Star-of-Bethlehem Control with Protox Inhibiting Herbicides

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Introduction

This study was conducted on a mature stand of tall fescue (*Schedonorus phoenix* (Scop.) Holub) infested with Star-of-Bethlehem (*Ornithogalum umbellatum* L.) at the East Tennessee Research and Education Center (Knoxville, TN). The objective of this project was to evaluate the efficacy of mesotrione and sulfentrazone alone and sulfentrazone in pre-packaged mixtures with 2,4-D plus dicamba plus quinclorac, or 2,4-D plus dicamba plus MCPP, for control of Star-of-Bethlehem in cool-season turf. All treatments were compared to current commercial standards of carfentrazone and bromoxynil.

Methods and Materials

The test site was maintained similar to that of a golf course rough with respect to irrigation, fertilization and mowing. This study was arranged in a randomized complete block design with three replications. Herbicide treatments were applied on 7 April 2008 and 10 March 2009 to plots (10' x 5') maintained at a 10-cm height of cut. Applications were delivered using a CO_2 powered boom sprayer calibrated to deliver 30 gpa using four, flat-fan, 8002 nozzles at 18 psi, configured to provide a 5-ft spray swath.

Star-of-Bethlehem control and tall fescue injury were rated visually utilizing a 0 (no weed control or turf injury) to 100 % (complete control of all weeds or turf) scale at 1, 2, 3, and 4 weeks after treatment (WAT).

Results and Discussion

At 4 WAT, applications of sulfentrazone at 0.28 and 0.42 kg/ha provided > 95% control of Star-of-Bethlehem in both 2008 and 2009. While an application of carfentrazone-ethyl at 0.03 kg/ha provided > 93% control at 2 WAT in both years, control at 4 WAT was reduced to 58 and 73 % in 2008 and 2009, respectively. Star-of-Bethlehem control following applications of commercial pre-packaged mixtures containing sulfentrazone was not significantly different from applications of sulfentrazone alone, at either rate, by 4 WAT in 2009. Applications of BAS800 alone and in combination with BAS 790 UD provided greater than 95 % control at 4 WAT in 2009.

At no time in this study was tall fescue injury observed (data not shown)

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Table 1. Percent visual control of Star-of-Bethlehem (*Ornithogalum umbellatum* L.) by 1, 2, 3, and 4 WAT for treatments applied in 2008 and 2009.

		Star-of-Bethlehem control							
		2008				2009			
Herbicide Treatment	Rate	1WAT[a]	2WAT	3WAT	4WAT	1WAT	2WAT	3WAT	4WAT
	-kg/ha-	%							
BROMOXYNIL	0.56	48	93	43	72	0	20	33	17
MESOTRIONE	0.28	7	52	48	50	0	33	47	43
NIS	0.25 %v/v								
SULFENTRAZONE	0.28	83	97	93	100	40	87	100	97
SULFENTRAZONE	0.42	83	100	95	95	53	92	100	100
CARFENTRAZONE	0.03	82	97	27	58	60	93	90	73
SULFENTRAZONE	0.07	40	82	68	67	33	90	98	93
QUINCLORAC	0.56								
2,4-D	0.99								
DICAMBA	0.11								
SULFENTRAZONE	0.07	23	77	53	70	33	85	99	87
2,4-D	1.57								
MCPP	0.56								
DICAMBA	0.25								
BAS 800	0.05	N/A	N/A	N/A	N/A	68	96	100	97
MSO	1.75								
BAS 800	0.05	N/A	N/A	N/A	N/A	67	95	99	100
BAS790 UD	1.38								
MSO	1.75								
UNTREATED CHECK[b]		0	0	0	0	0	0	0	0
LSD(0.05)		9	21	40	32	22	11	6	11

[a] Abbreviations: WAT = weeks after initial treatment; N/A= not applied

[b]The untreated check was not included in the statistical analysis

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