TECHNICAL NOTE

EFFECT OF 2,4-D AND 2,4,5-T DERIVATIVES ON BLOODWOOD *(EUCALYPTUS DICHROMOPHLOIA* F. MUELL.*)*.

Experiments were conducted on "Brian Pastures" Pasture Research Station, near Gayndah, in the Burnett River region, to test the effectiveness of 2,4-D and 2,4,5-T derivatives in destroying regrowth of bloodwood (*Eucalyptus dichromophloia* F. Muell.). This regrowth had occurred in trees that had been ringbarked but that had regenerated from the trunk below the frill or from lignotubers.

Two methods were tested: (1) applying the herbicide to a frill and to the stumps of severed suckers; and (2) spraying the foliage with the herbicide.

(1) Application to Frill and Stump.

Treatments were applied to separate blocks in early September, 1953 (spring), early December, 1953 (summer) and late April, 1954 (autumn). Each treatment was limited to a single plot containing at least 100 bloodwood trees sufficiently large to be frilled. The trees were up to 15 ft. high and 3-6 in. in diameter. They were completely frill-ringed about 30 in. above ground level; smaller suckers were cut off near ground level.

The mixtures used are shown in Table 1. The concentration in all cases was 1 per cent. acid equivalent of the active constituent.

Table 1.

DETAILS OF TREATMENTS.

Treatment Number.	Active Constituent.	Carrier.
1		Distillate
2	2, 4–D sodium salt	Water
3	2, 4–D triethanolamine salt ..	Water
4	2, 4–D triethanolamine salt ..	Distillate
5	2, 4–D ethyl ester	Water
6	2, 4–D ethyl ester	Distillate
7	2, 4–D ethyl ester + 2, 4, 5–T butyl ester	Water
8	2, 4–D ethyl ester + 2, 4, 5–T butyl ester	Distillate
9	2, 4, 5–T butyl ester	Water
10	2, 4, 5–T butyl ester	Distillate
11	2, 4, 5–T butoxy-ethanol ester ..	Distillate

PERCENTAGES OF BLOODWOOD TREES SHOWING REGROWTH FOLLOWING FRILL TREATMENT WITH DISTILLATE AND HORMONE HERBICIDES AT VARIOUS SEASONS.

Treatment.	Spring (3–5/9/53).				Summer (2/12/53).			Autumn (29–30/4/55).	
	No. Treated.	Percentage Showing Regrowth.			No. Treated.	Percentage Showing Regrowth.		No. Treated.	Percentage Showing Regrowth.
		1/12/53.	16/11/54.	16/11/55.		16/11/54.	16/11/55.		16/11/55.
(1) Distillate	119	75	82	90	152	95	96	126	100
(2) 2,4-D sodium salt in water ..	106	41	..	86	113	84	87	110	88
(3) 2,4-D amine in water	146	21	72	83	119	91	91	121	91
(4) 2,4-D amine in distillate ..	134	69	87	90	111	91	92	154	87
(5) 2,4-D ethyl ester in water ..	183	43	73	66	159	97	97	105	90
(6) 2,4-D ethyl ester in distillate ..	122	35	80	66	155	95	94	113	92
(7) 2,4-D/2,4,5-T mixed esters in water	120	23	71	76	136	93	93	153	82
(8) 2,4-D/2,4,5-T mixed esters in distillate	115	15	76	70	130	72	86	162	91
(9) 2,4,5-T butyl ester in water ..	177	32	81	79	159	72	76	134	93
(10) 2,4,5-T butyl ester in distillate ..	186	13	60	90	150	69	77	123	87
(11) 2,4,5-T butoxy ethanol ester in distillate	135	13	67	82	160	55	74	164	91

The mixture was applied to the frill or stump from a knapsack pump, the spray boom being replaced by a copper pipe about 1 ft. long inserted in front of the control tap and curved to facilitate application to the frill. Application immediately followed frilling. An average of 1·6 fl. oz. was applied to each tree.

The percentages of trees that had suckered at various intervals after treatment are shown in Table 2.

In most cases leaf-fall began in less than three months. Regrowth appeared in most cases from the trunk below the frill. In many of the hormone-treated trees these shoots died and were replaced by shoots which developed from the lignotuber.

There was an early response to distillate-based treatments, but overall there was no evidence to suggest that distillate was a more efficient carrier than water. In most cases distillate alone was slightly inferior to the 2,4-D and 2,4,5-T derivatives.

In the December treatments, 2,4,5-T derivatives were more effective than the 2,4-D derivatives; otherwise no differences between the two types were shown.

It is well known that soil type and topography affect the degree of suckering in ringbarked trees. The higher kills in plots 5-8 of the spring treatment are possibly attributable to a greater proportion of trees on the lower slopes in these plots. In plots 7 and 8, suckering on the steep slopes was 90 and 97 per cent. respectively, while on the lower slopes, where the soil was deeper, 50 and 72 per cent. respectively suckered.

The treated area was burnt over accidentally in August 1954 and because of this was again burnt in the spring of 1955 in conformity with district practice. The effect of these burnings could not be measured.

(2) Foliage Spraying.

The same mixtures were tested as foliage sprays on small suckers up to 8 ft. high. The regrowth had commenced three years previously in a stand which had been largely killed by ringbarking 30 years earlier.

The concentration used in each case was 0·2 per cent. acid equivalent, and treatments were given in September 1953, December 1953 and April 1954. The foliage and stems were thoroughly wetted, 1-4 gal. of spray being applied to each plot of two-fifths of an acre according to the density of the stand.

Many plants in each plot were defoliated and numerous aboveground stems were killed, but in all cases some plants showed little, if any, response to treatment. Regrowth commenced in the year following spraying and at the

Fig. 1.

Two Regenerations After Treatment Are Shown in this Photograph. The original trunk, ringbarked about 1933, is shown in the centre. The stem on the left appeared following the original ringbarking and was frilled and treated with a hormone preparation in December 1953. A vigorous sucker, on right, has again been produced from the base.

final inspection in November 1955 there was no evidence to suggest that any of the treatments had been even moderately successful. None of the underground parts were killed.

(3) Conclusion.

Hormone-type herbicides, whether applied to the frill or to the foliage, were ineffective in controlling bloodwood regrowth in the concentrations used and under the environmental conditions of the trials.

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