

Post Emergence Control of Broadleaf Weeds 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 dandelion (*Taraxacum officinale*), white clover (*Trifolium repens*), and buckhorn plantain (*Plantago lanceolata*) in perennial ryegrass and the phytotoxicity of these compounds on perennial ryegrass.

Methods and Materials

All plots were rated for the percent dandelion, white clover, and buckhorn plantain, prior to the application of any treatment, on a plot by plot basis. The test plots were 21 ft² and had approximately 80 percent broadleaf weed cover.

The study was a randomized complete block design with three replications. All of the treatments were applied on May 23, 2006 using a three foot CO₂ powered boom sprayer calibrated to deliver 40 gpa using one, flat fan, 11004E nozzle at 40 psi.

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

Results and Discussion

Turfgrass phytotoxicity was rated four times during the study (Table 1). No phytotoxicity was found during the study.

The percent control of dandelion, white clover and buckhorn plantain was rated three times during the study (Table 2). Weed control was somewhat variable during the rating period. On the final rating date, July 18, 2006, turfgrass treated with Spotlight at 2 pt/A had significantly less control of dandelion compared to turfgrass treated with Escalade 2 or Confront. Turfgrass treated with Spotlight alone had significantly more control of white clover than that treated with Spotlight at 1 pt /A plus 2,4-D Amine at 2 pt/A. Finally, turfgrass treated with Spotlight alone had significantly less control of buckhorn plantain than all other treated turfgrass except that treated with Spotlight at 1 pt /A plus 2,4-D Amine at 2 pt/A.

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Table 1. Evaluations of turfgrass phytotoxicity in 2006 where 0 = worst, 7 = acceptable and 10 = no phytotoxicity.

Treatment	Form	Rate PT/A	-----Phytotoxicity-----			
			6/1	6/7	6/20	7/18
SPOTLIGHT	1.5EC	1	10.0	10.0	10.0	10.0
2,4-D AMINE	3.8EC	2				
SPOTLIGHT	1.5EC	2	10.0	10.0	10.0	10.0
2,4-D AMINE	3.8EC	1				
CHECK			10.0	10.0	10.0	10.0
SPOTLIGHT	1.5EC	2	10.0	10.0	10.0	10.0
ESCALADE 2	4EC	3	10.0	10.0	10.0	10.0
CONFRONT	3SL	2	10.0	10.0	10.0	10.0
SURGE	EC	3.5	10.0	10.0	10.0	10.0

Table 2. Percent control of the dandelion, white clover, and buckhorn plantain populations following applications of selected herbicides.

Treatment	Form	Rate PT/A	-----June 7, 2006 ¹ -----			-----June 20, 2005 -----		
			Dand	Clover	Plant	Dand	Clover	Plant
SPOTLIGHT	1.5EC	1	92.2a	97.2a	90.0a	97.8a	96.1ab	99.2a
2,4-D AMINE	3.8EC	2						
SPOTLIGHT	1.5EC	2	97.2a	97.5a	100.0a	100.0a	99.2ab	100.0a
2,4-D AMINE	3.8EC	1						
CHECK			0.0b	0.0b	0.0b	0.0b	0.0c	0.0b
SPOTLIGHT	1.5EC	2	90.0a	99.2a	86.7a	90.0a	96.9ab	96.7a
ESCALADE 2	4EC	3	96.1a	96.4a	93.3a	100.0a	97.2ab	100.0a
CONFRONT	3SL	2	87.8a	98.1a	93.3a	100.0a	100.0a	100.0a
SURGE	EC	3.5	96.1a	96.1a	86.7a	100.0a	89.4b	93.3a

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

Table 2 (continued). Percent control of the dandelion, white clover, and buckhorn plantain populations following applications of selected herbicides.

Treatment	Form	Rate PT/A	-----July 18, 2006 ¹ -----		
			Dand	Clover	Plant
SPOTLIGHT	1.5EC	1	92.2abc	89.5b	89.7b
2,4-D AMINE	3.8EC	2			
SPOTLIGHT	1.5EC	2	98.3ab	99.2a	100.0a
2,4-D AMINE	3.8EC	1			
CHECK			0.0d	0.0c	0.0c
SPOTLIGHT	1.5EC	2	81.7c	100.0a	83.3b
ESCALADE 2	4EC	3	95.6ab	97.2ab	100.0a
CONFRONT	3SL	2	100.0a	100.0a	100.0a
SURGE	EC	3.5	86.1bc	91.7ab	100.0a

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