

Preemergence Control of Smooth Crabgrass

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Introduction

Preemergence control of smooth crabgrass (*Digitaria ischaemum*) was evaluated on a mature stand of 'Midnight' Kentucky bluegrass (*Poa pratensis*), at the Valentine Turfgrass Research Center, Penn State University, University Park, PA. The objective of the study was to determine the efficacy of selected preemergence herbicides for the control of smooth crabgrass and safety to desired species.

Methods and Materials

This study was a randomized complete block design with three replications. Treatments were applied on April 18, 2006 (PRE), May 18, 2006 (4 WAT), June 1, 2006 (6 WAT) and June 17, 2006 (8 WAT)) using a three foot CO₂ powered boom sprayer calibrated to deliver 80 gpa using one, flat fan, 11008E nozzle at 40 psi and granular treatments were applied to wet turf using a shaker jar. After each application the entire test site received approximately 0.5 inch of water. On April 27, 2006 0.5 lb N/M was applied from urea and 0.5 lb N/M from a 31-0-0 IBDU fertilizer was applied to plots that did not contain a fertilizer treatment. The site was mowed once per week with a rotary mower at one inch with clippings returned to the site.

The test site was overseeded with a native source of smooth crabgrass seed in the fall of at least two of the previous growing seasons. The test site had approximately 90% cover of smooth crabgrass in the non treated areas at the conclusion of the study.

Smooth crabgrass germination was first noted in the non treated areas of the test site on April 24, 2006.

Results and Discussion

Turfgrass phytotoxicity was rated four times during the study (Table 1). No turfgrass phytotoxicity was found during the study.

Smooth crabgrass control was rated once during the study (Table 2). All treated turfgrass provided commercially acceptable control of smooth crabgrass (85% or greater) except: Betasan at 7.4 oz/M applied PRE, Betasan at 2.5 oz/M applied PRE/4/8 WAT, 19-3-5 W/Barricade 0.21G or Barricade on DG PRO 0.48DG at 0.35 lb ai/A applied PRE, Barricade on DG PRO 0.48DG at 0.75 lb ai/A, 18-2-12 W/Dimension 0.164G or Dimension on DG PRO 0.25DG at 0.08 lb ai/A or applied PRE, 18-2-12 W/Dimension 0.164G or Dimension on DG PRO 0.25DG at 0.19 lb ai/A or applied PRE, 18-2-12 W/Dimension 0.164G at 0.25 lb ai/A applied PRE, and GWN-3109 applied PRE. It should be noted that some of the materials that did not control at the commercially acceptable level were applied at very low rates of active ingredients.

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

Treatment	Form	Rate LB AI/A	Timing	(-----Phytotoxicity-----)			
				5/2	5/23	6/6	6/27
PENDULUM	3.3EC	2	PRE/8 WAT	10.0	10.0	10.0	10.0
PENDULUM	3.3EC	1.5	PRE/8 WAT	10.0	10.0	10.0	10.0
PENDULUM AQUA CAP	3.8CS	2	PRE/8 WAT	10.0	10.0	10.0	10.0
PENDULUM AQUA CAP	3.8CS	1.5	PRE/8 WAT	10.0	10.0	10.0	10.0
BARRICADE	4FL	18 OZ/A	PRE/6 WAT	10.0	10.0	10.0	10.0
BARRICADE	65WG	13.8 OZ/A	PRE/6 WAT	10.0	10.0	10.0	10.0
BETASAN	4E	7.4 OZ/M	PRE	10.0	10.0	10.0	10.0
BETASAN	4E	2.5 OZ/M	PRE/4/8 WAT	10.0	10.0	10.0	10.0
BETASAN	4E	7.4 OZ/M	PRE	10.0	10.0	10.0	10.0
DIMENSION	40WP	0.125	PRE				
BETASAN	4E	4.5 OZ/M	PRE	10.0	10.0	10.0	10.0
DIMENSION	40WP	0.1875	PRE				
BETASAN	4E	2.5 OZ/M	PRE	10.0	10.0	10.0	10.0
DIMENSION	40WP	0.1875	PRE				
BETASAN	4E	4.5 OZ/M	PRE	10.0	10.0	10.0	10.0
DIMENSION	40WP	0.125	PRE				
DIMENSION	40WP	0.1875	PRE	10.0	10.0	10.0	10.0
DIMENSION	40WP	0.5	PRE	10.0	10.0	10.0	10.0
DIMENSION	40WP	0.25	PRE/6 WAT	10.0	10.0	10.0	10.0
BETASAN	4E	7.4 OZ/M	PRE	10.0	10.0	10.0	10.0
DIMENSION	40WP	0.1875	6 WAT				
BETASAN	4E	5.9 OZ/M	PRE	10.0	10.0	10.0	10.0
DIMENSION	40WP	0.1875	6 WAT				
BETASAN	4E	4.5 OZ/M	PRE	10.0	10.0	10.0	10.0
DIMENSION	40WP	0.1875	6 WAT				
DIMENSION	40WP	0.1875	PRE/6 WAT	10.0	10.0	10.0	10.0
CHECK				10.0	10.0	10.0	10.0
19-3-5 W/ BARRICADE	0.21G	0.35	PRE	10.0	10.0	10.0	10.0
BARRICADE ON DG PRO	0.48DG	0.35	PRE	10.0	10.0	10.0	10.0
19-3-5 W/ BARRICADE	0.21G	0.65	PRE	10.0	10.0	10.0	10.0
BARRICADE ON DG PRO	0.48DG	0.65	PRE	10.0	10.0	10.0	10.0
19-3-5 W/ BARRICADE	0.21DG	0.75	PRE	10.0	10.0	10.0	10.0
BARRICADE ON DG PRO	0.48DG	0.75	PRE	10.0	10.0	10.0	10.0
19-3-5 W/ BARRICADE	0.21G	1	PRE	10.0	10.0	10.0	10.0
BARRICADE ON DG PRO	0.48DG	1	PRE	10.0	10.0	10.0	10.0
18-2-12 W/ DIMENSION	0.164G	0.08	PRE	10.0	10.0	10.0	10.0
10.0							
DIMENSION ON DG PRO	0.25DG	0.08	PRE	10.0	10.0	10.0	10.0
18-2-12 W/ DIMENSION	0.164G	0.19	PRE	10.0	10.0	10.0	10.0
10.0							
DIMENSION ON DG PRO	0.25DG	0.19	PRE	10.0	10.0	10.0	10.0
18-2-12 W/ DIMENSION	0.164G	0.25	PRE	10.0	10.0	10.0	10.0
10.0							
DIMENSION ON DG PRO	0.25DG	0.25	PRE	10.0	10.0	10.0	10.0
18-2-12 W/ DIMENSION	0.164G	0.5	PRE	10.0	10.0	10.0	10.0
10.0							
DIMENSION ON DG PRO	0.25DG	0.5	PRE	10.0	10.0	10.0	10.0
GWN-3109	4E	7.4 OZ/M	PRE	10.0	10.0	10.0	10.0

