Scrub Weeds

NEW HERBICIDES FOR BLACKBERRY CONTROL

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Summary

Glyphosate at 2 kg/ha and 4 kg/ha and fosamine at 5 kg/ha and 7.5 kg/ha gave better control of blackberry (*Rubus fruticosus* agg.) crown regrowth than did 2,4,5-T (2 kg/ha) plus picloram (0.5 kg/ha). Glyphosate treatment was most effective when blackberry was making maximum growth while fosamine had its greatest effect when the plant had reached full vegetative development.

INTRODUCTION

Blackberry remains one of the most important and persistent scrub weed species in the warmer, high rainfall parts of New Zealand. For many years ester formulations of 2,4,5-T have been the basic herbicide for its control but, because of the poor translocation of this material into root tissue, additives to 2,4,5-T such as picloram and dicamba have been extensively used to give better control of regrowth from blackberry crowns.

To determine whether glyphosate and the more recently introduced herbicide fosamine (described by Niehuss and Roediger 1974) could give more effective control of blackberry regrowth than the presently recommended herbicides, the trials reported in this paper were commenced in 1975.

EXPERIMENTAL

One trial was conducted on Hauraki peat near Paeroa, where treatments of glyphosate 1, 2 and 4 kg/ha, fosamine 5 kg/ha and 2,4,5-T 2 kg/ha plus picloram 0.5 kg/ha were applied in January 1975 to blackberry at the early fruiting stage. Further treatments of fosamine 2.5, 5 and 7.5 kg/ha and glyphosate 2 kg/ha were added to the trial in April 1975 when some blackberry leaf senescence was becoming apparent.

At a site on river silt near Tahuna, treatments similar to those at Paeroa were applied in March and April 1975, when blackberry was respectively at the late fruiting and early leaf senescence stages. Subsequent treatments, all at Tahuna, consisted of glyphosate 1, 2 and 4 kg/ha and fosamine 2.5, 5 and 7.5 kg/ha applied in July 1975 when blackberry was relatively dormant, in November 1975 at the pre-flowering stage, and in January and March 1976 at the early and late fruiting stages. Treatments of 2,4,5-T kg/ha plus picloram 0.5 kg/ha were included in the January and March 1976 applications. All herbicide treatments were applied by hand gun in water at 2400 litre/ha to cover the whole plot and were replicated two or three times. No significant rain fell in the two days after any treatment.

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Examination of crown growth rings indicated that blackberry plants at Paeroa were 3-6 years old and those at Tahuna were 5-8 years old at the commencement of the trial in 1975. Using the plant descriptions of Amor (1974) the blackberry variety at both sites was identified as *R. procerus*.

RESULTS

Table 1 shows the survival of treated canes and the amount of crown regrowth on treated plots as percent of the numbers found on untreated controls.

Both glyphosate and fosamine applied in July were ineffective and results from these treatments are not included in Table 1.

Pasture species growing in association with the blackberry were eliminated by all rates of glyphosate and were replaced by annual grasses, flatweeds and thistles. Fosamine at the higher rates caused browning and severe retardation of pasture growth but most species survived, although flatweed and thistle numbers were increased. 2,4,5-T plus picloram eliminated clover and flatweeds from the pasture.

DISCUSSION

The response of blackberry to 2,4,5-T plus picloram in New Zealand is fairly well documented and it was included in these trials only for comparative purposes. At both sites and times of treatment it gave by far the quickest and usually the most complete destruction of treated canes and was less obviously damaging to associated pasture than glyphosate or fosamine. However, 2,4,5-T plus picloram failed to give adequate control of blackberry crown regrowth and two years after treatment reinfestation from this source was well advanced.

Glyphosate is well established as an effective herbicide for the control of deep rooted herbaceous species and Scherp (1975) has reviewed research into its mode of action in these plants, but little has been reported of its use against woody perennials such as blackberry. Glyphosate effects in blackberry were fairly slow to develop with many summer treated canes apparently alive in July. Table 1 shows that a significant proportion of those receiving 2 kg/ha survived into the following summer and 4 kg/ha was required to prevent cane recovery and reduce crown regrowth to a low level. Treatment effects generally paralleled blackberry growth activity; summer applications being more effective than those in autumn while winter treatment was totally ineffective.

The fosamine results in table 1 suggest that mid summer to early autumn, when blackberry has reached full vegetative development, is the optimum time of application for this material. This agrees with the results of Niehuss and Roediger (1974) who found July and August treatments to be less effective than those in September in the northern hemisphere. Fosamine had little effect on blackberry in winter. The observation by Niehuss and Roediger (1974) that fosamine treated plants showed little evidence of herbicidal effect in the season of treatment was confirmed, but their conclusion that 2.4

TABLE 1: Percent blackberry cane survival and crown regrowth, January 1977.

Treatment (kg/ha)	P A E R O A				T A H U N A									
	Jan. 1975 Cane Crown	April 1975 Cane Crown	March 1975 Cane Crown	April 1975 Cane Crown	Nov. 1975 Cane Crown	Jan. 1976 Cane Crown	March 1976 Cane Crown							
glyphosate 1	46	99	NA	62	84	NA	13	98	22	94	31	76		
glyphosate 2	15	13	27	67	9	25	15	42	7	22	10	34	15	10
glyphosate 4	7	7	NA	NA	1	11	NA	NA	0	1	1	11	0	9
fosamine 2.5	NA	NA	34	91	NA	NA	49	100	35	89	27	91	29	96
fosamine 5	12	16	19	43	5	21	6	37	20	49	14	17	9	12
fosamine 7.5	NA	NA	13	26	NA	NA	4	21	0	21	1	18	0	3
2,4,5-T 2 + picloram 0.5)	28	67	NA	NA	19	77	NA	NA	NA	0	44	0	86	
control	100	100	100	100	100	100	100	100	100	100	100	100	100	100
control, canes/m ²														
crown regrowth/m ²														
NA = not applied														

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kg/ha represents the optimum treatment rate was not supported by the results given in table 1 which show that the 7.5 kg/ha required for complete blackberry cane suppression was unable to prevent some crown regrowth.

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REFERENCES

- Amor, R.L., 1974. Taxonomy and distribution of *Rubus fruticosus* L. agg. (Rosaceae) naturalized in Victoria. *Muelleria* 3 (1): 37-62.
- Niehuss, M.H. and Roediger, K.J., 1974. Ammonium ethyl carbamoylphosphonate. A new plant growth regulator for the control of undesirable brush-weed species. *Proc. 12th British Weed Control Conf.*: 1015-1022.
- Scherp, L.A., 1975. A review of some factors affecting the performance of glyphosate. *Proc. 28th N.Z. Weed and Pest Control Conf.*: 165-168.