

## TREATMENT OF BLOODWOOD (*EUCALYPTUS DICHROMOPHLOIA*) WITH PICLORAM/2,4-D AND THE PENETRANT DIMETHYL SULPHOXIDE

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### SUMMARY

Basal bark application of picloram/2,4-D (5% acid equivalent) with dimethyl sulphoxide was more effective than applications at 2% and 1% levels, and applications without DMSO were ineffective.

There were no differences between 5%, 2% and 1% DMSO additions.

Summer and spring applications were superior to winter application.

### I. INTRODUCTION

In an attempt to eliminate suckering of bloodwood (*Eucalyptus dichromophloia*) after frilling, Fox and Johnson (1957) applied various derivatives of 2,4-D and 2,4,5-T to waist-high frills, cut stumps and foliage. They concluded that under the environmental conditions of the trials the arboricides were not effective in controlling bloodwood regrowth.

Subsequently Young (1961, 1965) showed that bloodwood could be effectively controlled with 2 % a.e. 2,4,5-T butyl ester in diesel distillate applied to a basal frill.

A less laborious method of arboricide application was sought and in preliminary trials mixtures of 2,4,5-T in diesel distillate or water were sprayed directly onto the bark. The majority of the trees remained unaffected by the treatments or produced basal suckers after partial defoliation.

To aid bark penetration, dibutyl phthalate (DBP) was added to the arboricide. The initial defoliation was promising but heavy suckering was observed 2 years following treatment (Beger 1969).

The results of this work led to the evaluation of the penetrant dimethyl sulphoxide (DMSO). However, nine combinations of DMSO and 2,4,5-T ester at various rates applied over three seasons failed to give effective control of bloodwood when sprayed onto the basal bark (Beger, unpublished).

In the investigations reported here, picloram/2,4-D was used with DMSO at various concentrations of each chemical and applied as a basal bark spray on bloodwood during winter, spring and summer.

## II. MATERIALS AND METHODS

The experiment was conducted at "Madoora", near Gayndah in south-eastern Queensland, during 1966-67, on a grey to light grey-brown gravelly sand of granitic origin.

The arboricide used was a mixture of 5% a.e. picolinic acid and 20% a.e. 2,4-dichlorophenoxyacetic acid, both as the triisopropanolamine salts. The penetrant was dimethyl sulphoxide, which is a water-miscible hygroscopic organic liquid. Concentrations used for both the arboricide and the penetrant were 1, 2 and 5% a.e. Both chemicals were carried in water. The arboricide concentration was based on the picolinic acid active ingredient. The penetrant for purposes of the experiment was considered to contain 100% active ingredient.

The treatments were applied to 540 trees in a single replicate of a 3x3x3 confounded factorial layout in three blocks each of nine plots, with 20 trees per treatment.

The single-stemmed trees were up to 7 m in height, with a basal diameter varying between 12 and 16 cm. The trees were marked with numbered metal tags secured by wire.

Each tree received approximately 110 ml of mixture sprayed to a height of 15 cm above ground level. A control treatment of 10 trees was basal bark sprayed with 2% a.e. picloram/2,4-D alone, in winter, spring and summer.

## III. RESULTS AND DISCUSSION

The effectiveness of the treatments was judged by the absence of green foliage and absence of regrowth from the base of the trees 2 years after arboricide application.

In Table 1, results for the 27 treatments and the means for the main treatments and the treatment combinations are given.

The study indicates that three concentrations of dimethyl sulphoxide were equally effective in carrying picloram/2,4-D through the bark of bloodwood.

Tree mortality was 90% and higher in summer when the arboricide was used at 5% picolinic acid a.e. No post-treatment suckering occurred.

The placement of the arboricide at the base of the tree in a continuous band and the absence of external injury associated with the injection method are suggested as contributory factors which precluded suckering in bloodwood.

The work does suggest that post-treatment suckering of eucalypts having lignotubers could be effectively controlled by using the basal bark spray method of application.

TABLE 1

PERCENTAGE MORTALITY OF *Eucalyptus dichromophloia* 2 YEARS AFTER TREATMENT WITH ARBORICIDE

	Penetrant 1%			Penetrant 2%			Penetrant 5%			Time Mean
	Arboricide			Arboricide			Arboricide			
	1%	2%	5%	1%	2%	5%	1%	2%	5%	
Winter .. ..	10	60	60	5	15	75	0	0	50	31
Spring .. ..	10	50	70	10	25	90	45	10	70	42
Summer .. ..	5	40	90	20	50	100	20	10	95	48
Penetrant mean ..	44			43			33			
Arboricide mean ..	..	..	..	..	..	..	14	29	78	
Arboricide x Penetrant .. ..	8	50	73	12	30	88	22	7	72	

		Winter	Spring	Summer
Penetrant	1%	43	43	45
	2%	32	42	57
	5%	17	42	42
Arboricide	1%	5	22	15
	2%	25	28	33
	5%	62	77	95

Main Effects		Treatment Combinations
$P < 0.001$	19.45 %	33.7 %
$P < 0.01$	12.1 %	21.0 %
$P < 0.05$	8.0 %	13.8 %

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