting days. The mortality rate during this period was approximately 20% and would definitely have been higher if it were not for infill hand planting done in the worst areas.

3. Inexperienced Planters

This season there were numerous different planters operating the planting machines. Planting crews were not as stable as previous years. Results show that the worst planters have an average mortality rate 15% above that of the experienced planters.

Recommendations for future planting operations.

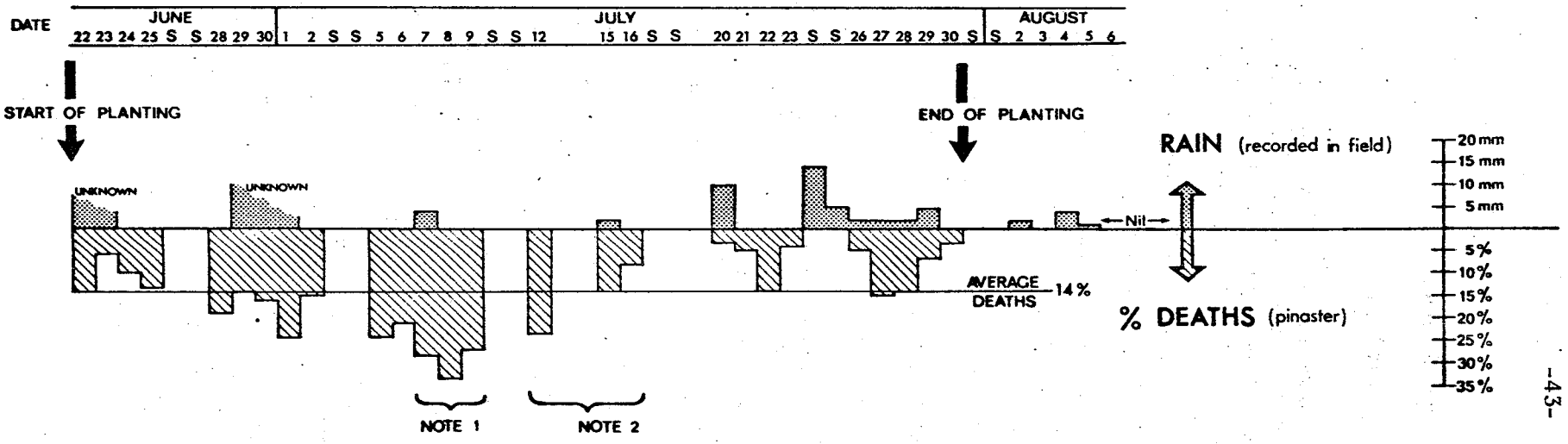
1. Much closer supervision in the field to assure planting depth is at least 5 cm above nursery level. This aspect of planting to be continually hammered throughout the season.

2. Planting operations to cease on the third or fourth consecutive day without rain. A closer look at long range forecasts will help determine when to cease.

3. Some form of training prior to planting operations should be attempted to accustom inexperienced planters to the operation. Once crews have been selected they should remain stable throughout the season. In any event when new employees are "given a go" at planting it should only be done so in the best possible conditions. i.e. During a very wet period. Closer field supervision should be carried out when this does occur.

With the above findings in mind it is expected that with the help of reasonable planting weather, mortality rates should drop below those of previous years. It is hoped that this will be the case for 1977 planting.

## RAIN AND % DEATHS COMPARISON




NOTE 1. Mortality could have been higher if not for infill hand planting carried out on these days.

NOTE 2. Mortality rate dropped despite lack of rain, possibly due to -

(1) good follow up rains on 20 and 24 July, 1976
(2) crews were fresh after a 2 day break ,
(3) two best planters returned to planting pinaster from 9 July
(4) plants on machines continually saturated at baseline stops.