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 ft^2 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 22, 2006 using a three foot CO_2 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 seven times during the study (Table 1). No turfgrass phytotoxicity was found during the study.

The percent control of dandelion, white clover and buckhorn plantain was rated seven times during the study (Table 2). The population change was somewhat variable during the rating period. On the final rating date, July 18, 2006, turfgrass treated with V-10142 at 0.5 lb ai/A plus Resource or NIS did not significantly reduce the dandelion or the white clover populations with respect to non treated turfgrass. On this date, turfgrass treated with V-10142 at 0.5 lb ai/A plus Resource or NIS and Turflon alone did not significantly reduced the population of buckhorn plantain compared to non treated turfgrass.

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

Treatment	Form	Rate	(----------Phytotoxicity----------				)
		QT/A	5/26	5/31	6/7	6/14	6/20
V-10142	75WD	0.5 LB AI/A	10.0	10.0	10.0	10.0	10.0
RESOURCE	0.86EC	3 OZ/A					
V-10142	75WD	0.5 LB AI/A	10.0	10.0	10.0	10.0	10.0
NIS	L	0.25% V/V					
V-10142	75WD	0.25 LB AI/A	10.0	10.0	10.0	10.0	10.0
TURFLON	4EC	1					
CHECK			10.0	10.0	10.0	10.0	10.0
V-10142	75WD	0.5 LB AI/A	10.0	10.0	10.0	10.0	10.0
TURFLON	4EC	1					
V-10142	75WD	0.75 LB AI/A	10.0	10.0	10.0	10.0	10.0
TURFLON	4EC	1					
TURFLON	4EC	1	10.0	10.0	10.0	10.0	10.0
SPEEDZONE	2.2EC	2	10.0	10.0	10.0	10.0	10.0

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

Treatment	Form	Rate	(--Phytotoxicity--)	
		QT/A	7/5	7/18
V-10142	75WD	0.5 LB AI/A	10.0	10.0
RESOURCE	0.86EC	3 OZ/A		
V-10142	75WD	0.5 LB AI/A	10.0	10.0
NIS	L	0.25% V/V		
V-10142	75WD	0.25 LB AI/A	10.0	10.0
TURFLON	4EC	1		
CHECK			10.0	10.0
V-10142	75WD	0.5 LB AI/A	10.0	10.0
TURFLON	4EC	1		
V-10142	75WD	0.75 LB AI/A	10.0	10.0
TURFLON	4EC	1		
TURFLON	4EC	1	10.0	10.0
SPEEDZONE	2.2EC	2	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	(----------May 26, 2006 [1] -------)			(----------May 31, 2005 ----------)		
		QT/A	Dand	Clover	Plant	Dand	Clover	Plant
V-10142	75WD	0.5 LB AI/A	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a
RESOURCE	0.86EC	3 OZ/A						
V-10142	75WD	0.5 LB AI/A	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a
NIS	L	0.25% V/V						
V-10142	75WD	0.25 LB AI/A	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a
TURFLON	4EC	1						
CHECK			0.0a	0.0a	0.0a	0.0a	0.0a	0.0a
V-10142	75WD	0.5 LB AI/A	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a
TURFLON	4EC	1						
V-10142	75WD	0.75 LB AI/A	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a
TURFLON	4EC	1						
TURFLON	4EC	1	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a
SPEEDZONE	2.2EC	2	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a

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	(----------June 7, 2006 [1] -------)			(----------June 14, 2005 ----------)		
		QT/A	Dand	Clover	Plant	Dand	Clover	Plant
V-10142	75WD	0.5 LB AI/A	47.2b	19.4b	50.0ab	98.9a	11.1b	90.0a
RESOURCE	0.86EC	3 OZ/A						
V-10142	75WD	0.5 LB AI/A	0.0c	11.1b	100.0a	83.3b	0.0b	80.0a
NIS	L	0.25% V/V						
V-10142	75WD	0.25 LB AI/A	94.4a	94.7a	100.0a	100.0a	99.2a	100.0a
TURFLON	4EC	1						
CHECK			0.0c	0.0b	0.0b	0.0c	0.0b	0.0b
V-10142	75WD	0.5 LB AI/A	97.8a	95.0a	75.0ab	97.8a	95.0a	95.0a
TURFLON	4EC	1						
V-10142	75WD	0.75 LB AI/A	92.8a	84.4a	100.0a	100.0a	100.0a	100.0a
TURFLON	4EC	1						
TURFLON	4EC	1	96.1a	91.7a	80.0ab	98.3a	88.9a	100.0a
SPEEDZONE	2.2EC	2	95.0a	98.9a	90.0a	96.7a	98.1a	100.0a

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	(----------June 20, 2006 [1]-------)			(----------July 5, 2006 ----------)		
		QT/A	Dand	Clover	Plant	Dand	Clover	Plant
V-10142	75WD	0.5 LB AI/A	92.2a	0.0b	90.0a	80.0ab	0.0b	50.0ab
RESOURCE	0.86EC	3 OZ/A						
V-10142	75WD	0.5 LB AI/A	71.7b	0.0b	100.0a	48.3b	0.0b	0.0b
NIS	L	0.25% V/V						
V-10142	75WD	0.25 LB AI/A	98.9a	96.9a	100.0a	95.6a	96.9a	80.0ab
TURFLON	4EC	1						
CHECK			0.0c	0.0b	0.0b	0.0c	0.0b	0.0b
V-10142	75WD	0.5 LB AI/A	100.0a	96.7a	100.0a	96.7a	95.0a	90.0a
TURFLON	4EC	1						
V-10142	75WD	0.75 LB AI/A	98.3a	97.2a	100.0a	96.1a	95.6a	100.0a
TURFLON	4EC	1						
TURFLON	4EC	1	100.0a	96.1a	100.0a	98.9a	96.1a	0.0b
SPEEDZONE	2.2EC	2	100.0a	93.6a	90.0a	95.0a	89.2a	80.0ab

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	(----------July 18, 2006 [1] -------)		
		QT/A	Dand	Clover	Plant
V-10142	75WD	0.5 LB AI/A	22.2b	0.0c	50.0ab
RESOURCE	0.86EC	3 OZ/A			
V-10142	75WD	0.5 LB AI/A	16.7b	0.0c	0.0b
NIS	L	0.25% V/V			
V-10142	75WD	0.25 LB AI/A	97.8a	96.9a	100.0a
TURFLON	4EC	1			
CHECK			0.0b	0.0c	0.0b
V-10142	75WD	0.5 LB AI/A	97.8a	95.0a	90.0a
TURFLON	4EC	1			
V-10142	75WD	0.75 LB AI/A	100.0a	97.2a	100.0a
TURFLON	4EC	1			
TURFLON	4EC	1	98.3a	97.8a	80.0ab
SPEEDZONE	2.2EC	2	98.3a	89.1b	100.0a

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