BLACKBERRY CONTROL WITH GLYPHOSATE

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SUMMARY

Consistently good control of blackberry (*Rubus spp*) was achieved in East Coast/Poverty Bay and Northland with various rates of glyphosate applied by boom or hand-gun. Improved control was evident with hand-gun treatments when the water application rate per hectare was raised by using higher spray pressures and larger spray tip orifice. Burning or slashing blackberry 40-60 days after spraying assisted long term control and aided the establishment of sown pasture species.

INTRODUCTION

Blackberry is still one of the more important scrub weed species that the New Zealand farmer has to deal with, particularly in the East Coast and Northland regions.

These two regions have been recognised as having blackberry growth types that show a higher resistance to herbicides than these in regions like Taranaki and Waikato.

The two species of blackberry currently recognised are (*Rubus laciniatus*) and (*R. fruticosus agg.*). (*R. fruticosus agg.*) in Northland consists of four major growth forms:

1. Green back scrambling
2. Green back deep veined
3. Pale back upright
4. Pale back deep veined scrambling.

In the East Coast region *R. fruticosus* is predominant, but its physical form and appearance often varies with environmental factors, such as grazing pressure, drought stress and soil type.

Forgie *et al* (1981) obtained acceptable blackberry control with glyphosate 14-19 months after treatment in 9 trials.

The reported failure of glyphosate (Roundup) to give long-term control of blackberry in Northland (Dempsey 1981), prompted a further series of trials to test its effectiveness. Results of these trials are reported here.

METHOD

Since Spring 1981 nine hand-gun trials have been laid down in Northland and East Coast regions.

Each trial was of randomised block design with 10-20 separate bushes receiving each treatment. Herbicides were applied between December (full blossom) and late April (ripe fruit). The gun spray was applied with a recognised high volume gun at 1000-2000 kPa through a No. 4, 6 or 8 tip. Rate of water per hectare is shown in Table 1.

Blackberry plants varied in growth habit between geographic sites;

Wairoa — prostrate, previously goat grazed, generally some degree of drought stress. Gisborne — upright scrambling, often more vigorous than Wairoa, but drought stressed. Not hard grazed.

Northland — mixed upright and scrambling types, mainly in good growth conditions. Types 1 and 3 (see introduction) were treated.

In four out of the nine trials plots were burned or slashed 40-60 days after spraying and oversown with grass seed.

Five aerial trials in East Coast region were treated using a helicopter in the same season as the hand-gun trials. Half overlap spraying system, and water rates of 220 litres/ha were used in all cases. Plot size was 0.5 ha. Sites were selected on the basis of even contour, uniform blackberry cover, and with no previous herbicide spraying within 5 years.

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Four out of the five sites were burnt 40-60 days after spraying, then oversown within 7 days, during late March, April and early May. Picloram/triclopyr and picloram/2,4,5-T treated bushes were burnt the following spring, 7-8 months later. Plots within a paddock were grazed with the remainder of the paddock. Visual ratings were made every 3 months. Regrowth suppression scores were made for the last assessment in April 1984. (Tables 1 and 2).

In Northland long-term control of blackberry was investigated in four areas sprayed by farmers using glyphosate at 360 ai/100 litres. An average of 15 crowns displaying from tight cluster to 75 mm glyphosate affected regrowth, were pegged 12-24 months after application and observed for a further 2 years.

RESULTS AND DISCUSSION

In Northland all treatments achieved a high degree of cane dehydration and breakdown (Table 1). Lower water rates were only marginally inferior to the higher water rates, although some commercially applied comparisons show a greater differential, suggesting operator problems with the low water volume technique.

In both regions picloram/triclopyr treatments showed excellent cane desiccation, but at 23-26 months after treatment (MAT) 21-23% regrowth had occurred.

TABLE 1: Summary of hand-gun blackberry control in East Coast/Northland.
GUN SPRAYING

Treatment	g/100 litres	Application method	East Coast						Northland	
			MAT	No. Trials	Mean % Control	MAT	No. Trials	Mean % Control		
glyphosate	360	A	27	5	60	26	2	89		
glyphosate	360	B	23	7	92	26	2	97		
glyphosate	360	C	26	2	100					
glyphosate	450	A	27	4	94					
glyphosate	450	B	21	6	95					
glyphosate	540	A	27	3	97	26	2	97		
glyphosate	540	B	22	4	97					
glyphosate/ 245-T	360/ 180	B	24	6	51					
glyphosate/ Triton X45	360/ 0.5w/v	B	19	3	97	26	2	95		
picloram triclopyr	50/200	B & C	23	7	77	26	2	79		
picloram/ 245-T	65/260	C	28	1	100					

***Application Method**

A. No 4 tip/750-1000 kPa/1200 litres water applied per hectare

B. No 6 tip/2000 kPa/3900 litres water applied per hectare

C. No 8 tip/2000 kPa/5000 litres water applied per hectare

On the East Coast glyphosate at 360 ai/100 litres applied with 1000 litres of spray solution/ha did not achieve an acceptable level of control but when glyphosate concentrations and total volume application rates were increased, control levels also increased (Table 1). The addition of 2,4,5-T to glyphosate was antagonistic in all trials, displaying good initial cane brown-off but a rapid regeneration of foliage from the original crown occurred within 12 months. Triton X-45 when added to glyphosate at 0.5% w/v appeared to give a quicker brown-off thus assisting burning.

In the aerial application trials in the East Coast, glyphosate at 7.2 kg ha/ai gave excellent blackberry control, with only minimal follow-up spraying to be done (Table 2). At 5.4 kg ai/ha glyphosate was marginally acceptable, but there was greater crown death when

TABLE 2: Summary of aerial sprayed blackberry control on the East Coast. Assessments made 25 MAT.

Treatment	kg ai/ha	No. Trials	Mean/Control*
glyphosate	3.24	5	52
glyphosate	4.32	3	63
glyphosate	5.4	5	81
glyphosate	7.2	5	91
picloram/triclopyr	1.0/4.0	4	61
glyphosate/Triton X-45	5.4/5 ltr/ha	3	89

Triton X-45 at 5 litres/ha was added. Picloram/triclopyr showed good initial brown-off but regrowth was apparent within 12 months.

The advantages of burning were demonstrated at most sites; with the removal of cane trash pasture establishment was better.

Glyphosate reduced other competitive weeds such as nigger head (*Carex secta*) rushes (*Juncus* sp) ratstail (*Sporobolus africanus*) Yorkshire fog (*Holcus lanatus*) browntop (*Agrostis capillaris*) and this improved pasture re-establishment.

Where intensive rotational grazing followed burning blackberry control was noticeably better. Plants showing sublethal glyphosate regrowth symptoms tended to die much quicker when subjected to heavy grazing. The farmer treated blackberry in Northland showed better than 80% crown mortality of plants. This slow die back was a regular feature of glyphosate treated plants.

To obtain good results with glyphosate, complete foliage coverage is essential. High water rates consistently produced higher levels of control.

CONCLUSION

Glyphosate gave a high and consistent level of blackberry control both as a gun and aerial boom application, especially when applied at higher water volumes than normal through a handgun. When applied through a spray gun at low water volumes using the misting or wafting technique, results were consistently inferior except in Northland where spray penetration was easier.

Plants under stress from drought or grazing pressure appeared more difficult to control, so that a farmer contemplating spraying should avoid them. Spraying earlier, late November to December did not give inferior results, in fact cane desiccation appeared greater.

Firing or slashing 40-60 days after spraying with glyphosate assisted the level of control, and also contributed to good pasture establishment, thereby assisting subsequent management.

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