

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 30, 2008 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 three 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 three times during the study (Table 1). Phytotoxicity was observed on the first rating date, 6/13/08, but did not fall below the level of acceptability 7.0. No phytotoxicity was observed following that rating date.

The control of dandelion, white clover, and buckhorn plantain was rated three times during the study (Table 2). Broadleaf weed control was variable. On the final rating date, July 25th, all treated turfgrass revealed a significant reduction in the dandelion population when compared to non treated turfgrass. All treated turfgrass, except that treated with V10142 combined with SILWET L-77 significantly reduced the white clover population compared to non treated turfgrass. Finally, the buckhorn plantain population was significantly reduced by all treatments except V10142 combined with Velocity compared to non-treated.

It should be noted that all treated broadleaf weed populations changed to some degree over time.

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Table 1. Evaluations of turfgrass phytotoxicity in 2008 where 0 = dead turf, 7 = acceptable, and 10 = no phytotoxicity.

Treatment	Form	Rate lb ai/A	-----Phytotoxicity-----		
			6/13	6/27	7/25
V10142	75WG	0.5	9.3	10.0	10.0
SILWET L-77	L	0.25% v/v			
V10142	75WG	0.5	7.0	10.0	10.0
TURFLON ESTER	4EC	1 qt/A			
V10142	75WG	0.25	7.3	10.0	10.0
TURFLON ESTER	4EC	1 qt/A			
CHECK			10.0	10.0	10.0
V10142	75WG	0.5	8.3	10.0	10.0
TURFLON ESTER	4EC	0.5 qt/A			
TURFLON ESTER	4EC	1 qt/A	7.7	10.0	10.0
SPEEDZONE	2.2EC	2 qt/A	8.3	10.0	10.0
V10142	75WG	0.5	9.7	10.0	10.0
VELOCITY	17.6SG	10.0 g ai/A			

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

Treatment	Form	Rate lb ai/A	-----June 13, 2008 ¹ -----			-----June 27, 2008-----			-----July 25, 2008-----		
			Dand	Clover	Plant	Dand	Clover	Plant	Dand	Clover	Plant
V10142	75WG	0.5	55.4ab	21.7b	80.0a	93.9a	21.7c	33.3bc	68.5b	28.3cd	60.0ab
SILWET L-77	L	0.25% v/v									
V10142	75WG	0.5	79.6a	76.0a	100.0a	98.2a	94.4a	100.0a	86.2a	96.6a	90.7a
TURFLON ESTER	4EC	1 qt/A									
V10142	75WG	0.25	80.2a	82.4a	93.3a	96.2a	98.4a	93.3a	86.0a	99.3a	93.3a
TURFLON ESTER	4EC	1 qt/A									
CHECK			0.0c	0.0b	0.0b	0.0b	0.0c	0.0c	0.0c	0.0d	0.0c
V10142	75WG	0.5	72.2ab	65.0a	50.0ab	96.2a	84.2a	56.7ab	74.4ab	64.2ab	30.0bc
TURFLON ESTER	4EC	0.5 qt/A									
TURFLON ESTER	4EC	1 qt/A	82.8a	77.3a	100.0a	95.3a	97.5a	100.0a	73.9ab	99.5a	80.0ab
SPEEDZONE	2.2EC	2 qt/A	69.0ab	70.9a	66.7ab	95.7a	95.8a	100.0a	79.7ab	91.0a	100.0a
V10142	75WG	0.5	43.9b	16.2b	33.3ab	92.8a	56.2b	66.7ab	72.2ab	48.3bc	26.7bc
VELOCITY	17.6SG	10.0 g ai/A									

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