

A COMPARISON OF A PICLORAM/TRICLOPYR MIXTURE WITH OTHER HERBICIDES FOR BLACKBERRY CONTROL

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SUMMARY

A summary of results of 52 trials for the control of blackberry (*Rubus fruticosus* agg.) in the East Coast/Northland and Waikato/Taranaki regions is presented. Forty-seven trials were conducted to assess the comparative performance of single applications of picloram/triclopyr, picloram/2,4,5-T, triclopyr, glyphosate, fosamine and 2,4,5-T as a gun or boom spray. Picloram/triclopyr gave a high and consistent level of control with both types of application with similar results being obtained for applications made between November and May, fosamine and especially 2,4,5-T were inferior to the other treatments.

INTRODUCTION

Preliminary trial work on blackberry (Forgie *et al* 1979) demonstrated that triclopyr was much more active than 2,4,5-T and that a mixture of triclopyr and picloram (4:1 ratio) provided further improvement in control, particularly on the more difficult blackberry in the Hawkes Bay, Poverty Bay and Northland regions.

Yórtt and Atkinson (1980) reported on four trials indicating that glyphosate gave better growth control on blackberry than picloram/2,4,5-T 12 months after treatment. Cornwell (1978) reported on the activity of fosamine on blackberry in New Zealand. This paper summarises the results of 52 trials on blackberry comparing mixtures of picloram plus triclopyr and picloram plus 2,4,5-T with triclopyr, glyphosate, fosamine and 2,4,5-T. Forty-seven of these trials compared single applications of the herbicides and five evaluated repeat applications over two seasons following the initial treatment.

METHOD

In 21 trials herbicides were applied by brush gun in the East Coast (Poverty Bay, Hawkes Bay), Northland, Waikato and Taranaki from 1978 to 1980. Each treatment was replicated twice. The gun spray was applied with a hand gun at 1400-1500 kPa through a No. 6 tip with treatments applied to full coverage. Plot size was determined by the volume of spray mix, usually 50 litres, applied at the equivalent of 2000-2500 litres/ha.

Twenty-six trials were laid down using boom spray applications during the same period as the gun applications. These trials were sprayed with a precision sprayer, using a hand-held 2 m boom fitted with either D3/25 tips at 275 kPa or Teejet 730231 nozzles at 200 kPa both applying a total of 500 litres/ha in two passes. Plots were 4 m wide by either 5 or 10 m long. The blackberry in these trials was between 0.5 and 1.0 m high. There were at least two replicates of each treatment. A non-ionic wetting agent was added to all fosamine applications at 0.1% of total volume.

Visual regrowth suppression ratings were made at regular intervals by two or more independent observers. Only the final or the most recent assessments, expressed as percent control, have been presented.

Triclopyr, alone and in mixture, was used as the butoxyethanol ester formulated as an emulsifiable concentrate. All other treatments were proprietary formulations.

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In the repeat treatment trials a 100-400 litre quantity of prepared spray solution was applied by hand gun to an area of blackberry. The following two seasons the same areas were retreated, with the amount of spray solution required for respraying being recorded.

RESULTS AND DISCUSSION

A summary of assessments of regrowth suppression of blackberry for 21 gun application trials and 17 boom sprayed trials is presented in Table 1. The results have been grouped into two regions, i.e. East Coast/Northland and Waikato/Taranaki as the type of blackberry differs significantly between the two regions. All treatments were applied during January to late April (post flower to late fruit).

TABLE 1: Summary of blackberry control in East Coast/Northland and Taranaki/Waikato for treatments applied January to end April (mid season).

Treatment kg/ha	Boom Spray			Gun Spray			
	Mean* % control	SD	No. of trials	Treatment g/100 lts	Mean % control	SD	No. of trials
East Coast/Northland							
picloram 1	77	10	13	50 + 200	86	10	9
triclopyr 4							
picloram 1	51	21	13	50 + 200	70	21	9
2,4,5-T 4							
triclopyr 8	69	17	12	300	70	25	9
glyphosate 3.2-4	60	27	9	360	86	14	3
fosamine + 4.8-9.6	39	30	9	480	47	27	3
2,4,5-T 8	7	5	3	360	31	20	7
Taranaki/Waikato							
picloram 1	97	6	4	50 + 200	95	7	12
triclopyr 4							
picloram 1	74	4	4	50 + 200	85	16	12
2,4,5-T 4							
triclopyr 8	92	6	3	300	83	21	12
glyphosate 3.2-4	65	29	3	360	77	17	3
fosamine 4.8-9.6	55	28	2	480	70	20	7
2,4,5-T 8	29	23	3	360	22	16	7

* The mean time elapsed between application and rating varied between treatments from 14 and 19 months.

