

# 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 18 ft<sup>2</sup> and had approximately 85 percent broadleaf weed cover.

The study was a randomized complete block design with three replications. All of the treatments were applied on June 1, 2009 using a three foot CO<sub>2</sub> powered boom sprayer calibrated to deliver 40 gpa using one, flat fan, TP9504EVS 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 unacceptable 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 27, 2009, turfgrass treated with QualiDithiopyr did not significantly reduce the weed populations when compared to non treated turfgrass. This would be expected as the weed populations were mature. Turfgrass treated with Trimec Classic and Triclopyr 4 at 1 qt/A with or without QualiDithiopyr revealed a significant reduction of the dandelion population when compared to non treated turfgrass. Turfgrass treated with Triclopyr 4 at 1 qt/A with or without QualiDithiopyr and Triclopyr 4 at 0.5 qt/A alone significantly reduced the white clover populations when compared to non treated turfgrass. Finally, only turfgrass treated with QualiDithiopyr did not significantly reduce the buckhorn plantain populations when compared to non treated turfgrass.

There was no crabgrass population to evaluate for control in this research area.

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**Table 1.** Evaluations of turfgrass phytotoxicity in 2009 where 0 = dead turf, 7 = acceptable, and 10 = no phytotoxicity.

Treatment	Form	Rate lb/A	-----Phytotoxicity-----		
			6/15	6/29	7/27
QUALI DITHIOPYR	40WP	0.625	10.0	10.0	10.0
MSO	L	1.5 pt/A			
QUALI DITHIOPYR	40WP	1.25	10.0	10.0	10.0
MSO	L	1.5 pt/A			
TRICLOPYR 4	4EC	0.5 qt/A	10.0	10.0	10.0
MSO	L	1.5 pt/A			
TRICLOPYR 4	4EC	1.0 qt/A	10.0	10.0	10.0
MSO	L	1.5 pt/A			
CHECK			10.0	10.0	10.0
QUALI DITHIOPYR	40WP	0.625	10.0	10.0	10.0
TRICLOPYR 4	4EC	0.5 qt/A			
MSO	L	1.5 pt/A			
QUALI DITHIOPYR	40WP	0.625	10.0	10.0	10.0
TRICLOPYR 4	4EC	1.0 qt/A			
MSO	L	1.5 pt/A			
QUALI DITHIOPYR	40WP	1.25	10.0	10.0	10.0
TRICLOPYR 4	4EC	0.5 qt/A			
MSO	L	1.5 pt/A			
QUALI DITHIOPYR	40WP	1.25	10.0	10.0	10.0
TRICLOPYR 4	4EC	1.0 qt/A			
MSO	L	1.5 pt/A			
TRIMEC CLASSIC	EC	1 qt/A	10.0	10.0	10.0
MSO	L	1.5 pt/A			

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

Treatment	Form	Rate lb/A	-----June 15, 2009 <sup>1</sup> -----			-----June 29, 2009-----			-----July 27, 2009-----		
			Dand	Clover	Plant	Dand	Clover	Plant	Dand	Clover	Plant
QUALI DITHIOPYR MSO	40WP L	0.625 1.5 pt/A	0.0d	0.0b	0.0b	0.0d	0.0c	0.0b	0.0b	0.0b	0.0b
QUALI DITHIOPYR MSO	40WP L	1.25 1.5 pt/A	0.0d	0.0b	0.0b	0.0d	0.0c	0.0b	0.0b	0.0b	0.0b
TRICLOPYR 4 MSO	4EC L	0.5 qt/A 1.5 pt/A	29.8c	67.9a	68.9a	14.5cd	65.4ab	57.8ab	15.3b	50.0a	68.9a
TRICLOPYR 4 MSO	4EC L	1.0 qt/A 1.5 pt/A	66.0a	80.7a	60.0a	67.1a	90.7a	60.0ab	43.8a	69.6a	73.3a
CHECK			0.0d	0.0b	0.0b	0.0d	0.0c	0.0b	0.0b	0.0b	0.0b
QUALI DITHIOPYR TRICLOPYR 4 MSO	40WP 4EC L	0.625 0.5 qt/A 1.5 pt/A	56.7ab	79.0a	93.3a	36.5a-d	75.9ab	44.4ab	10.9b	39.0ab	75.6a
QUALI DITHIOPYR TRICLOPYR 4 MSO	40WP 4EC L	0.625 1.0 qt/A 1.5 pt/A	57.4ab	71.4a	80.0a	43.9abc	79.3ab	33.3ab	21.3ab	68.2a	60.0a
QUALI DITHIOPYR TRICLOPYR 4 MSO	40WP 4EC L	1.25 0.5 qt/A 1.5 pt/A	32.4bc	71.2a	80.0a	19.4bcd	51.1b	77.8a	11.1b	37.0ab	66.7a
QUALI DITHIOPYR TRICLOPYR 4 MSO	40WP 4EC L	1.25 1.0 qt/A 1.5 pt/A	62.2a	84.4a	88.9a	73.3a	91.0a	94.4a	41.1a	81.3a	97.8a
TRIMEC CLASSIC MSO	EC L	1 qt/A 1.5 pt/A	57.1ab	73.3a	90.0a	52.4ab	52.2b	52.2ab	40.5a	41.1ab	64.4a

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