Annual Bluegrass Control in Fairway Height Creeping Bentgrass

J. A. Borger and M. B. Naedel [1]

Introduction

This study was conducted on a mature stand of 'Penneagle' creeping bentgrass (*Agrostis stolonifera*) 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 under simulated fairway conditions.

Methods and Materials

This study was a randomized complete block design with three replications. Treatments were applied on May 30 (MAY), June 5 (1 WAT), June 12 (2 WAT), June 19 (3 WAT), June 30 (4 WAT), July 6 (5 WAT), July 25 (8 WAT), September 20 (16 WAT), October 19 (20 WAT), November 15 (NOV), and December 14, 2006 (DEC) 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 0.5 inch using a five-plex reel mower that collected clippings. Turfgrass was irrigated on an as needed basis to prevent moisture stress. The study was fertilized prior to green up (April 25, 2006) with 1 lb N/M from IBDU and again on May 16, 2006 with 1 lb N/M from urea. The test area received maintenance fungicide applications to control disease.

The test site consisted of approximately 65 percent creeping bentgrass and 35 percent annual bluegrass at the initiation of the study. The annual bluegrass population was visually evaluated on May 23, 2006 and May 15, 2007, on a plot by plot basis, to determine the baseline population and percent change of the population in each plot.

Results and Discussion

Turfgrass discoloration was rated four times during the study (Table 1). On the last two rating dates, October 23, 2006 turfgrass treated with Trimmit combined with any other material except Prograss had unacceptable discoloration and on November 20, 2006, turfgrass treated with Trimmit combined with any other material except Rubigan at 0.75 oz/M plus 18-3-1 or Prograss had unacceptable discoloration.

Turfgrass spring green-up was rated twice during the study (Table 2). On April 11, 2007 turfgrass treated Prograss alone or in combination revealed a delay in green-up.

The percent population change of annual bluegrass was rated on May 15, 2007 (Table 3). Only turfgrass treated with Velocity at 45 g ai/A twice did not significantly reduce the population of annual bluegrass compared to non treated turfgrass.

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[1] Instructor and Research Technician, Department of Crop and Soil Sciences, Penn State University, University Park, Pa, 16802

Table 1. Discoloration of a mixed fairway height sward of 'Penneagle' creeping bentgrass and annual bluegrass in 2006.

Treatment	Form	Rate	Timing	(----------Discoloration [1]----------			
		(lb ai/A)		**6/7**	**7/15**	**10/23**	**11/20**
TRIMMIT	2SC	0.4	MAY/4/8/16/20 WAT	8.7	10.0	6.3	5.8
RUBIGAN	1AS	0.75 oz/M	MAY/4/8/16/20 WAT				
TRIMMIT	2SC	0.4	MAY/4/8/16/20 WAT	9.0	10.0	6.5	7.7
RUBIGAN	1AS	0.75 oz/M	MAY/4/8/16/20 WAT				
18-3-1	1.8L	0.2 lb N/M	MAY/4/8/16/20 WAT				
TRIMMIT	2SC	0.4	MAY/4/8/16/20 WAT	8.3	10.0	6.7	6.0
RUBIGAN	1AS	1.5 oz/M	MAY/4/8/16/20 WAT				
TRIMMIT	2SC	0.4	MAY/4/8/16/20 WAT	9.0	10.0	6.0	6.2
RUBIGAN	1AS	1.5 oz/M	MAY/4/8/16/20 WAT				
18-3-1	1.8L	0.2 lb N/M	MAY/4/8/16/20 WAT				
TRIMMIT	2SC	0.4	MAY/4/8/16/20 WAT	9.3	10.0	6.3	6.2
18-3-1	1.8L	0.2 lb N/M	MAY/4/8/16/20 WAT				
VELOCITY	80SP	30 g ai/A	MAY/2 WAT	8.3	10.0	10.0	10.0
CHECK				10.0	10.0	10.0	10.0
VELOCITY	80SP	45 g ai/A	MAY/2 WAT	8.0	10.0	9.0	10.0
VELOCITY	80SP	60 g ai/A	MAY/4 WAT	8.0	7.0	10.0	10.0
VELOCITY	80SP	10 g ai/A	MAY/1/2/3/4/5 WAT	7.0	8.0	10.0	10.0
PROGRASS	1.5EC	0.75	NOV/DEC	10.0	10.0	10.0	10.0
PROGRASS	1.5EC	0.75	NOV/DEC	10.0	10.0	10.0	10.0
TRIMMIT	2SC	0.75	NOV/DEC				
PROGRASS	1.5EC	0.375	NOV/DEC	10.0	10.0	10.0	10.0
TRIMMIT	2SC	0.375	NOV/DEC				

1 – Discoloration rated on a scale of 0 to 10 where 0= worst, 7 = acceptable, and 10 = no discoloration.

