CONTROL OF PRIVET

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SUMMARY

Privet (*Ligustrum* spp), traditionally an ornamental or hedge plant, is becoming a nuisance in many horticultural regions. This paper reports on four trials which investigated various chemicals and applicaton techniques for control of this plant. The successful treatments included treating cut stumps with 2,4-D/picloram or triclopyr/picloram, foliar spraying with DPX T6376 in spring or autumn, or glyphosate/X-45 in spring only.

INTRODUCTION

Privet is a strong-growing shrub or tree, introduced to New Zealand in the 1870's (Allan 1940) as an ornamental or hedge plant. Because of its hardiness it is now widespread and able to thrive in a wide range of habitats including heavy clay soils, wet swamp country and very cold areas.

Although a useful and attractive plant, privet is also a problem in a number of regions because of its ability to spread prolifically. From shelter and garden situations it has severely infested wasteland and less productive property, and firmly established itself in fence lines, drain banks and road verges. In these locations privet can interfere with clearing operations and power and telephone reticulation. It has not been a problem in pasture as stock will graze seedlings and fresh growth keeping it under control.

The leaves of mature privet have been found to be poisonous and stock deaths in New Zealand and overseas have been attributed to this species (Connor 1977; Whittet 1958). In suburban areas people who suffer from hay fever or asthma frequently complain to the local authorities when privet flowers during November-December.

Privet is not mentioned in any of the New Zealand manuals or publications on weed control and the only reported work is by Little (1982) who claims that privet is able to be controlled by treating cut stumps with 2,4-D/picloram formulation (Tordon 50-D).

Unpublished data by Whakatane District Noxious Plants Authority showed that foliar applications of 2,4,5-T with or without picloram or dicamba did not give satisfactory control of privet at rates recommended for other scrubweeds. Cut stump treatments with the above chemicals were more effective but did not give consistently good control. However amitrole/ammonium thiocyanate as a foliar application was more promising.

Overseas literature reports the success of cut stump treatment with 2,4,5-T (Fryer 1968; Whittet 1958) and failure of cut stump treatment with 2,4-D (Fryer 1968). Foliar spraying with glyphosate solution was also unsuccessful (Wye College 1976).

Because of the nature of the weed and its habitat, some treatments are more suited to certain types of infestation than others. Some are also not practical due to the proximity of the infestation to susceptible shelter or hormone-sensitive crops. On this basis treatments selected for investigation into the control of privet were grouped into trials as determined by the suitability of each treatment for a particular site, with the emphasis on finding a non-hormone treatment suitable for use in horticulture.

MATERIALS AND METHODS

Treatments were chosen on the basis of current practice, viz; amitrole/ammonium thiocyanate (Weedazol 4-L), cut stump painting; or because of their success in controlling other scrub weeds. The cut stump treatments were an expansion of Little's (1982) recommendations, including painting with triclopyr/picloram (Garlon 520), and with hexazinone (Velpar-L) as a non-hormone material. Hexazinone soil injections and tebuthiuron pellets (Graslan 20P) were tested with a view to avoiding problems with spray drift and volatilization. Glyphosate (Roundup) was in most cases used in conjunction with X-45 emulsifier to increase its herbicidal activity following the report from Wye College (1976) that when used alone glyphosate did not adequately control privet.

Trials were laid down near Whakatane on 15 December 1982 (Trials 1-3) and 13 April 1983 (Trial 4) using a randomised block design with two or three replications. Plot sizes ranged from 20 to 100 m^2 depending on application method. Treatment details are shown in Tables 1 and 2.

TABLE 1: Privet control by spring applications of various herbicides and treatment methods. Trials 1-3.

Treatment	Concentration ai % w/v	Application method	% Mortality (27.2.84) Trial 1	Trial 2	Trial 3
cut only			0		
2,4-D/picloram	20/5	cut and paint	90		
triclopyr/picloram*	1/0.25	cut and paint	92		
hexazinone	25	cut and paint	0		
hexazinone	25 (4 ml/m)	soil injection	27		
hexazinone	25 (8 ml/m)	soil injection	37		
hexazinone	0.36	foliar		35	
hexaxinone	0.72	foliar		85	33
DPX T6376	0.15	foliar	95		100
tebuthiuron	0.32	foliar	0		23
amitrole T	1.2/0.3	foliar		38	
amitrole T	2.4/0.6	foliar	37	35	38
glyphosate/X-45	0.36/0.5	foliar		87	
glyphosate/X-45	0.72/0.5	foliar	37	100	90
triclopyr/picloram	0.2/0.05	foliar		8	
triclopyr/picloram	0.4/0.1	foliar		30	10
SED**			7	13	11
CV%			24	28	26

* diluted with diesel

** approximate back transformed SED values

Trial 1 was conducted on *L. vulgare* 3-5 m high. This trial tested the cut stump and soil injection treatments as well as some foliar applications. Soil injection involved the use of a modified drench gun (Porter 1979) to apply to the soil, near the stem of the bush, either 4 or 8 ml of undiluted herbicide for every metre of bush height. The cut stump treatments were applied with a paint brush immediately after the bush was cut down ensuring all the stump was covered. Application of the foliar sprays was by means of a hydraulic nozzle knapsack sprayer fitted with an orchard lance and twin hollow cone nozzles, number 4 orifice, at 350 kPa.

