

Post Emergence Control of Crabgrass and Phytotoxicity Evaluations

J. A. Borger and T. L. Harpster¹

Introduction

Post emergence control of smooth crabgrass (*Digitaria ischaemum*) was evaluated on a mature stand of 'Futura 3000' perennial ryegrass² (*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 June 29, 2015 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 19, 2015.

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

Results and Discussion

Perennial ryegrass phytotoxicity was rated five times during the study (Table 1). There was no phytotoxicity found on any rating date that was below acceptable 7.0 on the perennial ryegrass.

Smooth crabgrass phytotoxicity was rated two times during the study (Table 1). All treated populations revealed some level 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 final rating date, September 9, 2015, no treated turfgrass provided commercially acceptable (85% or greater) control. There were significant reductions in the population that resulted from treating the turfgrass sward. This varied among the differing treated turfgrass. It should be noted that a single application early in the season may not completely control the smooth crabgrass population. The seed bank will be germinating until about July 15th. The decrease in smooth crabgrass control as time passed confirms this. These products can also control other broadleaf weeds. The control of some of the smooth crabgrass population would be an added bonus if the main target was a broadleaf weed population. This concept should be further explored.

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

² 35.80% Newton perennial ryegrass, 30.60% Cutter II perennial ryegrass, 30.19% Dasher 3 perennial ryegrass, 2.0% other crop, 1.36% inert matter, 0.05% weed seed, and no noxious weed seeds.

Table 1. Evaluations of perennial ryegrass and smooth crabgrass phytotoxicity where 1 = no injury, 3 = acceptable, and 10 = dead following post emergent crabgrass applications in 2015.

Treatment	Rate Pts/A	(------Rye-----)					(Crab)	
		7/2	7/9	7/15	7/24	8/13	7/2	7/9
Last Call	4	1.0	1.0	1.0	1.0	1.0	3.3	9.0
Quincept	8	1.0	1.0	1.0	1.0	1.0	5.3	8.7
Drive XLR8	4	1.0	1.0	1.0	1.0	1.0	5.7	9.0
Untreated Check		1.0	1.0	1.0	1.0	1.0	1.0	1.0
Q4	8	1.0	1.0	1.0	1.0	1.0	5.7	8.3
Last Call	4	1.0	1.0	1.0	1.0	1.0	2.7	9.0
Activator 90	0.25 % v/v							

Table 2. Percent control of the smooth crabgrass populations following applications of selected herbicides in 2015 where 85 % and greater control is considered commercially acceptable.

Treatment	Rate Pts/A	(------Crab Control ¹ -----)					
		7/9	7/15	7/24	8/13	8/25	9/9
Last Call	4	90.6 a	95.2 a	91.3 ab	77.2 a	70.0 a	70.0 a
Quincept	8	59.4 b	75.0 b	61.3 c	42.1 b	30.0 b	21.7 c
Drive XLR8	4	84.5 a	80.2 ab	79.2 b	56.1 b	36.7 b	46.7 b
Untreated Check		0.0 c	0.0 c	0.0 d	0.0 c	0.0 c	0.0 d
Q4	8	75.2 a	64.7 b	58.3 c	40.4 b	28.3 b	21.7 c
Last Call	4	90.6 a	95.2 a	95.0 a	77.2 a	70.0 a	70.0 a
Activator 90	0.25 % v/v						

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



[Type text]