Annual Bluegrass Control in Lawn Height Perennial Ryegrass

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Introduction

This study was conducted on a mature stand of 'Triplex' perennial ryegrass (*Lolium perenne* L.) 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 could reduce the annual bluegrass population in lawn height perennial ryegrass.

Methods and Materials

This study was a randomized complete block design with three replications. Treatments were applied on June 7 (JUNE), June 21 (2 WAT), June 29 (4 WAT), July 25 (8 WAT), August 22 (12 WAT), September 20 (16 WAT), October 25 (20 WAT), and November 27, 2007 (24 WAT) using a three foot CO_2 powered boom sprayer calibrated to deliver 40 gpa using one, flat fan, 11004E nozzle at 40 psi. The test area was maintained at 2 inches using a rotary mower that returned clippings to the site. Turfgrass was irrigated on an as needed basis to prevent moisture stress. The study was fertilized after green up with 2 lb N/M from IBDU and again in September with 0.5 lb N/M from urea. The test area received maintenance fungicide applications to control disease.

The test site consisted of approximately 60 percent perennial ryegrass and 40 percent annual bluegrass at the initiation of the study. The annual bluegrass population was visually evaluated on June 6, 2007 and May 8, 2008, on a plot by plot basis, to determine the baseline population and percent change of the population in each plot.

Results and Discussion

Turfgrass phytotoxicity was rated ten times during the study (Table 1). No unacceptable phytotoxicity (below 7.0) was found on any rating date.

Turfgrass spring greenup was rated twice during the study (Table 2). On the April 14th rating date, turfgrass treated with Trimmit at 11.5 oz/A applied six times, Tenacity at 5 oz/A applied 4/8/12WAT or applied 20/24 WAT, and Velocity had similar greenup to non treated turfgrass. All other treated turfgrass tended to have a slight delay in greenup. There was only a slight difference in spring greenup on the April 24, 2008 rating date.

Annual bluegrass control was rated on May 8, 2008 (Table 3). Only turfgrass treated with Trimmit at 11.5 oz/A applied six times, Trimmit at 21 oz/A applied JUNE plus Tenacity at 2 oz/.A applied 4/8/12 WAT plus Trimmit applied 20/24 WAT, and Prograss significantly reduced the annual bluegrass population compared to non treated turfgrass. It should be noted that the annual bluegrass population increased by about 55% in the sward of non treated turfgrass.

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Table 1. Phytotoxicity on a scale of 0-10, where 0 = dead turf, 7 = acceptable, and 10 = no phytotoxicity in a mixed lawn height sward of 'Triplex' perennial ryegrass and annual bluegrass in 2007.

Treatment	Form	Rate	Timing	(----------Phytotoxicity----------				)
		oz/A		6-14	6-21	7-5	7-19	7-26
TRIMMIT	2SC	21	JUNE/4/8/12/16/20 WAT	10.0	10.0	10.0	10.0	10.0
TRIMMIT	2SC	11.5	JUNE/4/8/12/16/20 WAT	10.0	10.0	10.0	10.0	10.0
TRIMMIT	2SC	21	JUNE	10.0	10.0	10.0	10.0	10.0
TRIMMIT	2SC	11.5	20/24 WAT					
TRIMMIT	2SC	21	JUNE	10.0	10.0	10.0	10.0	10.0
TENACITY	4SC	5	JUNE/20/24 WAT					
TRIMMIT	2SC	11.5	20/24 WAT					
TRIMMIT	2SC	21	JUNE	10.0	10.0	10.0	10.0	10.0
TENACITY	4SC	4	JUNE/20/24 WAT					
TRIMMIT	2SC	11.5	20/24 WAT					
TRIMMIT	2SC	21	JUNE	10.0	10.0	10.0	10.0	10.0
TENACITY	4SC	2	JUNE/20/24 WAT					
TRIMMIT	2SC	11.5	20/24 WAT					
TRIMMIT	2SC	21	JUNE	10.0	10.0	10.0	10.0	10.0
TENACITY	4SC	5	4/8/12 WAT					
TRIMMIT	2SC	11.5	20/24 WAT					
CHECK				10.0	10.0	10.0	10.0	10.0
TRIMMIT	2SC	21	JUNE	10.0	10.0	10.0	10.0	10.0
TENACITY	4SC	4	4/8/12 WAT					
TRIMMIT	2SC	11.5	20/24 WAT					
TRIMMIT	2SC	21	JUNE	10.0	10.0	10.0	10.0	10.0
TENACITY	4SC	2	4/8/12 WAT					
TRIMMIT	2SC	11.5	20/24 WAT					
TENACITY	4SC	5	4/8/12 WAT	10.0	10.0	10.0	10.0	10.0
TENACITY	4SC	5	20/24 WAT	10.0	10.0	10.0	10.0	10.0
VELOCITY	80SP	30	JUNE/2 WAT	8.7	7.2	7.8	10.0	10.0
PROGRASS	1.5EC	1.5 oz/M	20/24 WAT	10.0	10.0	10.0	10.0	10.0
PROGRASS	1.5EC	4.0 oz/M	20/24 WAT	10.0	10.0	10.0	10.0	10.0

