

Post Emergence Control of Ground Ivy and Phytotoxicity Evaluations

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Introduction

Broadleaf weed control and phytotoxicity evaluations were conducted on a stand of mature 'SR 4200' perennial ryegrass (*Lolium perenne* L.) at the Valentine Turfgrass Research Center, Penn State University, University Park, Pa. The objectives of the study were to determine the efficacy of selected broadleaf weed herbicides for the control of ground ivy (*Glechoma hederacea*) in perennial ryegrass and the phytotoxicity of these compounds on perennial ryegrass.

Methods and Materials

All plots were rated for the percent ground ivy prior to the application of any treatment on a plot by plot basis. The test plots were 21 ft² and had approximately 70 percent ground ivy cover. The ground ivy population had been plugged into the area using a typical golf course cup cutter for four years prior to the 2005 growing season. During the study, the ground ivy population was no longer increased by way of plugging. Any population increase was a result of the ground ivy population's growth habit during the study.

The study was a randomized complete block design with three replications. All of the treatments were applied on June 20, 2005 using a three foot CO₂ powered boom sprayer calibrated to deliver 40 gpa using two, flat fan, 11004 nozzles at 40 psi.

The test site was mowed at two inches weekly with a rotary mower with clippings returned to the site. The test site was irrigated to prevent moisture stress.

Results and Discussion

Phytotoxicity was evaluated six times during the study (Table 1). There was no phytotoxicity found on the perennial ryegrass on any of the rating dates.

The percent control was evaluated once on August 8, 2005 during the first growing season (Table 2). On this date all treated turfgrass had significantly less ground ivy than untreated. It should be noted that there was an increase in the untreated ground ivy population. Additionally, although not significant, when MacroSorb Foliar was part of the treatment regime there was a trend of increased control of ground ivy with the respective herbicides.

During the second growing season the percent control of ground ivy was rated on August 24, 2006 (Table 2). After approximately fourteen months post application of materials, no control of ground ivy was found. All treated and non treated turfgrass had an increase in the ground ivy populations. It appears that a single application of these materials only provide a single growing season of the population reduction of ground ivy.

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Table 1. Evaluations of perennial ryegrass phytotoxicity in 2005 where 0 = worst, 7 = acceptable and 10 = no phytotoxicity.

Treatment	Form	Rate lb ai/A	Phytotoxicity					
			6-28	7-5	7-12	7-19	7-26	8-2
DRIVE	75DF	0.75	10.0	10.0	10.0	10.0	10.0	10.0
2,4,D AMINE	3.87L	1						
MSO	L	1 % V/V						
DRIVE	75DF	0.75	10.0	10.0	10.0	10.0	10.0	10.0
2,4,D AMINE	3.87L	1						
MSO	L	1 % V/V						
MACROSORB FOLIAR	L	2 FL OZ/M						
CHECK			10.0	10.0	10.0	10.0	10.0	10.0
DRIVE	75DF	0.75	10.0	10.0	10.0	10.0	10.0	10.0
2,4,D AMINE	3.87L	1						
MACROSORB FOLIAR	L	2 FL OZ/M						
CONFRONT	3SL	32 FL OZ/A	10.0	10.0	10.0	10.0	10.0	10.0
CONFRONT	3SL	32 FL OZ/A	10.0	10.0	10.0	10.0	10.0	10.0
MACROSORB FOLIAR	L	2 FL OZ/M						

Table 2. Percent control of the ground ivy population following applications of selected herbicides.

Treatment	Form	Rate lb ai/A	% Control ^{1,2}	
			August 25, 2005	August 24, 2006
DRIVE	75DF	0.75	84.27a	-27.7a
2,4,D AMINE	3.87L	1		
MSO	L	1 % V/V		
DRIVE	75DF	0.75	89.66a	-17.6a
2,4,D AMINE	3.87L	1		
MSO	L	1 % V/V		
MACROSORB FOLIAR	L	2 FL OZ/M		
CHECK			-22.72b	-30.7a
DRIVE	75DF	0.75	98.27a	-27.1a
2,4,D AMINE	3.87L	1		
MACROSORB FOLIAR	L	2 FL OZ/M		
CONFRONT	3SL	32 FL OZ/A	84.76a	-24.2a
CONFRONT	3SL	32 FL OZ/A	87.30a	-43.7a
MACROSORB FOLIAR	L	2 FL OZ/M		

1 - Means followed by same letter do not significantly differ (P=0.05, Duncan's New MRT)

2 - Negative numbers indicate an increase in ground ivy population and positive numbers a decrease in population.