CONTROL OF MATAGOURI WITH PICLORAM IN MIXTURE WITH 2,4,5-T OR TRICLOPYR

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SUMMARY

Aerial application of picloram (1 kg ai/ha) formulated with 2,4,5-T or triclopyr (4 kg ai/ha) have excellent control of matagouri (*Discaria toumatou*) over eight seasons of trials and field assessments. Application during November/December at full flower and during active growth gave best results.

Control was variable at half rates but since in many circumstances some survival may be acceptable, further evaluation of lower rates is warranted.

INTRODUCTION

Matagouri is a woody scrub weed commonly occurring in dry low fertility hill country pastures where cultivation is not possible. It is a slow growing shrub or small tree with abundant long sharp thorns and sparse very small leaves and is not grazed by stock.

Hunter (1985) noted "Matagouri is an indigenous slow growing woody shrub widespread in the eastern hill, and high country, of the South Island. It was recorded, in the New Zealand Land Resource Inventory, as present on 1.2 million hectares in Otago, Canterbury, Southland and Marlborough. It occurred on a range of landforms including flat terraces and floodplains as well as steepland, almost always in the montane altitude zone below 1000 m a.s.l., and in districts with an annual rainfall below 1600 mm pa. Matagouri forms an open shrub canopy or localised thickets in short tussock and associated grassland, and is often associated with other shrubs, notably manuka, bracken and sweet brier".

It has become a limited problem in valley floors by preventing stock access and, as it responds to phosphate fertilizer, on developed hill country pastures. Traditionally top removal has been obtained by burning which occasionally kills plants, but more often they regrow in about 5 years. Reinvasion from seedlings is a minor problem. With increasing mechanical clearing costs chemical control has become a viable alternative.

This report presents results from eight aerial trials, and eighteen aerially applied farmer assessments in Canterbury, Otago and Southland. Proprietary formulations of picloram/2,4,5-T (Tordon 520, Tordon Brushkiller) picloram/triclopyr (Garlon 520), 2,4,5-T (IWD 2,4,5-T Double Strength) and an experimental formulation of triclopyr (IWD 3396) were used.

METHOD

Trials

Trial 7 was applied by fixed-wing aircraft with D8/46 nozzles at 200 kPa applying 200 litres/ha as a single pass. The remaining trials were applied by helicopter using 200 litres/ha of spray mix. Trial 4 was applied in a single pass using Velsicol "Delfoam" foam nozzles with D6 inserts, but without a foam additive. Trials 3 and 6 were applied in two opposite half overlapping passes of 100 litres/ha with D8/45 nozzles at 275 kPa and 60 kph flying speed. Trials 1, 2, 5 and 8 were similar but using D7/45 nozzles at 400 kPa and 65 kph.

Diesel fuel oil at 7.5-10% of the spray mix was included in all trials except No. 6.

One replicate of each treatment was applied to plots of approximately 0.3-0.5 ha for each trial.

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Trial sites were selected for evenness in height and density of matagouri. Bushes were about 0.5 m in height on trials 3, 5, 6 and about 1.0 m in height on the rest, and covered 30-60% of the ground on a dripline area basis. Sites generally were N.E. faces of moderate slope.

Field assessments

Eighteen blocks on 12 properties were evaluated. All field assessments were applied by helicopter; treatments on sites 1 to 6 and 11 to 14 were applied in 220-280 litres/ha as two half-overlapping parallel passes of 110-140 litres. The remainder were applied in 400-440 litres/ha, all in half-overlapping passes of 200-220 litres/ha except site 9 which was a single pass. Spraying systems D6/45, D6/46, D7/46, D8/45 were used in most cases with Velsicol "Delfoam" foaming nozzles (without foaming additive) used on sites 9, 11, 15 and 16.

The three older sites (1, 2 and 3) were treated to control gorse (1) and broom (2, 3) but the quite heavy matagouri spread throughout each block.

Diesel was not used as a spray additive on the field assessment sites.

Assessments

Assessments were done by an individual bush rating technique where two or more observers would count a minimum of 50 bushes, typically about 100 for each person, on

TABLE 1: Aerial trials; % of Matagouri plants with no live tissue evident.

