

Post Emergence Control of Broadleaf Weeds

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Introduction

Broadleaf weed control and turfgrass 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*) and the phytotoxicity of these compounds on perennial ryegrass.

Methods and Materials

All turfgrass test areas were rated by recording the population of dandelion, white clover, and buckhorn plantain species prior to the application of any treatment, on a plot by plot basis. The rating was conducted by way of visual interpretation. This was repeated following the application of materials and a percent control of the population was produced. The test plots were 18 ft² and had approximately 75 percent broadleaf weed cover.

The study was a randomized complete block design with three replications. Applications were applied to wet foliage on June 14, 2012 (BLEAF) using a three foot CO₂ powered boom sprayer (Figure 1) calibrated to deliver 80 gpa using one, flat fan, TP9508EVS nozzle at 40 psi .

The test site (Figure 2) 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 twice (Table 1). No turfgrass phytotoxicity was observed on any rating date.

The control of dandelion, white clover, and buckhorn plantain was rated four times during the study (Table 2). Broadleaf weed control was variable. On the final rating date, July 12, 2012, all treated turfgrass revealed a significant reduction in the white clover and buckhorn plantain populations when compared to non-treated turfgrass. Only turfgrass treated with Trimec Classic alone significantly reduced the dandelion population when compared to non-treated turfgrass.

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Table 1. Evaluations of turfgrass phytotoxicity in 2012 where 0 = dead turf, 7 = acceptable, and 10 = no phytotoxicity.

Treatment	Form	Rate oz/A	Timing	(--Turf Phytotoxicity--)	
				6/21	6/28
XONERATE	70WDG	0.5	BLEAF	10.0	10.0
TENACITY	4SC	5	BLEAF		
CHECK				10.0	10.0
XONERATE	70WDG	1	BLEAF	10.0	10.0
TENACITY	4SC	5	BLEAF		
XONERATE	70WDG	0.25	BLEAF	10.0	10.0
TENACITY	4SC	5	BLEAF		
TRIMEC CLASSIC	EC	4 pt/A	BLEAF	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 oz/A	Timing	(------June 21, 2012 ¹ -----)			(------June 28, 2012 ¹ -----)		
				Dand	Clover	Plant	Dand	Clover	Plant
XONERATE	70WDG	0.5	BLEAF	0.0a	100.0a	33.3a	0.0b	100.0a	83.3a
TENACITY	4SC	5	BLEAF						
CHECK				0.0a	0.0b	0.0a	0.0b	0.0b	0.0b
XONERATE	70WDG	1	BLEAF	0.0a	100.0a	33.3a	0.0b	100.0a	83.3a
TENACITY	4SC	5	BLEAF						
XONERATE	70WDG	0.25	BLEAF	0.0a	100.0a	0.0a	0.0b	100.0a	66.7ab
TENACITY	4SC	5	BLEAF						
TRIMEC CLASSIC	EC	4 pt/A	BLEAF	0.0a	100.0a	0.0a	8.6a	100.0a	83.3a

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

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

Treatment	Form	Rate oz/A	Timing	(------July 5, 2012 ¹ -----)			(------July 12, 2012 ¹ -----)		
				Dand	Clover	Plant	Dand	Clover	Plant
XONERATE	70WDG	0.5	BLEAF	0.0b	100.0a	100.0a	0.0b	100.0a	100.0a
TENACITY	4SC	5	BLEAF						
CHECK				0.0b	0.0b	0.0b	0.0b	0.0b	0.0b
XONERATE	70WDG	1	BLEAF	0.0b	100.0a	100.0a	0.0b	100.0a	100.0a
TENACITY	4SC	5	BLEAF						
XONERATE	70WDG	0.25	BLEAF	0.0b	100.0a	100.0a	0.0b	100.0a	100.0a
TENACITY	4SC	5	BLEAF						
TRIMEC CLASSIC	EC	4 pt/A	BLEAF	51.3a	100.0a	100.0a	91.4a	100.0a	100.0a

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

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

Treatment	Form	Rate oz/A	Timing	(------July 19, 2012 ¹ -----)			(------July 26, 2012 ¹ -----)		
				Dand	Clover	Plant	Dand	Clover	Plant
XONERATE	70WDG	0.5	BLEAF	0.0b	100.0a	100.0a	0.0b	100.0a	100.0a
TENACITY	4SC	5	BLEAF						
CHECK				0.0b	0.0b	0.0b	0.0b	0.0b	0.0b
XONERATE	70WDG	1	BLEAF	0.0b	100.0a	100.0a	0.0b	100.0a	100.0a
TENACITY	4SC	5	BLEAF						
XONERATE	70WDG	0.25	BLEAF	0.0b	100.0a	100.0a	0.0b	100.0a	100.0a
TENACITY	4SC	5	BLEAF						
TRIMEC CLASSIC	EC	4 pt/A	BLEAF	91.4a	100.0a	100.0a	91.4a	100.0a	100.0a

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



Figure 1: CO₂ powered boom sprayer used for applying liquid materials.



Figure 2: Representative overview of broadleaf trial at the conclusion. Photo taken 8/15/12.