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Plant growth regulators and herbicides for leafy spurge control¹

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Four experiments were established near Sheldon, ND to evaluate two Plant Growth Regulators (PGR's) as a pretreatment to herbicides for leafy spurge control. The PGR's were mefluidide and a cytokinin hormone concentrate (Cytex™ by Atlantic and Pacific Research, N. Palm Beach, FL). The PGR's were applied three days prior to the herbicide application. The herbicides were applied at less than normal use rates to observe any increase in leafy spurge control resulting from a PGR pretreatment. Two experiments were established for each PGR, the first on 17 July and the second on 1 September 1981. The plots were 10 by 30 feet, and treatments were replicated four times in a randomized complete block design. The treatments were applied in 8.5 gpa at 35 psi. Evaluations were based on percent stand reduction as compared to the control on 3 June and 13 August 1982.

Treatment	Rate (lb/A)	Control			
		Summer 1981 ^a		Fall 1981 ^b	
		June	Aug.	June	Aug.
Mefluidide pretreatment	(lb/A)	(%)			
Acifluorfen	1.0	2	0	20	17
2,4-D	1.0	7	3	15	5
Dicamba	1.0	7	1	14	2
Picloram	0.375	23	6	22	5
Acifluorfen+mefluidide	1.0+0.25	0	0	2	0
2,4-D+mefluidide	1.0+0.25	6	1	4	2
Dicamba+mefluidide	1.0+0.25	7	1	12	6
Picloram+mefluidide	0.375+0.25	13	8	23	2
Mefluidide	0.25	0	0	5	2
LSD (0.05)		4	5	20	16

¹ Cooperative investigation of Agronomy and ARS, U.S. Department of Agriculture. Published with the approval of the Agriculture Experiment Station, North Dakota State University, Fargo, ND.

Treatment	Rate	Control			
		Summer 1981 ^a		Fall 1981 ^b	
		June	Aug.	June	Aug.
<u>Cytokinin pretreatment</u>		(%)			
Acifluorfen	1.0	2	0	0	0
2,4-D	1.0	4	0	2	0
Dicamba	1.0	5	3	9	0
Picloram	0.375	25	8	66	4
Acifluorfen+cytokinin	1.0+0.25	2	0	2	0
2,4-D+cytokinin	1.0+0.05	3	0	0	0
Dicamba+cytokinin	1.0+0.25	9	6	5	0
Picloram+cytokinin	0.375+0.25	61	9	42	6
Cytokinin	0.25	0	0	5	2
LSD (0.05)		4	5	11	6

^aPGR's applied 17 July 1981 and herbicide 20 July 1981.

^bPGR's applied 1 September 1982 and herbicide 4 September 1981.

Herbicide application caused the most rapid top growth control in plants receiving a cytokinin pretreatment. The rapid top growth control was not observed in plants receiving a mefluidide pretreatment. Pretreatment with either PGR did not result in increased leafy spurge control in 1982 compared to herbicides used alone (Table).