

Preemergence Control of Smooth Crabgrass

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Introduction

Preemergence control of smooth crabgrass (*Digitaria ischaemum*) was evaluated on a mature stand of 'Jet Elite' perennial ryegrass (*Lolium perenne* L.), 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. All treatments were applied on April 19, 2005 (A) and some treatments were re-applied on May 17, (B), May 31 (C), and June 14, 2005 (D) using a three foot CO₂ powered boom sprayer calibrated to deliver 80 gpa using two, flat fan, 11004 nozzles at 40 psi. and a shaker jar. After each application the entire test site received approximately 0.5 inch of water. On April 21, 2005, 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 the test site where materials had been applied that did not contain any fertilizer. The site was mowed once per week with a rotary mower at one and one half inches with clippings returned to the site.

The test site was overseeded with a native source of smooth crabgrass seed in the fall of each growing season. The test site had approximately 90% cover smooth crabgrass in no treated areas.

Smooth crabgrass germination was first noted in the test site on April 25, 2005.

Results and Discussion

Turfgrass phytotoxicity was rated four times during the study (Table 1). Turfgrass treated with MON 44951 had below acceptable phytotoxicity on the May 9th (A application) and June 10th (C application only) rating dates.

Several materials provided commercially acceptable smooth crabgrass control (Table 2). Turfgrass treated with Dimension FG at 240 lb/A, Pendulum applied at the A plus C timings, Barricade 4FL at 18 plus 6 oz/A, Barricade 65WG at 13.8 plus 4.6 oz/A, Betasan at 7.4 oz/M plus Dimension at 0.187 lb ai/A, Betasan at 5.9 oz/M plus Dimension at 0.187 lb ai/A, Betasan at 4.5 oz/M plus Dimension at 0.187 lb ai/A, Dimension at 0.5 lb ai/A, Dimension at 0.25 lb ai/A (A/C), Betasan at 7.4 oz/M (A) plus Dimension at 0.187 lb ai/A (C), Betasan at 5.9 oz/M (A) plus Dimension at 0.187 lb ai/A (C), Betasan at 4.5 oz/M (A) plus Dimension at 0.187 lb ai/A (C), and Dimension at 0.187 lb ai/A (A/C) provided 85% or more smooth crabgrass control.

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Table 1. Evaluations of phytotoxicity where 0 = worst, 7 = acceptable, and 10 = no phytotoxicity taken in 2005.

Treatment	Form	Rate (lbs ai/A)	Timing	5/9	5/23	6/10	6/20
DIMENSION FG	0.21G	180 lb/A	A	10.0	10.0	10.0	10.0
DIMENSION FG	0.21G	240 lb/A	A	10.0	10.0	10.0	10.0
STONEWALL	0.2G	250 lb/A	A	10.0	10.0	10.0	10.0
MON 44951	75WG	1.5 oz/A	A	6.0	9.0	10.0	10.0
MON 0810	AL	0.25 % v/v	A				
MON 44951	75WG	2 oz/A	A	6.0	9.0	10.0	10.0
MON 0810	AL	0.25 % v/v	A				
MON 44951	75WG	2.5 oz/A	A	6.0	9.0	10.0	10.0
MON 0810	AL	0.25 % v/v	A				
MON 44951	75WG	1 oz/A	A/C	6.0	9.0	6.0	10.0
MON 0810	AL	0.25 % v/v	A/C				
MON 44951	75WG	1.5 oz/A	A/C	6.0	9.0	6.0	10.0
MON 0810	AL	0.25 % v/v	A/C				
MON 44951	75WG	2 oz/A	A/C	6.0	9.0	6.0	10.0
MON 0810	AL	0.25 % v/v	A/C				
PENDULUM	3.3EC	2/1.5	A/C	10.0	10.0	10.0	10.0
PENDULUM	3.3EC	1.5	A/C	10.0	10.0	10.0	10.0
PENDULUM	3.8CS	2/1.5	A/C	10.0	10.0	10.0	10.0
PENDULUM	3.8CS	1.5	A/C	10.0	10.0	10.0	10.0
BARRICADE	4L	18/6 oz/A	A/C	10.0	10.0	10.0	10.0
BARRICADE	65WG	13.8/4.6 oz/A	A/C	10.0	10.0	10.0	10.0
V-10142	75WG	0.375	A	10.0	10.0	10.0	10.0
V-10142	75WG	0.5	A	10.0	10.0	10.0	10.0
V-10142	75WG	0.75	A	10.0	10.0	10.0	10.0
V-10142	0.5G	0.75	A	10.0	10.0	10.0	10.0
PENDULUM	60WG	1.5	A	10.0	10.0	10.0	10.0
V-10142	75WG	0.375/	A	10.0	10.0	10.0	10.0
PENDULUM	60WG	1.5	A				
V-10142	75WG	0.5	A	10.0	10.0	10.0	10.0
PENDULUM	60WG	1.5	A				
BETASAN	4E	7.4 oz/M	A	10.0	10.0	10.0	10.0
BETASAN	4E	2.5 oz/M	A/B/D	10.0	10.0	10.0	10.0
BETASAN	4E	7.4 oz/M	A	10.0	10.0	10.0	10.0
TUPERSAN	50WP	2.2 oz/M	C				
BETASAN	4E	7.4 oz/M	A	10.0	10.0	10.0	10.0
DIMENSION	40WP	0.1875	A				
BETASAN	4E	5.9 oz/M	A	10.0	10.0	10.0	10.0
DIMENSION	40WP	0.1875	A				
BETASAN	4E	4.5 oz/M	A	10.0	10.0	10.0	10.0
DIMENSION	40WP	0.1875	A				
DIMENSION	40WP	0.1875	A	10.0	10.0	10.0	10.0
DIMENSION	40WP	0.5	A	10.0	10.0	10.0	10.0
DIMENSION	40WP	0.25	A/C	10.0	10.0	10.0	10.0
BETASAN	4E	7.4 oz/M	A	10.0	10.0	10.0	10.0
DIMENSION	40WP	0.1875	C				
BETASAN	4E	5.9 oz/M	A	10.0	10.0	10.0	10.0
DIMENSION	40WP	0.1875	C				
BETASAN	4E	4.5 oz/M	A	10.0	10.0	10.0	10.0
DIMENSION	40WP	0.1875	C				
DIMENSION	40WP	0.1875	A/C	10.0	10.0	10.0	10.0
CHECK				10.0	10.0	10.0	10.0

