Seedhead Suppression of Fairway Height Annual Bluegrass

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Introduction

This study was conducted on a mature stand of annual bluegrass (*Poa annua*) and creeping bentgrass (*Agrostis stoloifera)* at the Valentine Turfgrass Research Center, Penn State University, University Park, PA. The objective of the study was to determine if selected materials could suppress annual bluegrass seedhead populations under simulated golf course fairway conditions.

Methods and Materials

This study was a randomized complete block design with three replications (Figure 1). Treatments were applied at boot stage on April 18, 2014 using a three foot CO_2 powered boom sprayer (Figure 2) calibrated to deliver 40 gpa using one, flat fan, TP9504EVS nozzle at 40 psi. Additionally, turfgrass was irrigated on an as needed basis to prevent moisture stress.

The test site consisted of approximately 95 percent annual bluegrass and 5 percent creeping bentgrass at the initiation of the study. Turfgrass populations were visually evaluated for the percent seedhead coverage in order to evaluate the test material's ability to suppress annual bluegrass seedheads. The test site was mowed at 0.50 inches three times a week with a reel mower. Turfgrass was irrigated on an as needed basis to prevent moisture stress.

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

Results and Discussion

Turfgrass phytotoxicity and color were evaluated five times during the study (Table 1 and Table 2). No unacceptable turfgrass phytotoxicity or color was observed during the study.

Annual bluegrass seedhead populations were rated five times during the study (Table 3). The amount of annual bluegrass seedhead found on the site over the test period varied. It is evident that the peak seedhead production was noted starting on 13 May as non-treated turfgrass had 70% coverage of seedheads. There is a notable trend in the data. When Maintain CF 125 is combined with either MCPP or Embark there is a reduction in the annual bluegrass seedhead production. Annual bluegrass seedheads were also suppressed when Maintain CF 125 was combined with a low rate of Embark. Also observed was that higher rates of Maintain CF 125 alone reduced the seedhead population.

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Table 1. Evaluations of an annual bluegrass and creeping bentgrass mix at fairway height for phytotoxicity, where 1 = no phytotoxicity, 3 = acceptable, and 10 = dead turf in 2014. Initial treatments were applied on April 18, 2014.

Treatment	Form	Rate	(----------Phytotoxicity[1]----------)				
		Lb AIA	5/5	5/13	5/21	5/28	6/3
MAINTAIN CF 125	1 EC	0.063	1.3	1.0	0.7	2.7	2.5
MAINTAIN CF 125	1 EC	0.5	1.0	1.0	1.0	2.3	2.3
MAINTAIN CF 125	1 EC	1	1.0	1.0	1.0	2.0	2.0
MAINTAIN CF 125	1 EC	2	1.0	1.0	1.0	2.0	2.3
EMBARK T/O	0.2 SL	0.0625	3.0	1.0	1.0	2.0	1.0
UNTREATED CHECK			1.0	1.0	1.0	1.0	1.0
EMBARK T/O	0.2 SL	0.0625	2.3	1.0	1.0	1.7	1.3
UREA		0.25 lb/M					
MAINTAIN CF 125	1 EC	0.063	2.0	1.0	1.0	1.3	1.3
EMBARK T/O	0.2 SL	0.03125					
MAINTAIN CF 125	1 EC	0.063	1.0	1.0	1.0	1.7	2.0
EMBARK T/O	0.2 SL	0.03125					
UREA		0.25 lb/M					
MAINTAIN CF 125	1 EC	0.063	1.3	1.0	1.0	3.0	3.3
MCPP	1.9 SC	0.125					
MAINTAIN CF 125	1 EC	0.5	1.3	1.0	1.0	3.0	3.3
MCPP	1.9 SC	0.125					

Table 2. Color ratings taken on a scale of 0 to 10 where 0 = brown turf, 7 = acceptable, and 10 = dark green of an annual bluegrass, creeping bentgrass simulated fairway in 2014. Treatments were applied on April 18, 20114.

Treatment	Form	Rate	(----------Color----------)				
		Lb AIA	5/5	5/13	5/21	5/28	6/3
MAINTAIN CF 125	1 EC	0.063	8.0	7.3	8.0	7.3	7.3
MAINTAIN CF 125	1 EC	0.5	7.7	7.7	8.0	7.7	7.3
MAINTAIN CF 125	1 EC	1	7.3	7.7	8.0	7.7	7.7
MAINTAIN CF 125	1 EC	2	7.3	7.0	7.7	7.3	7.7
EMBARK T/O	0.2 SL	0.0625	6.5	9.0	9.0	9.0	8.7
UNTREATED CHECK			8.0	7.0	8.0	7.0	7.3
EMBARK T/O	0.2 SL	0.0625	6.8	9.0	9.0	8.3	9.0
UREA		0.25 lb/M					
MAINTAIN CF 125	1 EC	0.063	7.0	9.0	9.0	7.3	8.3
EMBARK T/O	0.2 SL	0.03125					
MAINTAIN CF 125	1 EC	0.063	7.8	8.0	9.0	7.7	8.3
EMBARK T/O	0.2 SL	0.03125					
UREA		0.25 lb/M					
MAINTAIN CF 125	1 EC	0.063	8.0	7.0	7.7	7.3	7.0
MCPP	1.9 SC	0.125					
MAINTAIN CF 125	1 EC	0.5	8.0	7.0	7.7	7.0	7.0
MCPP	1.9 SC	0.125					

Table 3. Percent annual bluegrass seedhead coverage on a simulated fairway. Treatments were applied on April 18, 2014.

Treatment	Form	Rate	(----------% Seedhead Coverage[1]----------)				
		Lb AIA	5/5	5/13	5/21	5/28	6/3
MAINTAIN CF 125	1 EC	0.063	13.3 ab	70.0 ab	81.7 a	53.3 a	56.7 b
MAINTAIN CF 125	1 EC	0.5	5.0 bc	60.0 ab	56.7 ab	15.3 b	28.7 b
MAINTAIN CF 125	1 EC	1	2.0 c	46.7 bc	16.7 b	6.7 b	20.0 b
MAINTAIN CF 125	1 EC	2	1.7 c	48.3 bc	5.0 b	2.3 b	8.3 b
EMBARK T/O	0.2 SL	0.0625	0.0 c	15.0 c	10.0 b	16.7 b	15.0 b
UNTREATED CHECK			18.3 c	70.0 ab	73.3 a	70.0 a	70.0 a
EMBARK T/O	0.2 SL	0.0625	1.7 c	13.3 c	16.7 b	10.0 b	16.7 b
UREA		0.25 lb/M					
MAINTAIN CF 125	1 EC	0.063	5.0 bc	18.3 c	20.0 b	23.3 b	28.3 b
EMBARK T/O	0.2 SL	0.03125					
MAINTAIN CF 125	1 EC	0.063	13.3 ab	33.3 bc	40.0 ab	16.7 b	13.3 b
EMBARK T/O	0.2 SL	0.03125					
UREA		0.25 lb/M					
MAINTAIN CF 125	1 EC	0.063	18.3 a	90.0 a	80.0 a	3.7 b	5.0 b
MCPP	1.9 SC	0.125					
MAINTAIN CF 125	1 EC	0.5	11.7 ab	60.0 ab	31.7 ab	5.3 b	5.0 b
MCPP	1.9 SC	0.125					

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