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CONTROL OF SWEET BRIER USING PICLORAM, TRICLOPYR AND 2,4,5-T APPLIED WITH MODIFIED DRENCH GUN

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SUMMARY

Results of four trials on the control of sweet brier (*Rosa rubiginosa*) in Central Otago are presented. Formulations containing picloram/2,3,4-T, picloram/triclopyr and triclopyr were applied with a modified drench gun as a spray to the basal stem area during the late winter/early summer period. The formulations were diluted 1:1 with diesel or water or a 1:4:5 diesel: water: formulation combination. A high level of control was obtained with all three formulations and diluents although the triclopyr ester treatment was marginally inferior but still quite acceptable.

INTRODUCTION

The scattered distribution of sweet brier combined with its vigorous crown regrowth potential makes it very difficult to control economically on low producing high country.

High volume spraying, basal spraying and granular application of herbicides have all been extensively investigated with varying degrees of success (Dingwall 1964). With 2,4,5-T high volume water application results were variable while basal diesel applications increased reliability. A major improvement was achieved with the use of picloram in combination with 2,4,5-T as a high volume gun application and picloram as a 2% granular (Moffat 1965; Leonard 1965). Granules have the disadvantage of requiring higher rates of a herbicide to achieve a satisfactory degree of control while the high volume sprays are comparatively expensive to apply and unsuitable on terrain where access is difficult.

The present series of trials was begun in 1978 to assess more efficient application techniques and triclopyr, a new herbicide which had shown promising activity on other brushweeds. During this period a number of variations in techniques and mixtures of herbicides were evaluated. The results reported in this paper are confined to the technique using a modified drench gun for the application of formulations of picloram with triclopyr and 2,4,5-T and triclopyr alone.

METHOD

A Phillips DUOMATIC 15 drench gun was fitted with a 450 mm SPELMAN Weed Wand and a D7/45 disc and core nozzle. This nozzle produced a semi-solid cone spray with a moderate hand squeeze and a maximum dosage delivery of 15 ml.

Treatments were applied by spraying around the bush with the nozzle directed towards the crown but giving full coverage of the lower 250 mm of cane. The three formulations used were:

- picloram amine/2,4,5-T ester containing 75/300 g/litre
- picloram amine/triclopyr ester containing 50/200 g/litre
- triclopyr ester containing 600 g/litre

As the concentrations of active ingredients varied between the two mixture formulations, the volume per dose of the picloram/triclopyr formulation applied was 50 percent higher than the picloram/2,4,5-T formulation to obtain the same rates of

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active ingredient.

The formulations were applied either in water or diesel or a diesel/water mixture. The dilutions used were a 1:1 mixture with water or diesel or a 1:4:5 diesel:water:formulation combination. Thus a ready-to-use 10 ml dose containing 5 ml of the picloram/2,4,5-T formulation and 5 ml of diluent contained 0.4 g picloram and 1.5 g 2,4,5-T. Likewise, a ready-to-use 15 ml dose containing 7.5 ml of the picloram/triclopyr formulation and 7.5 ml of the diluent contained 0.4 g picloram and 1.5 g triclopyr. The triclopyr formulation was diluted 1:1 with diesel and applied 4.5g triclopyr in each 15 ml dose.

The number of doses applied per bush was varied according to bush size (Table 1).

The trials were conducted in Central Otago with the times of treatment varying from early bud movement (August) to full leaf expansion (November). Each treatment contained 5 to 10 bushes.

Visual ratings were made for brown-out at 3-4 months post-treatment and regrowth suppression at 12 months.

RESULTS AND DISCUSSION

Control of sweet brier with the three different formulations, with varying diluents and rates of application is presented in Table 2.

