LUCERNE WEED CONTROL — RESULTS OF TWO NORTHLAND TRIALS

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Summary

Two trials are reported in which late winter applications of chemicals to weedy lucerne stands, are compared with untreated control. Some treatments have increased production from lucerne, but have not necessarily increased the total dry matter. It is suggested that the chemical glyphosate has had an adverse effect on lucerne.

INTRODUCTION

THERE has been little recent work investigating the control of weeds in lucerne in the northern districts of the North Island. From other areas of New Zealand, especially the central North Island and South Island, research has generally shown that chemicals can be used, but that they are an expensive substitute for good management. This paper reports two Northland trials investigating the chemical control of weeds in lucerne. One trial tests a new chemical — glyphosate at 3 rates.

TRIAL DESIGN AND MANAGEMENT

Trial 1 was laid down in July 1970, on lucerne established 10 months earlier on a volcanic soil—Waiotu bouldery loam. At the time of laying down, 10 weed species were recorded, predominantly dicotyledons. Trial 2 was established in August 1972 on lucerne sown 8 months earlier on Red Hill clay loam. Twenty-six weed species were recorded being a mixture of dicotyledons and monocotyledons.

Chemicals were applied in approximately 400 litres/ha of water and treatments were replicated 6 times. Adequate applications of lime, phosphorus and potassium were made before, and again after lucerne establishment.

RESULTS AND DISCUSSION

A few weeks after application, trials were assessed for effect of chemicals (Tables 1 and 2). Carbetamide and pronamide showed little effect at the early stage but they showed a distinct improvement in weed control during the summer. Observations of the damage from chemicals to the lucerne showed paraquat alone, paraquat/simazine and glyphosate produced scorch. Other treatments showed only slight or no effects on the lucerne.

TABLE 1: LUCERNE WEED CONTROL — TRIAL 1
(Chemicals applied 6/7/70)

Treatment	Effect of weedicide marking	Percentage lucerne (remainder weeds)		Dry Matter Production		
		4/8/70 (0-10 scale*)	Cut 13/10/70	Cut 25/11/70	Lucerne	Weeds Total
untreated	0.3 dE	33	39	2470	4330	6800 aA
pronamide 1.7	1.2 dDE	56	88	4450	1650	6100 bcAB
carbetamide 3.4	0.8 dDE	73	90	5390	1250	6640 abAB
paraquat 0.4	6.0 aA	70	70	4130	1770	5900 cAB
pronamide 1.7+ simazine 1.1	2.5 cCD	68	60	3860	2200	6060 bcAB
carbetamide 3.4+ simazine 1.1	4.2 bBC	55	64	3620	2450	6070 bcAB
paraquat 0.4+ simazine 1.1	5.2 abAB	67	41	3010	2800	5810 cB
terbacil 1.1	4.0 bBC	60	67	3910	2170	6080 bcAB
C.V.	33.6%					8.7%

* 0 (least) to 10 (most) effective weed control

TABLE 2: LUCERNE WEED CONTROL—TRIAL 2
(Chemicals applied 11/8/72)

Treatment	Effect of weedicide marking	Percentage lucerne (remainder weeds)		Dry Matter Production Tot. 2 cuts 25/10/72 & 22/2/73		
		19/9/72 (0-10* scale)	Cut 25/10/72	Cut 22/2/73	Lucerne	Weeds Total
untreated	3.8 bB	37	87	2450 dCD	2550 aA	5000aA
paraquat 0.3+ simazine 1.0	5.3 abAB	89	90	3650 abA	350 dCD	4000 cdBC
pronamide 2.0+ simazine 1.0	5.2 abAB	78	91	3850 aA	800 cC	4650 abAB
terbacil 1.0	5.3 abAB	84	93	3900 aA	550 cdCD	4450 bcAB
metribuzin 0.8	5.0 abAB	78	82	3450 abAB	850 cC	4300 bcBC
glyphosate 0.3	5.0 abAB	56	86	2700 cdBC	1450 bB	4150 bcdBC
glyphosate 0.6	6.5 aAB	84	86	3150 bcABC	500 cdCD	3650 dC
glyphosate 1.2	7.3 aA	87	89	1900 eD	200 dD	2100eD
C.V.	35%		15%	35%		11%

* 0 (least) to 10 (most) effective weed control

Lucerne

Mowing results are shown in Tables 1 and 2. In both trials untreated control plots have produced the most dry matter but weeds contributed 50% or more of the total dry matter produced on untreated plots. The proportion of weeds appeared to decline naturally on untreated plots, through the season, under mowing management.

At the 1% level of probability, total dry matter from pronamide, carbetamide, paraquat, pronamide/simazine, carbetamide/simazine and terbacil treatments were not significantly different from untreated control. In both trials paraquat/simazine gave good weed control but produced less dry matter (sig. 1%) than untreated control. In Trial 2 the dry matter production from glyphosate was less than from control. This was more marked at higher rates. The results of this trial would suggest that glyphosate is inferior to other chemicals for weed control in lucerne. Of 3 rates tested, the middle rate (0.6 kg/ha) has produced the greatest quantity of lucerne. At a lower rate weed control is poor and at a higher rate lucerne was apparently adversely affected by the chemical. In terms of lucerne dry matter production there are some differences between trials. Pronamide and carbetamide show a clear advantage over untreated plots in Trial 1. Paraquat/simazine, pronamide/simazine, terbacil and metribuzin show greater lucerne production than control (sig. 1%) in Trial 2.

CONCLUSIONS

1. Chemical control of weeds in lucerne was achieved, but total dry matter production was not increased.
2. Total dry matter from pronamide, carbetamide, paraquat, pronamide/simazine, carbetamide/simazine and terbacil was within 15% of that produced by untreated control plots.
3. Glyphosate was not as suitable for weed control in lucerne as other chemicals tested.

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