Table 1 (continued). Phytotoxicity on a scale of 0-10, where 0 = dead turf, 7 = acceptable, and 10 = no phytotoxicity in a mixed lawn height sward of 'Triplex' perennial ryegrass and annual bluegrass in 2007.

Treatment	Form	Rate	Timing	(----------Phytotoxicity----------				)
		oz/A		8-2	8-15	9-6	9-20	10-16
TRIMMIT	2SC	21	JUNE/4/8/12/16/20 WAT	10.0	10.0	10.0	10.0	10.0
TRIMMIT	2SC	11.5	JUNE/4/8/12/16/20 WAT	10.0	10.0	10.0	10.0	10.0
TRIMMIT	2SC	21	JUNE	10.0	10.0	10.0	10.0	10.0
TRIMMIT	2SC	11.5	20/24 WAT					
TRIMMIT	2SC	21	JUNE	10.0	10.0	10.0	10.0	10.0
TENACITY	4SC	5	JUNE/20/24 WAT					
TRIMMIT	2SC	11.5	20/24 WAT					
TRIMMIT	2SC	21	JUNE	10.0	10.0	10.0	10.0	10.0
TENACITY	4SC	4	JUNE/20/24 WAT					
TRIMMIT	2SC	11.5	20/24 WAT					
TRIMMIT	2SC	21	JUNE	10.0	10.0	10.0	10.0	10.0
TENACITY	4SC	2	JUNE/20/24 WAT					
TRIMMIT	2SC	11.5	20/24 WAT					
TRIMMIT	2SC	21	JUNE	7.8	10.0	10.0	8.8	10.0
TENACITY	4SC	5	4/8/12 WAT					
TRIMMIT	2SC	11.5	20/24 WAT					
CHECK				10.0	10.0	10.0	10.0	10.0
TRIMMIT	2SC	21	JUNE	7.7	10.0	10.0	8.3	10.0
TENACITY	4SC	4	4/8/12 WAT					
TRIMMIT	2SC	11.5	20/24 WAT					
TRIMMIT	2SC	21	JUNE	10.0	10.0	10.0	10.0	10.0
TENACITY	4SC	2	4/8/12 WAT					
TRIMMIT	2SC	11.5	20/24 WAT					
TENACITY	4SC	5	4/8/12 WAT	7.7	10.0	10.0	8.3	10.0
TENACITY	4SC	5	20/24 WAT	10.0	10.0	10.0	10.0	10.0
VELOCITY	80SP	30	JUNE/2 WAT	10.0	10.0	10.0	10.0	10.0
PROGRASS	1.5EC	1.5 oz/M	20/24 WAT	10.0	10.0	10.0	10.0	10.0
PROGRASS	1.5EC	4.0 oz/M	20/24 WAT	10.0	10.0	10.0	10.0	10.0

Table 2. Spring green up ratings on a scale of 0-10, where 0 = dormant turf and 10 = full green up, of a mixed lawn height sward of 'Triplex' perennial ryegrass and annual bluegrass in 2008.

