

Pre and Post Emergence Control of Crabgrass and Phytotoxicity Evaluations

J. A. Borger and T. L. Harpster¹

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 April 23 (PRE) and June 16, 2014 (7 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 six times during the study (Table 1). There was no phytotoxicity found on any rating date.

Turfgrass color was rated three times during the study (Table 2). There was no color ratings below acceptable on any rating date.

The percent control of the smooth crabgrass was rated five times during the study (Table 3). In general, there was good control of smooth crabgrass found from the first rating date to the last. On the last rating date all treated turfgrass except that treated with QP DITHIOPYR at 32 oz/A applied PRE provided commercially acceptable (85% or greater) control.

¹ Senior Instructor, Research and Technician III Respectively, Department of Plant Sciences, Penn State University, University Park, Pa, 16802

Table 1. Evaluations of perennial ryegrass phytotoxicity where 1 = no injury, 3 = acceptable, and 10 = dead following pre and post emergent crabgrass applications in 2014.

Treatment		Lbs AI Rate		TIMING	-----RYE PHYTO-----					
		/A	fl oz/A		5/6	6/16	7/2	7/23	8/1	8/22
QP DITHIOPYR	EC	2	16	PRE/7 WAT	1.0	1.0	1.0	1.0	1.0	1.0
QP DITHIOPYR	EC	2	32	PRE	1.0	1.0	1.0	1.0	1.0	1.0
QP PRODIAMINE	L	4	32	PRE	1.0	1.0	1.0	1.0	1.0	1.0
UNTREATED CHECK					1.0	1.0	1.0	1.0	1.0	1.0
DIMENSION	EW	2	16	PRE/7 WAT	1.0	1.0	1.0	1.0	1.0	1.0
DIMENSION	EW	2	32	PRE	1.0	1.0	1.0	1.0	1.0	1.0
BARRICADE	FL	4	32	PRE	1.0	1.0	1.0	1.0	1.0	1.0

Table 2. Evaluations of perennial ryegrass color where 1 = brown, 7 = acceptable, and 10 = dark green following pre and post emergent crabgrass applications in 2014.

Treatment		Lbs AI Rate		TIMING	-----RYE COLOR-----		
		/A	fl oz/A		7/2	7/23	8/22
QP DITHIOPYR	EC	2	16	PRE/7 WAT	9.0	8.3	8.6
QP DITHIOPYR	EC	2	32	PRE	9.0	8.3	8.0
QP PRODIAMINE	L	4	32	PRE	9.0	9.0	8.3
UNTREATED CHECK					9.0	7.3	8.3
DIMENSION	EW	2	16	PRE/7 WAT	9.0	8.0	7.0
DIMENSION	EW	2	32	PRE	9.0	8.3	7.7
BARRICADE	FL	4	32	PRE	9.0	8.3	7.7

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	Lbs AI /A	Rate fl oz/A	TIMING	(-----CRAB CONTROL ¹ -----)					
				6/16	7/2	7/23	8/1	8/22	
QP DITHIOPYR	EC	2	16	PRE/7 WAT	93.3 a	91.7 a	91.7 ab	91.7 ab	100.0 a
QP DITHIOPYR	EC	2	32	PRE	93.3 a	87.5 a	83.2 b	75.6 b	73.1 b
QP PRODIAMINE L		4	32	PRE	100.0 a	100.0 a	100.0 a	100.0 a	100.0 a
UNTREATED CHECK					0.0 b	0.0 b	0.0 c	0.0 c	0.0 c
DIMENSION	EW	2	16	PRE/7 WAT	100.0 a	100.0 a	100.0 a	100.0 a	99.3 a
DIMENSION	EW	2	32	PRE	92.2 a	90.3 a	96.6 a	97.0 a	96.8 a
BARRICADE	FL	4	32	PRE	96.7 a	91.7 a	91.7 ab	86.0 ab	92.7 a

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

