Annual Bluegrass Control in Kentucky Bluegrass

J. A. Borger and T. L. Harpster [1]

Introduction

This study was conducted on a mature mixed sward of 'Midnight' Kentucky bluegrass (*Poa pratensis*) and annual bluegrass (*Poa annua*) at the Valentine Turfgrass Research Center, Penn State University, University Park, PA. The objective of the study was to determine if selected materials applied in the summer could suppress annual bluegrass populations.

Methods and Materials

This study was a randomized complete block design with three replications (Figures 1, 3 and 4). Treatments were applied on 10 (June) and 20 (14DAT) June, and 9 July (28 DAT) using a three foot CO_2 powered boom sprayer calibrated to deliver 40 gpa using one, flat fan, TP9504EVS nozzle at 40 psi (Figure 2). The test site consisted of approximately 55 percent Kentucky bluegrass and 45 percent annual bluegrass at the initiation of the study.

All plots were rated by recording the population of annual bluegrass prior to the application of any treatment, on a plot by plot basis. The rating was conducted by way of visual interpretation. This was repeated following the application of materials and a percent control of the population was produced.

The test site was mowed at three inches weekly with a rotary mower with clippings returned to the site. The test site was irrigated to prevent moisture stress.

Data were analyzed with ARM 8.5.0 using Duncan's New MRT at the 0.5 percent significant level.

Results and Discussion

Kentucky bluegrass phytotoxicity was rated four times during the study (Table 1). Turfgrass treated with Tenacity alone or in combination had unacceptable levels of phytotoxicity on three of the four rating dates. On the July 14th rating date, turfgrass treated with ARY-0452-110 alone also revealed unacceptable phytotoxicity. No other unacceptable phytotoxicity was observed during the study. (Refer to the air temperatures during the study that are included)

Annual bluegrass phytotoxicity was rated seven times during the study (Table 2). Treated turfgrass exhibited varying levels of phytotoxicity at different times following application of materials. This was expected as the objective was to reduce the populations.

Annual bluegrass control was rated three times during the study (Table 3.). The amount of control was variable during this study. On the final rating date, for this growing season, no treated turfgrass significantly reduce the annual bluegrass populations when compared to non-treated turfgrass. There were never any voids in the turfgrass sward during the study. Refer to Table 4.

This report should be considered preliminary. The true population change of the annual bluegrass will not be verified until a control rating is taken in the spring of 2015.

The spring annual bluegrass control rating (Table 3.) was taken on May 1, 2015. All treated turfgrass significantly reduced the population compared to non-treated turfgrass. Although the annual bluegrass population was decreased, there were no voids in the turfgrass that remained.

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

Table 1. 'Midnight' Kentucky bluegrass injury from 0-10, where 0 = no injury, 3 = acceptable, and 10 = dead turf in 2014.

Treatment	Rate oz/A	Timing	(----------Kentucky Bluegrass Injury----------) 6/20	6/23	7/10	7/14
ARY-0452-110	1.40	JUNE/14/28 DAT	1.70	1.00	1.00	3.70
NIS	0.25 % V/V					
Tenacity	4.00	JUNE/14/28 DAT	5.00	3.00	1.30	1.00
NIS	0.25 % V/V					
Untreated Check			1.00	1.30	1.30	1.00
ARY-0452-110	1.40	JUNE/14/28 DAT	4.70	4.00	1.00	4.70
Tenacity	4.00					
NIS	0.25 % V/V					

Table 2. Annual bluegrass injury from 0-10, where 0 = no injury and 10 = dead turf in 2014.

Treatment	Rate oz/A	Timing	(----------Annual Bluegrass Injury----------) 6/20	6/23	7/14	7/18	7/30	8/7	9/9
ARY-0452-110	1.40	JUNE/14/28 DAT	4.00	1.00	5.00	8.30	4.00	4.70	1.00
NIS	0.25 % V/V								
Tenacity	4.00	JUNE 14/28 DAT	3.30	4.30	1.00	1.30	1.00	1.30	1.00
NIS	0.25 % V/V								
Untreated Check			1.00	2.30	1.00	2.30	1.20	1.00	1.00
ARY-0452-110	1.40	JUNE/14/28 DAT	8.00	6.30	6.00	9.00	7.30	8.00	1.00
Tenacity	4.00								
NIS	0.25 % V/V								

Table 3 Percent control of annual bluegrass in 'Midnight' Kentucky bluegrass in 2014 and spring 2015.

Treatment	Rate oz/A	Timing	(----------Annual Bluegrass Control[1]----------) 7/10	8/14	9/9	5/1/2015
ARY-0452-110	1.40	JUNE/14/28 DAT	46.30 a	64.80 b	11.10 a	68.5 a
NIS	0.25 % V/V					
Tenacity	4.00	JUNE/14/28 DAT	48.50 a	37.80 b	3.30 a	66.3 a
NIS	0.25 % V/V					
Untreated Check			0.00 a	0.00 c	0.00 a	0.00 b
ARY-0452-110	1.40	JUNE/14/28 DAT	37.60 a	96.60 a	0.00 a	44.8 a
Tenacity	4.00					
NIS	0.25 % V/V					

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

Table 4 Percent coverage of 'Midnight' Kentucky bluegrass population in plots treated in 2014.

Treatment	Rate oz/A	Timing	(----------% Coverage Kentucky Bluegrass[1] ----------) 6/5	7/10	8/7	8/14	5/1/15
ARY-0452-110	1.40	JUNE/14/28 DAT	50.00 ab	70.00 a	61.70 b	68.30 a	78.3 a
NIS	0.25 % V/V						
Tenacity	4.00	JUNE/14/28 DAT	45.00 b	75.00 a	90.00 a	68.30 a	81.7 a
NIS	0.25 % V/V						
Untreated Check			55.00 ab	70.00 a	86.70 a	56.70 a	60.0 a
ARY-0452-110	1.40	JUNE/14/28 DAT	66.70 a	76.70 a	46.00 c	64.30 a	76.0 a
Tenacity	4.00						
NIS	0.25 % V/V						

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