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Evaluation of 2,4-D LVE as a setup treatment for low rates of picloram (Tordon 22K) for leafy spurge control

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Introduction

Leafy spurge is considered one of the most serious weeds in Wyoming. It has been reported that it infests 48,618 acres of rangeland and pastures in the State (Hittle 1983).

Picloram (Tordon 22K) is one of the most effective herbicides for controlling leafy spurge, however, the high cost of picloram has limited its use.

This experiment was conducted to evaluate the use of 2,4-D LVE as a setup treatment prior to light rates of picloram.

Picloram was applied at two times; immediately after 2,4-D LVE application, and fourteen days after 2,4-D LVE application for leafy spurge shoot and root control.

The experiment was established in the fall of 1984 at the University of Wyoming greenhouses at Laramie. Leafy spurge plants were established from root cuttings and then transplanted to 15 by 18 cm metal pots. Each of the thirteen treatments was replicated ten times in a randomized complete block design. The light duration in the greenhouse was sixteen hours, the average temperature was 22°C, and the pots were watered daily.

Data collected included visual estimation of injury (1 = healthy and 5 complete kill), shoot length (cm), root length, fresh weight of shoot and root (g), and dry weight of shoot and root. The dry weight was obtained by oven drying shoots and roots at 80°C for forty-eight hours.

This research indicated that 2,4-D LVE at 0.0625 and 0.125 lb a.i./A did not injure leafy spurge. Picloram at 0.125 lb a.i./A resulted in severe plant injury and at 0.25 lb a.i./A resulted in total control. Combination treatments tended to be less effective than picloram alone (Table 1).

Literature cited

1. Hittle, G.F. 1983. Wyoming's leafy spurge program 1978-1982. 95pp.

Table 1. Plant growth responses to the selected herbicide treatments.¹

No.	Treatment (lb a.i./A)	Injury index ²	Shoot length (cm)	Root length (cm)	Fresh shoot wt. (g)	Dry shoot wt. (g)	Fresh root wt. (g)	Dry root wt. (g)
1.	.0625 2,4-D LVE (D ₁)	1	70.5	66.0	10.2	3.2	25.7	11.9
2.	.1250 2,4-D LVE (D ₂)	1	52.1	62.7	17.0	5.0	29.0	9.3
3.	.1250 Picloram (P ₁)	4	17.2	31.2	.6	.3	2.9	.8
4.	.2500 Picloram (P ₂)	5	25.1	19.7	.5	.3	1.2	.3
5.	D ₁ + P ₁ (0 day)	3.8	34.9	72.6	8.6	2.7	13.6	3.4
6.	D ₁ + P ₁ (14 day)	4.1	32.0	70.1	4.5	1.4	19.7	3.9
7.	D ₁ + P ₂ (0 day)	4.5	32.0	56.4	2.5	.8	19.0	4.0
8.	D ₁ + P ₂ (14 day)	4.6	27.3	61.5	1.7	.8	21.0	4.6
9.	D ₂ + P ₁ (0 day)	4	38.1	68.6	3.4	1.0	17.1	3.2
10.	D ₂ + P ₁ (14 day)	4.4	29.9	62.0	4.2	1.5	19.4	3.7
11.	D ₂ + P ₂ (0 day)	4.4	28.2	84.3	3.1	1.2	22.8	4.5
12.	D ₂ + P ₂ (14 day)	4.8	27.9	68.1	2.1	1.0	18.0	5.6
13.	Check	1	44.3	81.8	10.2	2.8	36.0	10.8
	LSD (0.05)	0.52	10.45	17.95	3.45	0.96	8.70	3.09
	C.V. %	16.66	33.70	33.06	74.65	65.00	53.02	69.26

¹Each value is an average of ten replications.

²1 = healthy, 5 = dead.