Trials 2-4 were conducted on a dense infestation of *L. sinense* which ranged in height from 0.25-2.5 m. All treatments of Trial 2 were applied with a handgun and number 2.8 tip at 700-1400 kPa. With the exception of the tebuthiuron pellets used in Trial 4 all treatments in Trials 3 and 4 were applied with the hydraulic nozzle knapsack sprayer.

TABLE 2: Privet control by autumn application of various herbicides. Trial 4.

Treatment	Concentration ai % w/v	Trial 4 % Damage (30.11.83)	Trial 4 % Mortality (27.2.84)
amitrole T	1.6/0.4	58	12
amitrole T	2.4/0.6	62	15
glyphosate	0.49	30	20
glyphosate	0.72	43	15
glyphosate/X-45	0.49/0.5	53	43
glyphosate/X-45	0.72/0.5	62	50
hexazinone	0.26	5	0
hexazinone	0.4	17	5
DPX T6376	0.075	90	98
DPX T6376	0.15	90	100
tebuthiuron	0.32	30	45
tebuthiuron	0.64	43	50
tebuthiuron*	4 kg/ha	22	12
tebuthiuron*	8 kg/ha	33	27
triclopyr/picloram	0.27/0.07	73	35
triclopyr/picloram	0.4/0.1	90	38
triclopyr/picloram/X-45	0.27/0.07/0.5	82	37
SED**		8	11
CV%		12	42

* pellet formulation; all other treatments were foliar applications

**approximate back transformed SED values

The glyphosate-based treatments were applied by misting a low pressure spray over the tops of the privet wetting the upper surface of the leaves, while all other foliar applicators thoroughly wet the whole plant.

RESULTS AND DISCUSSION

Visual assessments were made several times following treatment to confirm plant death. The final assessments of percentage mortality are given in Tables 1 and 2. From these observations it was obvious that treatments which were effective (90-100% dead), killed the plants within 3 months of application. This category included cut stump painting with either 2,4-D/picloram or triclopyr/picloram, DPX T6376 in spring or autumn and glyphosate/X-45 in spring only. DPX T6376 worked very quickly and very effectively and therefore rates lower than those tested are worth investigating. The failure of glyphosate/X-45 in Trial 1 can be attributed to difficulties in applying the mixture evenly over the larger plants, as death was noted in only the parts of the plants which received the spray. The chemical did not translocate sufficiently into untreated parts.

Of the other treatments only hexazinone applied with a handgun in Trial 2 (Table 1) resulted in more than 50% plant mortality. All the hexazinone applications resulted in 80-100% leaf drop after about 1 month and the plants continued to show phytotoxic symptoms over the assessment period. This resulted in plant death only in the case of the high rate, with the plants in other treatments gradually overcoming the damage.

Amitrole/ammonium thiocyanate had a similar effect on the plants except that brown-off was quicker and complete, and the regrowth was deformed and white as opposed to the normally developed but yellow regrowth after treatment with hexazinone. Triclopyr/picloram also resulted in a rapid and complete brown-off. However, the larger plants (> 0.5 m) quickly regrew with no apparent long term effects. The autumn applications of this herbicide gave more consistent results than the spring application.

As higher than normal rates of all the above chemicals were tested, increasing the rate to achieve better control is not a viable option. For these chemicals to be useful in controlling privet an entirely new strategy would need to be developed.

In spring tebuthiuron (Spike 80 W) had very little effect on privet with only partial leaf drop (15-30%) followed by quick regrowth. The autumn treatments, however, were more effective with the foliar applications giving better control than the pellet formulation. Leaf drop was still incomplete with both of them, and higher rates might be worth investigating in this case.

CONCLUSION

Results of these trials show some viable means for the control of privet and the choice of method would depend on local circumstances. For sparse infestations of large trees or for bushes in shelter belts, fence lines etc, cut stump painting with either 2,4-D/picloram or triclopyr/picloram could be used effectively. With proper care glyphosate/X-45 could be used to control privet in and around horticultural areas and in wasteland. At this stage DPX T6376 appears a possibility only for pastures and wasteland.

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