

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). No turfgrass phytotoxicity was observed on any 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 and white clover populations when compared to non-treated turfgrass. Finally, the buckhorn plantain population was significantly reduced by all treatments except Q-P Quinclorac at 1 lb/A and Trimec Classic when compared to non-treated turfgrass.

It should be noted that all treated broadleaf weed populations changed to some degree over time. One final observation, the addition of Triclopyr to Q-P Quinclorac generally increased the efficacy of Q-P Quinclorac but is not always significant across the study.

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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/A	-----Phytotoxicity-----		
			6/13	6/27	7/25
Q-P QUINCLORAC	75DF	0.5	10.0	10.0	10.0
Q-P QUINCLORAC	75DF	1	10.0	10.0	10.0
TRICLOPYR 4	4EC	0.5 qt/A	10.0	10.0	10.0
TRICLOPYR 4	4EC	1 qt/A	10.0	10.0	10.0
Q-P QUINCLORAC	75DF	0.5	10.0	10.0	10.0
TRICLOPYR 4	4EC	0.5 qt/A			
CHECK			10.0	10.0	10.0
Q-P QUINCLORAC	75DF	0.5	10.0	10.0	10.0
TRICLOPYR 4	4EC	1 qt/A			
Q-P QUINCLORAC	75DF	1	10.0	10.0	10.0
TRICLOPYR 4	4EC	0.5 qt/A			
Q-P QUINCLORAC	75DF	1	10.0	10.0	10.0
TRICLOPYR 4	4EC	1 qt/A			
TRIMEC CLASSIC	3.32EC	4 pt/A	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 lb/A	-----June 13, 2008 ¹ -----			-----June 27, 2008-----			-----July 25, 2008-----		
			Dand	Clover	Plant	Dand	Clover	Plant	Dand	Clover	Plant
Q-P QUINCLORAC	75DF	0.5	38.1c	61.7a	93.3a	38.1c	61.7a	93.3a	56.2c	97.3a	93.3a
Q-P QUINCLORAC	75DF	1	45.6bc	57.8a	100.0a	45.6bc	57.8a	100.0a	81.3b	100.0a	60.0ab
TRICLOPYR 4	4EC	0.5 qt/A	81.1a	67.1a	66.7ab	81.1a	67.1a	66.7ab	41.7c	83.8b	0.0b
TRICLOPYR 4	4EC	1 qt/A	87.8a	92.2a	91.1a	87.8a	92.2a	91.1a	90.8ab	98.9a	75.6a
Q-P QUINCLORAC	75DF	0.5	84.2a	77.8a	93.3a	84.2a	77.8a	93.3a	96.2ab	100.0a	86.7a
TRICLOPYR 4	4EC	0.5 qt/A									
CHECK			0.0d	0.0b	0.0b	0.0d	0.0b	0.0b	0.0d	0.0c	0.0b
Q-P QUINCLORAC	75DF	0.5	86.3a	75.7a	100.0a	86.3a	75.7a	100.0a	98.7a	100.0a	90.0a
TRICLOPYR 4	4EC	1 qt/A									
Q-P QUINCLORAC	75DF	1	70.8ab	73.8a	76.7ab	70.8ab	73.8a	76.7ab	98.9a	99.3a	80.0a
TRICLOPYR 4	4EC	0.5 qt/A									
Q-P QUINCLORAC	75DF	1	91.2a	90.0a	100.0a	91.2a	90.0a	100.0a	98.3a	100.0a	93.3a
TRICLOPYR 4	4EC	1 qt/A									
TRIMEC CLASSIC	3.32EC	4 pt/A	69.7ab	90.0a	100.0a	69.7ab	90.0a	100.0a	85.9ab	100.0a	63.3ab

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