All treatments gave a high level of control of sweet brier after rapid initial brown-out of expanded leaves and stems. Initial 1978 treatments showed outstanding breakdown of cane tissue from the picloram/2,4,5-T treatments after two years, while more recent trials showed similar trends from all three formulations. The degree of control obtained with the picloram/2,4,5-T formulations confirmed farmer evaluations conducted in the Vincent County (Higgins unpublished data). Where complete control was not achieved, mainly in the large multistemmed bushes, those surviving were in a condition to be easily retreated with reduced rates as regrowth was confined to outer stems where complete coverage had not been obtained.

There was little difference in the end result with the three diluents used. Diesel aided wetting and possibly improved uptake of the herbicide but the tendency of the diesel mixtures to physically separate necessitated continual agitation. Some limited work using the undiluted picloram/2,4,5-T formulation has given promising results but requires further investigation.

Current research indicates a high level of control can be achieved outside the application times used in these trials. Treatment during the late autumn/winter period has the advantage of being at a time when farm labour is more readily available. Early season treatment makes for easier application due to the absence of foliage which presents difficulties in obtaining complete spray coverage at the base of the stems.

CONCLUSION

The use of modified drench gun to apply small volume doses of comparatively concentrated solutions of picloram/2,4,5-T, picloram/triclopyr and triclopyr offers real promise in improving the economics of treatment of scattered infestations of sweet brier.

TABLE 1: Number of doses per bush relative to size

1 dose	Bush less than 1 m high — easy crown and stem coverage.
2 doses	Bush 1-2 m high — no more than 2-3 stems.
3 doses	Bush 1-2 m high — multistemmed, requiring treatment from all sides.
4 doses	Bush over 2 m high — multistemmed, requiring treatment from all sides.

TABLE 2: Mean visual ratings for brown-out and regrowth suppression of sweet brier.

<i>picloram/2,4,5-T treatments</i>		1:1 diesel mix								1:1 water mix								1:4:5 diesel water mix							
Response rated Trial No.		BO*				RS*				BO				RS				BO				RS			
Bush size	Doses	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
▼ 1 m	1	7.5	10	10	-	9.7	10	10	-	10	-	19	-	10	-	10	-	10	-	10	-				
▼ 1 m	2	9.0	10	10	9.8	10	10	10	10	10	9.9	10	10	10	10	10	10	10	10	10	10				
1-2 m	2	-	10	10	-	-	10	10	-	10	-	10	-	10	-	10	-	10	-	10	-				
1-2 m	3	9.4	10	10	9.9	10	10	10	10	10	8.5	10	9.6	10	10	10	10	10	10	10	10				
▲ 2 m	3	-	8.3	9.8	-	-	9.3	10	-	8.8	-	10	-	10	-	10	-	10	-	10	-				
▲ 2 m	4	8.1	9.8	10	8.5	10	9.8	10	9.5	10	8.6	8.8	9.4	10	9.8	9.4	10	10	10	10	10				

<i>picloram/triclopyr treatments</i>		1:1 diesel mix								<i>triclopyr treatments</i> 1:1 diesel mix							
Response rated Trial No.		BO				RS				BO				RS			
Bush size	Doses	2	4	4	2	4	4	1	2	3	4	1	2	3	4		
▼ 1 m	1	10	-	-	10	-	-	8.9	10	10	-	9	10	10	-		
▼ 1 m	2	10	10	10	10	10	10	9.6	10	10	10	9.3	10	10	10		
1-2 m	2	10	-	-	10	-	-	-	8.5	10	-	-	9	10	-		
1-2 m	3	9.9	9.7	10	10	9.8	9.8	9.8	9.9	10	9.3	9.4	9.7	10	9.8		
▲ 2 m	3	9.3	-	-	9.0	-	-	-	8.7	10	-	-	8.3	10	-		
▲ 2 m	4	9.7	8.9	9.8	9.8	9.7	9.7	9.5	9.6	9.8	9.5	9.9	9.4	9.5	9.4		

* BO = Brown-out; RS = Regrowth suppression Score 0 = no effect 10 = complete brown-out or regrowth suppression.

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