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## **Leafy spurge control with quinclorac applied with various additives<sup>1</sup>**

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Quinclorac is an auxin type herbicide with moderate soil residual. Previous greenhouse research at North Dakota State University has shown quinclorac will injure leafy spurge and may be more effective when applied with a seed oil additive rather than alone. The purpose of this research was to evaluate quinclorac applied alone and in combination with picloram or various spray additives at several leafy spurge growth stages.

The first experiment was established in June and July 1989 near Hunter, ND, when leafy spurge was in the true flower and late seed-set growth stages, respectively. The herbicides were applied using a tractor-mounted sprayer delivering 8.5 gpa at 35 psi. The plots were 10 by 25 feet in a randomized complete block design with four replications. Evaluations were based on a visual estimate of percent stand reduction as compared to the control. Quinclorac was applied with soybean oil plus Atplus 300F emulsifier rather than the recommended oil additive BAS-090 because that additive caused rapid injury to leafy spurge leaves in greenhouse trials. However, in subsequent field research, BAS-090 alone did not injure leafy spurge severely and was included in the second experiment. The second experiment was established near West Fargo on September 14, 1990, when leafy spurge was in the fall regrowth stage, 20 to 30 inches tall with 2 to 3 inch new fall growth. The experimental design was as previously described except the plots were 10 by 30 feet.

Quinclorac provided an average of 50% and 35% leafy spurge control in August when applied in June and July, respectively (Table 1). Adding soybean oil plus Atplus 300F or Silwett L-77 generally did not improve control compared to quinclorac applied alone. Picloram plus 2,4-D and picloram plus quinclorac when applied in June or July provided similar leafy spurge control.

Quinclorac provided much better leafy spurge control when applied in September compared to June or July (Tables 1 and 2). Quinclorac at 1 lb/A plus BAS-090 provided better leafy spurge control than quinclorac applied alone or with the seed-oil-based additive Scoil (Table 2). Control with quinclorac plus BAS-090 was similar to picloram plus 2,4-D at 0.5 plus 1 lb/A, the most commonly used fall-applied treatment. Quinclorac applied with Picloram or picloram plus BAS-090 provided similar control to picloram plus 2,4-D and quinclorac plus BAS-090. Scoil applied with picloram did not improve leafy

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spurge control compared to picloram alone and reduced control when applied with picloram plus 2,4-D. Leafy spurge control declined rapidly after the July 1991 evaluation and all treatments were reapplied in September 1991.

Quinclorac plus BAS-090 fall-applied provided good leafy spurge control and May be an alternative to picloram plus 2,4-D. There was no grass injury with any treatment.

**Table 1. Quinclorac alone, with various additives, or with picloram for leafy spurge control (Lym).**

Application date and treatment	Rate  lb/A	Evaluation date		
		Aug. 89	June 90	Aug 90
		% control		
June 1989				
Quinclorac + soybean oil + Atplus 300F	0.5 + 1 qt + 1%	60	4	0
Quinclorac + soybean oil + Atplus 300F	1 + 1 qt + 1%	26	1	1
Quinclorac + Silwett L-77	1 + 0.25%	55	38	16
Quinclorac	1	55	41	31
Picloram + quinclorac	0.25 + 0.5	72	26	10
Picloram + 2,4-D	0.25 + 0.5	80	14	4
July 1989				
Quinclorac + soybean oil + Atplus 300F	0.5 + 1 qt + 1%	34	3	0
Quinclorac + soybean oil + Atplus 300F	1 + 1 qt + 1%	53	6	1
Quinclorac + Silwett L-77	1 + 0.25%	28	22	2
Quinclorac	1	28	17	3
Picloram + quinclorac	0.25 + 0.5	66	9	0
Picloram + 2,4-D	0.25 + 0.5	80	0	0
LSD (0.05)		24	NS	17

**Table 2. Quinclorac and picloram with various additives applied in September 1990 for leafy spurge control (Lym).**

Treatment	Rate  lb/A	Evaluation date	
		June 91	July 91
		% control	
Quinclorac + BAS-090	1 + 1 qt	90	63
Quinclorac + Scoil	1 + 1 qt	74	56
Quinclorac,	1	49	26
Quinclorac + picloram	1 + 0.5	85	64
Quinclorac + picloram + BAS-090	1 + 0.5 + 1 qt	91	77
Picloram + 2,4-D	0.5 + 1	81	67
Picloram + 2,4-D + Scoil	0.5 + 1 + 1 qt	43	22
Picloram + 2,4-D + BAS-090	0.5 + 1 + 1 qt	57	19
Picloram + Scoil	0.5 + 1 qt	71	34
Picloram	0.5	60	12
LSD (0.05)		28	36