

Star-of-Bethlehem Control with Mixtures of Mesotrione and Topramezone with Photosystem II inhibiting herbicides

Dr. J.T. Brosnan¹ and G.K. Breeden

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 topramezone applied alone, and in mixtures with bromoxynil and bentazon, for control of Star-of-Bethlehem in cool-season turf.

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 10 March 2009 to plots (10' x 5') maintained at a 10-cm height of cut. Applications were delivered using a CO₂ 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

Star-of-Bethlehem control at 2, 3, and 4 weeks after treatment (WAT) with topramezone at 0.036 kg/ha was increased by 77, 50, and 46%, respectively, by the addition of bromoxynil at 0.56 kg/ha. Control following treatment with mesotrione at 0.28 kg/ha was increased by 77, 30, and 32% at 2, 3, and 4 WAT by the addition of bromoxynil at 0.56 kg/ha as well. Star-of-Bethlehem control following treatment with mesotrione at 0.28 kg/ha was increased by 20% with the addition of bentazon at 0.56 kg/ha at 2WAT; however, this response was not observed for mixtures of topramezone at 0.036 kg/ha plus bentazon at 0.56 kg/ha (Table 1).

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

¹Assistant Professor and Extension Assistant, Dept. of Plant Sciences, University of Tennessee-Knoxville

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

Treatment	Rate kg/ha	Star-of-Bethlehem control			
		1WAT ^a	2WAT	3WAT	4WAT
		-----%			
TOPRAMEZONE	0.036	2	5	43	47
AGRIDEX	1% v/v				
MESOTRIONE	0.28	0	5	63	61
ACTIVATOR-90	0.25 % v/v				
BENTAZON	0.56	2	9	32	32
AGRIDEX	1% v/v				
BROMOXYNIL	0.56	12	78	78	74
AGRIDEX	1% v/v				
TOPRAMEZONE	0.036	2	12	58	63
BENTAZON	0.56				
AGRIDEX	1% v/v				
TOPRAMEZONE	0.036	18	82	93	93
BROMOXYNIL	0.56				
AGRIDEX	1% v/v				
MESOTRIONE	0.28	3	28	73	82
BENTAZON	0.56				
NIS	0.25 % v/v				
MESOTRIONE	0.28	15	82	93	93
BROMOXYNIL	0.56				
NIS	0.25 % v/v				
UNTREATED CHECK ^b		0	0	0	0
LSD (0.05)		6	14	17	19

^a Abbreviations: WAT = weeks after initial treatment

^b Untreated check not included in statistical analysis