Table 2. Evaluations of the percent control of smooth crabgrass in 2006. Commercially acceptable control was considered to be 85% and above.

Treatment	Form	Rate LB AI/A	Timing	(----% Control----) 8/15
PENDULUM	3.3EC	2/1.5	PRE/8 WAT	92.7
PENDULUM	3.3EC	1.5	PRE/8 WAT	99.0
PENDULUM AQUA CAP	3.8CS	2/1.5	PRE/8 WAT	99.0
PENDULUM AQUA CAP	3.8CS	1.5	PRE/8 WAT	99.0
BARRICADE	4FL	18 OZ/A	PRE/6 WAT	96.0
BARRICADE	65WG	13.8 OZ/A	PRE/6 WAT	99.0
BETASAN	4E	7.4 OZ/M	PRE	76.7
BETASAN	4E	2.5 OZ/M	PRE/4/8 WAT	76.7
BETASAN	4E	7.4 OZ/M	PRE	96.0
DIMENSION	40WP	0.125	PRE	
BETASAN	4E	4.5 OZ/M	PRE	96.0
DIMENSION	40WP	0.1875	PRE	
BETASAN	4E	2.5 OZ/M	PRE	96.0
DIMENSION	40WP	0.1875	PRE	
BETASAN	4E	4.5 OZ/M	PRE	93.0
DIMENSION	40WP	0.125	PRE	
DIMENSION	40WP	0.1875	PRE	94.7
DIMENSION	40WP	0.5	PRE	99.0
DIMENSION	40WP	0.25	PRE/6 WAT	99.0
BETASAN	4E	7.4 OZ/M	PRE	96.0
DIMENSION	40WP	0.1875	6 WAT	
BETASAN	4E	5.9 OZ/M	PRE	96.0
DIMENSION	40WP	0.1875	6 WAT	
BETASAN	4E	4.5 OZ/M	PRE	97.7
DIMENSION	40WP	0.1875	6 WAT	
DIMENSION	40WP	0.1875	PRE/6 WAT	99.0
CHECK				0.0
19-3-5 W/ BARRICADE	0.21G	0.35	PRE	63.3
BARRICADE ON DG PRO	0.48DG	0.35	PRE	60.0
19-3-5 W/ BARRICADE	0.21G	0.65	PRE	90.0
BARRICADE ON DG PRO	0.48DG	0.65	PRE	80.0
19-3-5 W/ BARRICADE	0.21DG	0.75	PRE	99.0
BARRICADE ON DG PRO	0.48DG	0.75	PRE	83.3
19-3-5 W/ BARRICADE	0.21G	1	PRE	94.7
BARRICADE ON DG PRO	0.48DG	1	PRE	86.7
18-2-12 W/ DIMENSION	0.164G	0.08	PRE	50.0
DIMENSION ON DG PRO	0.25DG	0.08	PRE	40.0
18-2-12 W/ DIMENSION	0.164G	0.19	PRE	68.3
DIMENSION ON DG PRO	0.25DG	0.19	PRE	75.0
18-2-12 W/ DIMENSION	0.164G	0.25	PRE	81.7
DIMENSION ON DG PRO	0.25DG	0.25	PRE	86.7
18-2-12 W/ DIMENSION	0.164G	0.5	PRE	93.0
DIMENSION ON DG PRO	0.25DG	0.5	PRE	99.0
GWN-3109	4E	7.4 OZ/M	PRE	76.7