Treatment	Form	Rate	Timing	(----------Green Up----------)	
		oz/A		4/14/08	4/24/08
TRIMMIT	2SC	21	JUNE/4/8/12/16/20 WAT	6.3	10.0
TRIMMIT	2SC	11.5	JUNE/4/8/12/16/20 WAT	7.0	10.0
TRIMMIT	2SC	21	JUNE	6.5	10.0
TRIMMIT	2SC	11.5	20/24 WAT		
TRIMMIT	2SC	21	JUNE	5.0	7.5
TENACITY	4SC	5	JUNE/20/24 WAT		
TRIMMIT	2SC	11.5	20/24 WAT		
TRIMMIT	2SC	21	JUNE	5.0	8.3
TENACITY	4SC	4	JUNE/20/24 WAT		
TRIMMIT	2SC	11.5	20/24 WAT		
TRIMMIT	2SC	21	JUNE	5.0	7.8
TENACITY	4SC	2	JUNE/20/24 WAT		
TRIMMIT	2SC	11.5	20/24 WAT		
TRIMMIT	2SC	21	JUNE	5.0	8.2
TENACITY	4SC	5	4/8/12 WAT		
TRIMMIT	2SC	11.5	20/24 WAT		
CHECK				7.2	10.0
TRIMMIT	2SC	21	JUNE	5.0	8.7
TENACITY	4SC	4	4/8/12 WAT		
TRIMMIT	2SC	11.5	20/24 WAT		
TRIMMIT	2SC	21	JUNE	4.7	7.2
TENACITY	4SC	2	4/8/12 WAT		
TRIMMIT	2SC	11.5	20/24 WAT		
TENACITY	4SC	5	4/8/12 WAT	7.0	10.0
TENACITY	4SC	5	20/24 WAT	7.0	10.0
VELOCITY	80SP	30	JUNE/2 WAT	7.0	10.0
PROGRASS	1.5EC	1.5 oz/M	20/24 WAT	6.7	10.0
PROGRASS	1.5EC	4.0 oz/M	20/24 WAT	6.0	8.7

Table 3. Percent control of annual bluegrass in a mixed lawn height sward with 'Triplex' perennial ryegrass in 2008.

Treatment	Form	Rate oz/A	Timing	(--------% Control [1, 2]-------) 5/8/2008
TRIMMIT	2SC	21	JUNE/4/8/12/16/20 WAT	79.4a
TRIMMIT	2SC	11.5	JUNE/4/8/12/16/20 WAT	11.1a-d
TRIMMIT	2SC	21	JUNE	-100.0ef
TRIMMIT	2SC	11.5	20/24 WAT	
TRIMMIT	2SC	21	JUNE	38.9abc
TENACITY	4SC	5	JUNE/20/24 WAT	
TRIMMIT	2SC	11.5	20/24 WAT	
TRIMMIT	2SC	21	JUNE	-5.6a-e
TENACITY	4SC	4	JUNE/20/24 WAT	
TRIMMIT	2SC	11.5	20/24 WAT	
TRIMMIT	2SC	21	JUNE	44.4ab
TENACITY	4SC	2	JUNE/20/24 WAT	
TRIMMIT	2SC	11.5	20/24 WAT	
TRIMMIT	2SC	21	JUNE	2.8a-d
TENACITY	4SC	5	4/8/12 WAT	
TRIMMIT	2SC	11.5	20/24 WAT	
CHECK				-55.6b-f
TRIMMIT	2SC	21	JUNE	11.1a-d
TENACITY	4SC	4	4/8/12 WAT	
TRIMMIT	2SC	11.5	20/24 WAT	
TRIMMIT	2SC	21	JUNE	51.1a
TENACITY	4SC	2	4/8/12 WAT	
TRIMMIT	2SC	11.5	20/24 WAT	
TENACITY	4SC	5	4/8/12 WAT	-80.6def
TENACITY	4SC	5	20/24 WAT	-141.7f
VELOCITY	80SP	30	JUNE/2 WAT	-63.9c-f
PROGRASS	1.5EC	1.5 oz/M	20/24 WAT	54.4a
PROGRASS	1.5EC	4.0 oz/M	20/24 WAT	96.9a

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

2 – Negative numbers indicate an increase in annual bluegrass populations and positive numbers a decrease in population.