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Leafy spurge control with alternating applications of imazapic and picloram plus 2,4-D

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Imazapic is an ALS inhibiting herbicide recently labeled for leafy spurge control in non-cropland. Research at North Dakota State University has shown that occasionally imazapic will injure certain grass species. The purpose of this research was to evaluate imazapic applied alone, in rotation with picloram plus 2,4-D, or the three herbicides applied together for long-term leafy spurge control.

The experiment was established at Jamestown and Valley City, North Dakota in a dense stand of leafy spurge. Initial herbicide treatments were applied in early June during the true-flower growth stage or in mid-September when leafy spurge was in the fall regrowth growth stage. Initial treatments of imazapic were followed by picloram plus 2,4-D. Likewise, initial treatments of picloram plus 2,4-D were followed by imazapic. Imazapic was applied at 1 or 2 oz/A in the spring or fall, respectively. Picloram plus 2,4-D was applied at the general use rate of 4 + 16 oz/A in the spring or 8 + 16 oz/A in the fall. The three-way mixture of picloram plus 2,4-D plus imazapic was applied once in the spring or fall with no follow-up treatment.

Treatments were applied with a hand-held sprayer delivering 8.5 gpa at 35 psi. The experiment was a randomized complete block design with four replications at both locations and plots were 10 by 30 feet. Control was based on percent stand reduction as compared to the untreated check.

The three herbicide mixture of picloram plus 2,4-D plus imazapic applied once in the spring provided the best long-term leafy spurge control (Table). Control averaged across locations was 98% in September 1999, 15 months after treatment. This high level of control was unexpected and is similar to picloram applied alone at 32 oz/A. The same three-herbicide treatment applied in the fall only averaged 61% control 12 months after treatment. The best split treatments were picloram plus 2,4-D applied in the spring followed by imazapic in the fall and imazapic fall-applied followed by picloram plus 2,4-D in the spring.

Table. Leafy spurge control with imazapic combined or alternated with picloram and 2,4-D applied in the spring or fall at two locations.

Treatment	Rate	Treatment	Rate	August 1998			June 1999			Sept 1999		
				JMS[a]	VC[a]	Mean	JMS[a]	VC[a]	Mean	JMS[a]	VC[a]	Mean
	—— oz/A ——		— oz/A —	% control								
Spring 1998		**Fall 1998**										
Picloram+2,4-D	4+16	Imazapic+Scoil+28%N	2+1qt+1qt	85	88	86	99	99	99	70	95	82
Imazapic+Scoil+28% N	1+1qt+1qt	Picloram+2,4-D	8+16	28	58	43	99	99	99	53	82	67
Picloram+2,4D+imazapic + Scoil+28%N	4+16+1+1qt+1qt	None		99	95	97	95	99	99	97	99	98
LSD (0.05)				11	16	7[b]						
Fall 1998		**Spring 1999**										
Picloram+2, 4-D	8+16	Imazapic+Scoil+28%N	1+1qt+1qt				98	94	96	82	91	87
Imazapic+Scoil+28%N	2+1qt+1qt	Picloram+2,4-D	9+16				99	99	99	96	98	97
Picloram+2,4-D + imazapic +Scoil+28% N	8+16+2 + 1qt+1qt	None					99	99	99	59	64	61
LSD (0.05)							NS	2	NS	11	16	9[c]

[a]JMS = Jamestown, VC = Valley City

[b]Significant interaction between locations. Control with imazapic at Valley City was higher than at Jamestown.

[c]Control at Valley City is higher than at Jamestown.