+ Majority applied at high rate.

SD = Standard deviation.

The picloram/triclopyr treatments gave the best level of control both as a gun and boom application. The level of control was consistent as demonstrated by the lower standard deviations compared with the other treatments. Triclopyr as a boom spray also gave a similar level of control. Fosamine gave an acceptable degree of control in the high volume trials in the Taranaki/Waikato region. Apart from this, fosamine and especially 2,4,5-T were inferior, giving a low level of control. Glyphosate gave a high degree of control as a gun application in the East Coast/Northland region and in other trials gave a similar level of control to picloram/2,4,5-T and triclopyr.

The elapsed time between treatment and assessment for the individual trials ranged from 12 months to 30 months with the majority being greater than 15 months. As

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blackberry is renowned for its crown regrowth potential it is acknowledged that assessments should be made for at least two years to assess the degree of control. Glyphosate and fosamine at around 12 months post-treatment often appeared to provide excellent control however, an examination of the crowns, rhizomes and roots in some trials showed a high percentage of these still to be alive and to have signs of fresh shoot regrowth from below ground level. In the treatments containing picloram or triclopyr, crowns had already decayed in those plants not showing any cane regrowth.

The performance of all treatments confirmed that a higher level of control can be expected on blackberry in the Waikato/Taranaki region than in the East Coast/Northland region. The low growing blackberry infestations in the warmer regions of Northland, Poverty Bay and Hawkes Bay were harder to control and more regrowth could be expected requiring follow up sprays in the succeeding seasons. This was particularly so for boom spray applications where spray coverage was likely to be less complete than with high volume hand gun applications.

The speed of brown-off of leaves and initial cane desiccation for the picloram/triclopyr treatment was slightly slower than treatments containing 2,4,5-T, as was final leaf drop. Complete stem desiccation generally occurred within 3 months. Complete stem desiccation with glyphosate and fosamine took up to 6 months.

The boom spray treatment programme in the East Coast/Northland region was extended to compare treatments outside the normal January/April period. A summary of the mean percent regrowth control is presented in Table 2.

TABLE 2: Boom spray trials — percent regrowth control of blackberry at various times of treatment.

Treatment	kg/ha	Mean percent regrowth suppression		
		Early + (5)*	Mid (13)	Late (4)
picloram/triclopyr	1 + 4	69	77	77
picloram/2,4,5-T	1 + 4	35	51	38
triclopyr	8	65	69	-

+ Early season — November-December

Mid season — January-April

Late season — May

*() — Number of trials.

The control achieved with picloram/triclopyr was similar for the three periods and early season treatment of triclopyr gave the same degree of control as when applied in mid season. This allows the extension of the spraying season without a reduction in efficacy. The level of control of picloram/2,4,5-T was reduced both in the early and late season treatments.

No treatment can be expected to give complete regrowth suppression from a single spray. Five gun spray trials were conducted to examine the cost efficiency of using a treatment which provided a relatively high initial crown kill demanding less costly follow up in subsequent years. The mean quantities of spray mix used for repeat treatments of blackberry in five areas in the Northland/East Coast region are presented in Table 3.

TABLE 3: Mean volume of spray mix (litres) used for an initial spray and two repeat sprayings of blackberry at five sites.

Treatment g/100 litres	Initial treatment	First respray	Second respray
picloram + triclopyr 50 + 200	100*	19	2.5
picloram + 2,4,5-T 50 + 200	100	38	6
triclopyr 300	100	29	4
2,4,5-T 360	100	63	59

* For clarity of presentation, the volumes have been converted to a 100 litre base.

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The data demonstrate that the picloram/triclopyr (50 + 200 g/100 litres) required less follow up with very little regrowth to re-treat in the second season. Cane removal was carried out 8 months after the initial spray by burning or slashing. A high degree of control by the second season enables over-sowing and pasture improvement to be initiated.

CONCLUSIONS

The picloram/triclopyr combination gave a high and consistent level of blackberry control both as a gun and boom application as a single spray. The control achieved with picloram/triclopyr was similar for applications made from November through to May. This combination also gave a high level of control with repeat applications as a gun spray. Fosamine and especially 2,4,5-T were inferior to other treatments. This series of trials confirms previous work that blackberry in the East Coast/Northland region is more difficult to control than in other regions.

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