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Granular picloram and dicamba for leafy spurge control¹

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Granular and liquid formulations of picloram and dicamba were compared for leafy spurge control in six experiments established in 1980 on 25 June and 3 September near Valley City, 2 July near Tolna, 10 July near Minot, 15 July near Dickinson and on 25 August 1981 near Dickinson. An experiment to compare liquid and granular picloram in a sandy soil was established on 11 June 1980 in the Sheyenne National Grasslands near McLeod, ND. All experiments were in a randomized complete block design with four replications and 10 by 30 feet plots. The granules were applied uniformly by hand, while the liquid formulations were applied with a tractor mounted sprayer at 8.5 gpa. Evaluations were based on percent stand reduction compared to the control. The ANOVA test revealed that there was a significant interaction between site and treatments. Therefore, experimental sites will be discussed individually.

Leafy spurge control with picloram and dicamba at Valley City generally was higher from fall than spring applied treatments, especially when evaluated 24 months after treatment (Table 1). Picloram 2%G at 1.5 and 2.0 lb/A fall applied provided 96 and 100% leafy spurge control after two years compared to 87 and 90%, respectively, when spring applied. The spring applied treatments dropped in control dramatically to 22 and 53% respectively after 27 months. Picloram 2S at 2.0 lb/A provided 98 and 100% leafy spurge control after two seasons when spring and fall applied, respectively. Dicamba 4S and 5%G at 8.0 lb/A provided 28 and 45% control when spring applied and 97 and 83% control when fall applied, respectively. Fall applied dicamba 4S and 5%G at 8 lb/A and picloram at 2 lb/A provided similar control after one year but the control with granular dicamba dropped to 83% by the second year. The spring 1980 applied dicamba did not give satisfactory leafy spurge control in 1982.

Leafy spurge control at Valley City generally was better than at other sites. At Tolna, picloram 2S at 2 lb/A and 2%G at 1.5 and 2.0 lb/A provided 93, 83 and 90% leafy spurge control, respectively, when evaluated 25 months after treatment (Table 1). Dicamba 4S and 5%G at 8 lb/A provided 61 and 66% leafy spurge control, respectively, after 25 months. At Minot, no treatment provided satisfactory leafy spurge control after two years with picloram 2S at 2 lb/A providing the best control at 53%. At Dickinson in the 1980 experiment only picloram 2S at 2 lb/A provided satisfactory control at 90%, but the same treatment applied in 1981 had 30% control after only one year which is much lower than

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normally occurs. Picloram 2%G at 2 lb/A applied in 1980 and 1981 provided 74 and 91% control after one year, respectively. Dicamba did not give satisfactory control at one year in either experiment.

Picloram 2S and 2%G at equal rates provided similar leafy spurge control over a 26 month period when evaluated on the sandy soil of the Sheyenne National Grasslands (Table 2). Picloram 2S and 2%G provided 88 and 89% control in August 1982 respectively, but the other treatments did not maintain satisfactory control.

Granular and liquid formulations of dicamba or picloram generally provided similar leafy spurge control at comparable rates. Picloram at 2 lb/A was the only treatment that consistently provided long term control. In general leafy spurge control decreased more rapidly in the drier areas of western North Dakota than at the eastern sites. Once leafy spurge control decreased to 70 to 80% control declined rapidly thereafter at all sites.

Table 1. Granular picloram and dicamba for leafy spurge control at various locations in North Dakota. (Lym and Messersmith).

Herbicide	Rate (lb/A)	Location/evaluation date																		
		Valley City								Tolna				Minot			Dickinson ^a			
		Spring treatment				Fall treatment				6-81	9-81	7-82	6-81	9-81	6-82	8-81	6-82	6-82	9-82	
Picloram 2%G	1.0	97	80	53	25	95	86	84	55	79	60	66	72	28	13	56	31	76	25	
Picloram 2%G	1.5	98	89	87	22	99	100	100	96	88	90	83	85	30	15	74	65	95	45	
Picloram 2%G	2.0	99	98	90	53	100	100	99	100	98	100	90	96	81	40	74	73	97	91	
Dicamba 5%G	4.0	74	55	9	3	94	74	43	31	31	5	17	19	0	0	4	3	58	20	
Dicamba 5%G	6.0	82	54	25	3	96	99	89	58	44	10	37	56	20	5	30	10	66	30	
Dicamba 5%G	8.0	91	75	45	19	99	100	98	83	70	57	43	66	27	13	39	20	94	51	
Picloram 2S	2.0	100	99	98	90	100	100	100	100	100	95	93	98	85	53	91	90	95	30	
Dicamba 4S	8.0	94	74	28	12	99	99	100	97	88	89	70	61	5	4	42	25	84	19	
LSD (0.05)		9	14	21	17	3	10	22	29	18	15	40	20	30	15	26	19	21	22	

^aTwo separate experiments begun at Dickinson in August of 1980 and 1981 respectively.

Table 2. Leafy spurge control using picloram liquid and granules in a sandy soil in the Sheyenne National Grasslands. (Lym and Messersmith).

Herbicide formulation	Rate (lb/A)	Control			
		May 1981	August 1981	June 1982	August 1982
Picloram 2S	0.5	73	13	3	1
Picloram 2S	1.0	98	73	24	25
Picloram 2S	2.0	100	99	94	88
Picloram 2%G	0.5	53	5	0	0
Picloram 2%G	1.0	97	72	23	14
Picloram 2%G	2.0	100	98	90	89
LSD (0.05)	---	25	12	14	12