Table 2. Spring green up of a mixed fairway height sward of 'Penneagle' creeping bentgrass and annual bluegrass in 2006.

Treatment	Form	Rate (lb ai/A)	Timing	(-------Spring Green Up [1]--------) 4/11	4/30
TRIMMIT	2SC	0.4	MAY/4/8/16/20 WAT	8.7	10.0
RUBIGAN	1AS	0.75 oz/M	MAY/4/8/16/20 WAT		
TRIMMIT	2SC	0.4	MAY/4/8/16/20 WAT	9.0	10.0
RUBIGAN	1AS	0.75 oz/M	MAY/4/8/16/20 WAT		
18-3-1	1.8L	0.2 lb N/M	MAY/4/8/16/20 WAT		
TRIMMIT	2SC	0.4	MAY/4/8/16/20 WAT	8.3	10.0
RUBIGAN	1AS	1.5 oz/M	MAY/4/8/16/20 WAT		
TRIMMIT	2SC	0.4	MAY/4/8/16/20 WAT	9.0	10.0
RUBIGAN	1AS	1.5 oz/M	MAY/4/8/16/20 WAT		
18-3-1	1.8L	0.2 lb N/M	MAY/4/8/16/20 WAT		
TRIMMIT	2SC	0.4	MAY/4/8/16/20 WAT	9.0	10.0
18-3-1	1.8L	0.2 lb N/M	MAY/4/8/16/20 WAT		
VELOCITY	80SP	30 g ai/A	MAY/2 WAT	8.0	10.0
CHECK				7.0	10.0
VELOCITY	80SP	45 g ai/A	MAY/2 WAT	8.0	10.0
VELOCITY	80SP	60 g ai/A	MAY/4 WAT	7.7	10.0
VELOCITY	80SP	10 g ai/A	MAY/1/2/3/4/5 WAT	8.3	10.0
PROGRASS	1.5EC	0.75	NOV/DEC	6.0	7.8
PROGRASS	1.5EC	0.75	NOV/DEC	5.3	7.5
TRIMMIT	2SC	0.75	NOV/DEC		
PROGRASS	1.5EC	0.375	NOV/DEC	6.3	9.3
TRIMMIT	2SC	0.375	NOV/DEC		

1 – Green up rated on a scale of 0 to 10 where 0= no green up and 10 = full green up.

Table 3. Percent annual bluegrass population change in a mixed fairway height sward of 'Penneagle' creeping bentgrass and annual bluegrass. Ratings taken on May 15, 2007.

Treatment	Form	Rate (lb ai/A)	Timing	(-------Population Change [1, 2]-----) 5/15/07
TRIMMIT	2SC	0.4	MAY/4/8/16/20 WAT	36.1cd
RUBIGAN	1AS	0.75 oz/M	MAY/4/8/16/20 WAT	
TRIMMIT	2SC	0.4	MAY/4/8/16/20 WAT	47.2bcd
RUBIGAN	1AS	0.75 oz/M	MAY/4/8/16/20 WAT	
18-3-1	1.8L	0.2 lb N/M	MAY/4/8/16/20 WAT	
TRIMMIT	2SC	0.4	MAY/4/8/16/20 WAT	58.3a-d
RUBIGAN	1AS	1.5 oz/M	MAY/4/8/16/20 WAT	
TRIMMIT	2SC	0.4	MAY/4/8/16/20 WAT	66.7a-d
RUBIGAN	1AS	1.5 oz/M	MAY/4/8/16/20 WAT	
18-3-1	1.8L	0.2 lb N/M	MAY/4/8/16/20 WAT	
TRIMMIT	2SC	0.4	MAY/4/8/16/20 WAT	66.7a-d
18-3-1	1.8L	0.2 lb N/M	MAY/4/8/16/20 WAT	
VELOCITY	80SP	30 g ai/A	MAY/2 WAT	47.2bcd
CHECK				-11.1e
VELOCITY	80SP	45 g ai/A	MAY/2 WAT	25.0de
VELOCITY	80SP	60 g ai/A	MAY/4 WAT	81.7ab
VELOCITY	80SP	10 g ai/A	MAY/1/2/3/4/5 WAT	95.8a
PROGRASS	1.5EC	0.75	NOV/DEC	78.3abc
PROGRASS	1.5EC	0.75	NOV/DEC	96.1a
TRIMMIT	2SC	0.75	NOV/DEC	
PROGRASS	1.5EC	0.375	NOV/DEC	36.1cd
TRIMMIT	2SC	0.375	NOV/DEC	

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

2 – Negative numbers indicate an increase in annual bluegrass populations.