Trial No.	1	2	3	4	5
Date	11/81	11/81	12/81	12/82	12/82
Location	Omihi	Omihi	Mt. Somers	Nightcaps	Wedderburn
Diesel	7.5%	7.5%	10%	10%	10%
M.A.T.*	24	24	28	25	25
Treatment	kg ai/ha				
Picloram + 2,4,5-T	0.5	42	74	99	90
Picloram + 2,4,5-T	2.0				80
Picloram + 2,4,5-T	1.0	70	87	98	86
Picloram + 2,4,5-T	4.0				90
Picloram + Triclopyr	0.5	26	83	97	82
Picloram + Triclopyr	2.0				20
Picloram + Triclopyr	1.0	66	65	97	—
Picloram + Triclopyr	4.0				90
2,4,5-T + Triclopyr	4.0	20	41	66	86
2,4,5-T + Triclopyr	2.0				—
Trial No.	6	7	Mean	8	
Date	12/81	12/82	Nov/Dec	1/83	
Location	Mt. Somers	Te Anau	Trials	Omihi	
Diesel	Nil	10%		10%	
M.A.T.*	27	24	($\pm$ SDX ^{**})	22	
Treatment	kg ai/ha				
Picloram + 2,4,5-T	0.5	17	97	71 $\pm$ 29	26
Picloram + 2,4,5-T	2.0				
Picloram + 2,4,5-T	1.0	79	91	86 $\pm$ 8	14
Picloram + 2,4,5-T	4.0				
Picloram + Triclopyr	0.5	87	68	66 $\pm$ 29	44
Picloram + Triclopyr	2.0				
Picloram + Triclopyr	1.0	88	—	81 $\pm$ 13	—
Picloram + Triclopyr	4.0				
2,4,5-T + Triclopyr	4.0	—	85	60 $\pm$ 26	36
2,4,5-T + Triclopyr	2.0				

* Months after treatment

** Standard deviation

a transect diagonal to the direction of spraying. Each bush was rated as 'dead' (no green tissue visible about ground) or 'live' (green stem or leaf tissue visible).

RESULTS AND DISCUSSION

Results of the trials are given in Table 1 and results of the field assessments in Table 2.

Results in both trials and field assessments were similar when treated while in full flower and during active growth (November/December). Picloram/2,4,5-T (1/4 kg ai/ha) gave 85.9% (± 8.4) (SDXn) control in the trials and 85% (± 17.1) in the field assessments.

TABLE 2: Field assessments of Matagouri plants with no live tissue evident.

Site	Property	Date (mm/yy)	Years*	% Control
Picloram/2,4,5-T (1.5/6 kgs ai/ha)				
12	J	Dec 12/80	5	95
Picloram/2,4,5-T (1/4 kg ai/ha)				
1	A	Nov/Dec 12/75	8	97
3	B	12/76	7	100
4	C	11/78	5	97
5	D	11/79	1	80
6	E	11/79	1.5	78
8	G	12/79	2.5	86
11	G	12/82	1	92
13	J	11/81	3	40
14	J	12/82	2	95
			Mean	85 $\pm$ 17.2**
Picloram/2,4,5-T/(0.5/2 kg ai/ha)				
15	K	Nov 11/83	1	90
16	K	11/83	1	95
17	L	11/83	1	87
18	L	11/83	1	86
			Mean	89.5 $\pm$ 3.5
Picloram/2,4,5-T(1/4 kg ai/ha)				
2	B	Jan/April 2/76	7	42
7	F	4/80	0.5	60
9	H	1/80	2.5	98
10	I	4/80	5	37
			Mean	59.3 $\pm$ 24

* Years after treatment

** Standard deviation (SDXn)

Limited field assessment of lower rates of picloram/2,4,5-T (0.5/2 kg ai/ha) showed promise on four sites on two properties (89.5% $\pm$ 3.5) but was more variable in the trials (71.3% $\pm$ 28.5). Picloram/triclopyr formulations have given very similar results to equivalent rates of picloram/2,4,5-T and the tank mixture of 2,4,5-T + triclopyr (2 + 4 kg ai/ha) was very similar to the 0.5/2 kg rates of picloram with 2,4,5-T or triclopyr.

Control outside the November/December flowering period was variable and tended to be less reliable.

The addition of diesel oil to the spray mix (intended as a penetrant), in the trials is of questionable value as similar results were obtained in the field assessments without it. Similarly there was no difference between formulations of picloram/2,4,5-T as the K salt/octyl ester used in most of the field assessments and as the amine salt/butyl ester in

all the trials and six field assessments (11, 14, 15-18).

The visual assessment method of rating 100 bushes on a diagonal transect seems effective, with variation between succeeding seasons being acceptable. However larger samples on two to three permanent transects per plot are suggested to improve reliability. This method could be used for any scrubweeds open enough to allow access.

CONCLUSIONS

Aerial applications of picloram formulations with 2,4,5-T and triclopyr at 1/4 kg ai/ha gave good control of matagouri over eight seasons of the trials and field assessments when applied during November/December i.e. at full flowering and during active growth.

Lower rates of 0.5/2 kg ai/ha gave variable control, but since in many instances some survival may be acceptable for land stabilization or stock shelter, further evaluation is warranted. Under good growth conditions it may be possible to extend the spraying season further into the summer.

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REFERENCES

- Hunter G.G., 1985. Distribution of matagouri (*Discaria toumatou*) in New Zealand. *Proceedings of the workshop on matagouri*. In press.