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EFFECTS OF 2,4,5–T AND DIBUTYL PHTHALATE ON BLOODWOOD (EUCALYPTUS DICHROMOPHLOIA)

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SUMMARY

In trials on bloodwood using 2% 2, 4, 5-T butyl ester with and without the penetrant dibutyl phthalate, the mortality from spraying the bark at the base of trees, at waist height and in frills at waist height did not exceed 28%.

Using a 2% concentration of 2, 4, 5-T in diesel oil, without a penetrant, applied to basal frills, a kill of 92% was obtained.

I. INTRODUCTION

In the past, *Eucalyptus dichromophloia* (bloodwood), a common constituent of forests being cleared or thinned to encourage native pasture, was killed by ringbarking. Considerable regrowth occurred from the region of the lignotuber following this operation. Methods of avoiding the need to ringbark bloodwood and to control post-treatment suckering were therefore investigated.

In early trials at "Brian Pastures" Pasture Research Station in sub-coastal Queensland, the chemicals used included 2, 4-D sodium and triethanolamine salts, 2, 4-D ethyl ester, 2, 4, 5-T butyl and butoxyethanol esters, and mixtures of 2, 4-D and 2, 4, 5-T using diesel oil and water as carriers (Fox and Johnson 1957; Young 1961, 1965). Of these, only 2, 4, 5-T butyl ester at 2% and 3% (40% a.e.) in diesel oil prevented post-treatment suckering. The 3% 2, 4, 5-T mixture gave only slightly better results than the 2% mixture. In the trials reported here, 2% 2, 4, 5-T butyl ester in diesel oil was used.

II. METHODS

The trials were located at "Brian Pastures", on basalt-derived grey-brown loams and clay loams, acid to moderately alkaline in reaction.

The mean annual rainfall at "Brian Pastures" is approximately 28 in. and is mainly of summer incidence. At the time of treatment, i.e. March, April, May 1964, the monthly rainfalls were 1·61, 1·12 and 1·42 in. respectively. The total precipitation for the year 1964 was 29·30 in. and for 1965 it was 19·47 in.

Single-stemmed bloodwood trees were selected at random and marked with color-coded metal tags. Each treatment comprised five trees and treatments were replicated five times. The arboricide used in all experiments was 2, 4, 5-T butyl ester (40% a.e.) in diesel oil both with and without the penetrant dibutyl phthalate (DBP). DBP was added to aid the penetration of the arboricide through the bark.

The mixtures were applied by knapsack spray with an angled discharge nozzle in the following manner:

Experiment 1: to the basal bark (5 treatments);

Experiment 2: into a waist-high frill (5 treatments);

Experiment 3(a): to the basal bark (4 treatments);

Experiment 3(b): to the bark at waist height (4 treatments);

Experiment 3(c): into a basal frill (4 treatments).

Frills were thoroughly saturated. Bark sprays were applied in a 5-in. high continuous band at approximately 3 fl oz per tree, the amount depending on the circumference of the tree.

Effectiveness of the treatments was measured 1 year after application. A final assessment was made in April 1966, 2 years after the treatments were applied.

III. RESULTS

The results are shown diagrammatically in Figure 1. A satisfactory "kill" of bloodwood was achieved with a 2% solution of 2, 4, 5-T butyl ester (40% a.e.) in diesel oil, sprayed into a basal frill. No benefit was obtained from adding dibutyl phthalate. In some cases, the addition of DBP was deleterious.

IV. DISCUSSION

The penetrant dibutyl phthalate appears to aid the arboricide through the bark but then seems to inhibit the action of the arboricide. This depressive effect may result from a decreased concentration of arboricide reaching the cambial layers.

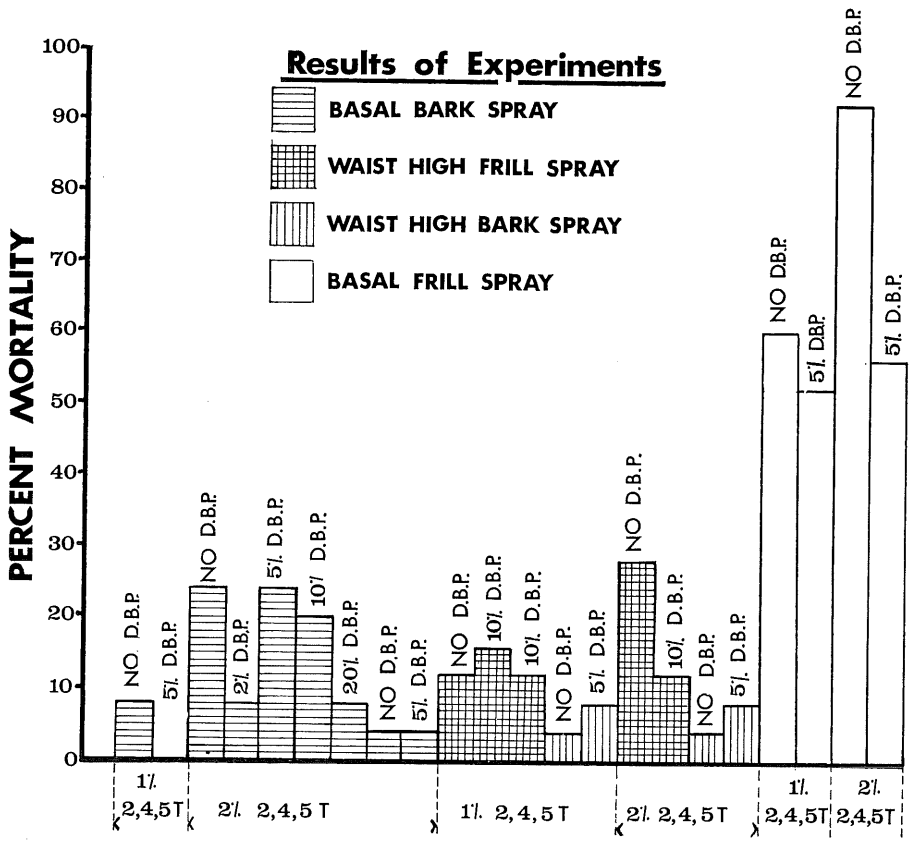

Fig. 1.—Results of experiments. Column 2 represents nil mortality from basal bark application of 1% 2,4,5-T plus 5% DBP. Added DBP in column 4 was 2½%. Column 11 is for 10% DBP without 2,4,5-T.

Incidence of basal suckers in the treatments where DBP was added was higher than in the treatments with arboricide only.

Use of 2% 2, 4, 5-T in diesel oil with a waist-high frill spray resulted in a defoliation of 80% at 1 year. However, at 2 years, mortality was reduced to 28%, due to suckering.

Similar results were evident with a basal bark spray of 2% 2, 4, 5-T plus 5% DBP in diesel oil. Defoliation at 1 year was 44% but at 2 years mortality was as low as 24%.

It appears necessary to allow a lapse of at least 2 years after treatment before any conclusions can be drawn regarding the true effectiveness of arboricides.

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