Table 2. Evaluations of the percent control of smooth crabgrass taken on Aug 8, 2005. Commercially acceptable control was considered to be 85% and above.

Treatment	Form	Rate (lbs ai/A)	Timing	% Control
DIMENSION FG	0.21G	180 lb/A	A	80.0
DIMENSION FG	0.21G	240 lb/A	A	85.0
STONEWALL	0.2G	250 lb/A	A	55.0
MON 44951	75WG	1.5 oz/A	A	1.7
MON 0810	AL	0.25 % v/v	A	
MON 44951	75WG	2 oz/A	A	15.0
MON 0810	AL	0.25 % v/v	A	
MON 44951	75WG	2.5 oz/A	A	8.3
MON 0810	AL	0.25 % v/v	A	
MON 44951	75WG	1 oz/A	A/C	5.0
MON 0810	AL	0.25 % v/v	A/C	
MON 44951	75WG	1.5 oz/A	A/C	6.7
MON 0810	AL	0.25 % v/v	A/C	
MON 44951	75WG	2 oz/A	A/C	8.3
MON 0810	AL	0.25 % v/v	A/C	
PENDULUM	3.3EC	2/1.5	A/C	95.0
PENDULUM	3.3EC	1.5	A/C	89.7
PENDULUM	3.8CS	2/1.5	A/C	97.7
PENDULUM	3.8CS	1.5	A/C	94.3
BARRICADE	4L	18/6 oz/A	A/C	99.0
BARRICADE	65WG	13.8/4.6 oz/A	A/C	99.0
V-10142	75WG	0.375	A	18.3
V-10142	75WG	0.5	A	28.3
V-10142	75WG	0.75	A	63.3
V-10142	0.5G	0.75	A	60.0
PENDULUM	60WG	1.5	A	50.0
V-10142	75WG	0.375/	A	43.3
PENDULUM	60WG	1.5	A	
V-10142	75WG	0.5	A	43.3
PENDULUM	60WG	1.5	A	
BETASAN	4E	7.4 oz/M	A	68.3
BETASAN	4E	2.5 oz/M	A/B/D	76.7
BETASAN	4E	7.4 oz/M	A	63.3
TUPERSAN	50WP	2.2 oz/M	C	
BETASAN	4E	7.4 oz/M	A	97.7
DIMENSION	40WP	0.1875	A	
BETASAN	4E	5.9 oz/M	A	94.7
DIMENSION	40WP	0.1875	A	
BETASAN	4E	4.5 oz/M	A	93.0
DIMENSION	40WP	0.1875	A	
DIMENSION	40WP	0.1875	A	63.3
DIMENSION	40WP	0.5	A	97.7
DIMENSION	40WP	0.25	A/C	97.7
BETASAN	4E	7.4 oz/M	A	96.3
DIMENSION	40WP	0.1875	C	
BETASAN	4E	5.9 oz/M	A	96.3
DIMENSION	40WP	0.1875	C	
BETASAN	4E	4.5 oz/M	A	96.3
DIMENSION	40WP	0.1875	C	
DIMENSION	40WP	0.1875	A/C	96.0
CHECK				0.0