

Creeping Bentgrass Conversion to Perennial Ryegrass using A12738

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Introduction

Phytotoxicity and control evaluations were conducted on a stand of mature 'Penn-Eagle' creeping bentgrass (*Agrostis stolonifera*). On a separate site, the percent cover of newly seeded 'Amazing GS' perennial ryegrass (*Lolium perenne*, L.) was evaluated. Both of these studies were conducted at the Valentine Turfgrass Research Center, Penn State University, University Park, Pa and received the same rates and application schedule of the test materials. The overall objective of these studies was to determine the phytotoxicity/control of the creeping bentgrass and the reestablishment of perennial ryegrass.

Methods and Materials

The studies were a randomized complete block design with three replications. Treatments were applied on June 29 (4 WBS), July 12 (2 WBS), July 26 (SEED), August 24 (3 WAS), and September 6 (5 WAS), 2007 using a three foot CO₂ powered boom sprayer calibrated to deliver 40 gpa using one, flat fan, 11004E nozzle at 40 psi.

The creeping bentgrass site was mowed at one half of an inch with a five-plex fairway mower with clippings collected and maintained similar to a golf course fairway with respect to irrigation, fertility, and mowing. The perennial ryegrass seedbed site had Glyphosate applied, prior to the application of test materials, at a rate of 3 qts/A on June 6, 2007 and was seeded July 26, 2007. Perennial ryegrass germination was first noted on the test site September 1, 2007. Once established, the new turf was mowed once weekly at 2 inches with a rotary mower with clipping returned to the site.

Results and Discussion

Creeping bentgrass phytotoxicity was evaluated seven times during the study (Table 1). All treated turfgrass revealed some level of phytotoxicity during the study. On the final rating date, September 18th, no phytotoxicity was found.

Creeping bentgrass control was evaluated seven times during the study (Table 2). All treated turfgrass revealed some level of control during the study. On the final rating date, September 18th, all treated turfgrass had significantly less creeping bentgrass than non treated turfgrass. Turfgrass treated with A12738 with X-77, at the 2 WBS/SEED/3 WAS timing had significantly more creeping bentgrass than all other treated turfgrass.

Perennial ryegrass cover was evaluated four times during the study (Table 3). All treated turfgrass revealed some level of perennial ryegrass growth during the study. On the final rating date, September 19th, the A12738 with X-77, at the 2 WBS/SEED/3 WAS timing and 4/2 WBS/SEED/3 WAS timing had significantly less perennial ryegrass cover than non treated turfgrass.

Finally, it was noted that there was a differential germination of annual bluegrass in the perennial ryegrass test site. The percent cover of annual bluegrass was rated on September 25th. All treated turfgrass had significantly less annual bluegrass cover when compared to non treated turfgrass.

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Table 1. Evaluations of creeping bentgrass phytotoxicity where 0 = worst, 7 = acceptable, and 10 = no phytotoxicity taken in 2007.

Treatment	Form	Rate oz ai/A	Timing	-----Phytotoxicity-----						
				7/11	7/18	7/26	8/8	8/22	9/5	9/18
A12738	4SC	2	2 WBS/SEED/3 WAS	10.0	5.0	4.7	5.0	10.0	5.7	10.0
X-77	L	0.25 %v/v	2 WBS/SEED/3 WAS							
A12738	4SC	2.5	2 WBS/SEED/3 WAS	10.0	5.0	4.0	4.7	10.0	5.8	10.0
X-77	L	0.25 %v/v	2 WBS/SEED/3 WAS							
CHECK				10.0	10.0	10.0	10.0	10.0	10.0	10.0
A12738	4SC	2	2 WBS/SEED/3/5 WAS	10.0	5.0	4.7	5.3	10.0	6.2	10.0
X-77	L	0.25 %v/v	2 WBS/SEED/3/5 WAS							
A12738	4SC	2	4/2 WBS/SEED/3 WAS	3.0	1.3	3.8	10.0	10.0	10.0	10.0
X-77	L	0.25 %v/v	4/2 WBS/SEED/3 WAS							

Table 2. Evaluations of the percent control of creeping bentgrass in 2007.

Treatment	Form	Rate oz ai/A	Timing	-----% Control ¹ -----						
				7/11	7/18	7/26	8/8	8/22	9/5	9/18
A12738	4SC	2	2 WBS/SEED/3 WAS	0.0a	0.0b	0.0b	33.3b	43.3b	55.0b	61.7b
X-77	L	0.25 %v/v	2 WBS/SEED/3 WAS							
A12738	4SC	2.5	2 WBS/SEED/3 WAS	0.0a	0.0b	0.0b	40.0b	66.7ab	71.7ab	81.7a
X-77	L	0.25 %v/v	2 WBS/SEED/3 WAS							
CHECK				0.0a	0.0b	0.0b	0.0c	0.0c	0.0c	0.0c
A12738	4SC	2	2 WBS/SEED/3/5 WAS	0.0a	0.0b	0.0b	36.7b	56.7b	66.7b	78.3a
X-77	L	0.25 %v/v	2 WBS/SEED/3/5 WAS							
A12738	4SC	2	4/2 WBS/SEED/3 WAS	0.0a	20.0a	25.0a	80.0a	88.3a	91.7a	95.0a
X-77	L	0.25 %v/v	4/2 WBS/SEED/3 WAS							

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

Table 3. Evaluations of the percent cover of perennial ryegrass taken in 2007.

Treatment	Form	Rate oz ai/A	Timing	(% Ryegrass Cover ¹)			
				8/8	8/22	9/5	9/19
A12738	4SC	2	2 WBS/SEED/3 WAS	48.3a	76.7b	83.3a	90.0b
X-77	L	0.25 %v/v	2 WBS/SEED/3 WAS				
A12738	4SC	2.5	2 WBS/SEED/3 WAS	53.3a	76.7b	86.3a	93.0ab
X-77	L	0.25 %v/v	2 WBS/SEED/3 WAS				
CHECK				65.0a	88.3a	93.3a	97.7a
A12738	4SC	2	2 WBS/SEED/3/5 WAS	55.0a	78.3b	88.0a	94.7ab
X-77	L	0.25 %v/v	2 WBS/SEED/3/5 WAS				
A12738	4SC	2	4/2 WBS/SEED/3 WAS	48.3a	76.7b	86.7a	90.0b
X-77	L	0.25 %v/v	4/2 WBS/SEED/3 WAS				

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

Table 4. Evaluations of the percent cover of *Poa annua* in the perennial ryegrass seedbed taken in 2007.

Treatment	Form	Rate oz ai/A	Timing	(----% Poa ¹ -----)
				9/25
A12738	4SC	2	2 WBS/SEED/3 WAS	1.0b
X-77	L	0.25 %v/v	2 WBS/SEED/3 WAS	
A12738	4SC	2.5	2 WBS/SEED/3 WAS	1.0b
X-77	L	0.25 %v/v	2 WBS/SEED/3 WAS	
CHECK				46.7a
A12738	4SC	2	2 WBS/SEED/3/5 WAS	1.0b
X-77	L	0.25 %v/v	2 WBS/SEED/3/5 WAS	
A12738	4SC	2	4/2 WBS/SEED/3 WAS	1.0b
X-77	L	0.25 %v/v	4/2 WBS/SEED/3 WAS	

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