

Pre and Post Emergence Control of Crabgrass and Phytotoxicity Evaluations

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Introduction

Pre and post emergence control of smooth crabgrass (*Digitaria ischaemum*) was evaluated on a mature mono stand of 'Amazing GS' 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 herbicides for the pre and post emergence control of smooth crabgrass and to evaluate injury to the desired species.

Methods and Materials

This study was a randomized complete block design with three replications. Treatments were applied on June 20 (POST) and July 11, 2014 (3 WAT) using a three foot CO₂ powered boom sprayer (Figure 1) calibrated to deliver 40 gpa using one, flat fan, TP9504EVS nozzle at 50 psi. The site was mowed once per week with a rotary mower at one and a half inches with clippings returned to the site. The study area was irrigated to prevent moisture stress.

The test site was overseeded with a native source of smooth crabgrass in the fall of at least four of the previous growing seasons. Smooth crabgrass germination was first noted in the test site on May 25, 2014.

Ratings were conducted by way of visual interpretation on a plot by plot basis. Transformations were completed using Abbotts to determine percent control. Weed control was calculated by comparing populations per plot with the untreated plot within each replication.

Results and Discussion

Turfgrass phytotoxicity was rated five times during the study (Table 1). There was no phytotoxicity found on any rating date.

Crabgrass phytotoxicity was rated twice during the study (Table 1). Treated crabgrass exhibited varying levels of phytotoxicity.

The percent control of the smooth crabgrass was rated six times during the study (Table 2). In general, there was a decline in the control of smooth crabgrass found from the first rating date to the last rating date. On the last rating date all treated turfgrass provided commercially acceptable (85% or greater) control.

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Table 1. Evaluations of perennial ryegrass phytotoxicity where 1 = no injury, 3 = acceptable, and 10 = dead following applications of selected herbicides in 2014.

Treatment		LBAE /GAL	Rate FL OZ/A	TIMING	(-----RYE PHYTO-----)					(CRAB PHYTO)	
					6/26	6/27	7/18	7/30	8/22	6/23	6/27
PYLEX	SC	2.8	1	POST /3 WAT	1.0	1.0	1.0	1.0	1.0	1.0	2.3
MES-100			0.5% v/v								
PYLEX	SC	2.8	1.5	POST /3 WAT	1.0	1.0	1.0	1.0	1.0	1.0	8.0
MES-100			0.5% v/v								
UNTREATED CHECK					1.0	1.0	1.0	1.0	1.0	1.0	1.0
PYLEX	SC	2.8	0.75	POST /3 WAT	1.0	1.0	1.0	1.0	1.0	1.0	5.7
DRIVE XLR8	EC	1.5	32								
MES-100			0.5% v/v								
DRIVE XLR8	EC	1.5	64	POST /3 WAT	1.0	1.0	1.0	1.0	1.0	1.0	2.0
MES-100			0.5% v/v								

Table 2. Percent control of the smooth crabgrass populations following applications of selected herbicides in 2014 where 85 % and greater control is considered commercially acceptable.

Treatment		LBAE /GAL	Rate FL OZ/A	TIMING	(-----CRAB CONTROL ¹ -----)					
					7/11	7/18	7/30	8/22	8/28	9/9
PYLEX	SC	2.8	1	POST /3 WAT	93.3 a	97.8 b	97.8 b	97.4 b	94.8 b	93.1 a
MES-100			0.5% v/v							
PYLEX	SC	2.8	1.5	POST /3 WAT	100.0 a	100.0 a	100.0 a	99.0 ab	100.0 a	96.4 a
MES-100			0.5% v/v							
UNTREATED CHECK					0.0 b	0.0 c	0.0 c	0.0 c	0.0 c	0.0 b
PYLEX	SC	2.8	0.75	POST /3 WAT	91.7 a	100.0 a	100.0 a	99.1 ab	97.8 ab	93.6 a
DRIVE XLR8	EC	1.5	32							
MES-100			0.5% v/v							
DRIVE XLR8	EC	1.5	64	POST /3 WAT	100.0 a	100.0 a	100.0 a	100.0 a	99.3 ab	98.3 a
MES-100			0.5% v/v							

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

