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Sulfometuron - A sulfonyleurea herbicide phytotoxic to leafy spurge

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Abstract:

Sulfometuron {2-[[[(4,6-dimethyl-2-pyrimidinyl)amino]sulfonyl]-benzoic acid} is among a group of sulfonyleurea herbicides currently being marketed for industrial weed control. These herbicides are analogs of chlorsulfuron (2-chloro-N-[[4-methoxy-6-methyl-1,3,5-triazin-2-yl]amino] carbonyl]benzenesulfonamide) but they have less soil residual and different weed control spectrums than chlorsulfuron. Sulfometuron is the only sulfonyleurea herbicide that has shown herbicidal activity on leafy spurge (*Euphorbia esula* L.), at least within the range of economic application rates. Leafy spurge growth stopped following application of sulfometuron at 0.5 to 2.0 oz ai/A, but leaves and stems remained green. However, sulfometuron directly affected root bud growth. Root buds were either inhibited completely or only a few grew but were white and short compared to numerous pink elongated buds on untreated plants. Sulfometuron at 0.5 to 1 oz/A plus an auxin herbicide provided better leafy spurge control than sulfometuron alone and long-term control was better when sulfometuron was mixed with picloram (4-amino-3,5,6 trichloro-2-pyridinecarboxylic acid) than with 2,4-D (2,4-dichlorophenoxy)acetic acid) or dicamba (3,6-dichloro-2-methoxybenzoic acid) (Table). Leafy spurge control with sulfometuron tended to be better as a spring compared to a fall application whether applied alone or with an auxin herbicide. Sulfometuron inhibits growth of many grass species, but application after the major growth period of most grass species may allow its use on pasture and rangeland. Also, enhanced grass growth after eliminating leafy spurge competition may compensate for the direct suppression of forage production by chlorsulfuron. The optimum herbicide application rates and date and the effectiveness of various retreatments and combination treatments with auxin herbicides still must be determined.

Table.

Treatment	Rate (oz/A)	Application and evaluation dates				
		June 27, 1985			September 4, 1985	
		August 21, 1985	May 29, 1986	August 18, 1986	May 29, 1986	August 18, 1986
		(% control)				
Sulfometuron	0.5	---	---	---	16	0
Sulfometuron	1	0	6	0	95	7
Sulfometuron	1.5	0	63	25	---	---
Sulfometuron	2	0	36	6	---	---
Sulfometuron+2,4-D	1+16	95	76	26	99	17
Sulfometuron+dicamba	1+32	96	85	40	97	23
Sulfometuron+picloram	1+8	70	96	59	99	74
Sulfometuron+2,4-D	0.5+16	---	---	---	95	24
Sulfometuron+dicamba	0.5+32	---	---	---	97	51
Sulfometuron+picloram	0.5+8	---	---	---	99	40
Sulfometuron+metsulfuron	2+0.5	0	60	24	88	13
DPX-L5300	1	---	---	---	44	6
LSD (0.05)		25	22	26	26	30