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The Rutgers Turfgrass Proceedings is published yearly by the Rutgers Center for Turfgrass Science, Rutgers Cooperative Extension, and the New Jersey Agricultural Experiment Station, Cook College, Rutgers, The State University of New Jersey in cooperation with the New Jersey Turfgrass Association. The purpose of this document is to provide a forum for the dissemination of information and the exchange of ideas and knowledge. The proceedings provide turfgrass managers, research scientists, extension specialists, and industry personnel with opportunities to communicate with co-workers. Through this forum, these professionals also reach a more general audience, which includes the public.

This publication includes lecture notes of papers presented at the 2001 New Jersey Turfgrass Expo. Publication of these lectures provides a readily available source of information covering a wide range of topics and includes technical and popular presentations of importance to the turfgrass industry.

This proceedings also includes research papers that contain original research findings and reviews of selected subjects in turfgrass science. These papers are presented primarily to facilitate the timely dissemination of original turfgrass research for use by the turfgrass industry.

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Dr. Ann Brooks Gould, Editor
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EVALUATION OF FUNGICIDES FOR THE CONTROL OF FUSARIUM PATCH ON A BENTGRASS/POA GREEN

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Fungicides were evaluated for their ability to control Fusarium patch (caused by *Microdochium nivale*) on a creeping bentgrass (*Agrostis stolonifera*) and annual bluegrass (*Poa annua*) putting green at the Peace Pipe Country Club in Denville, NJ. The test area was mowed at a height of 0.156 inch seven times per week with clippings collected. Turf was irrigated to avoid drought stress. Fertilizer was applied as 10-10-10 on 15 August 2001 (0.75 lb nitrogen (N)/1000 ft²) and as 18-3-17 on 23 September 2001 (1 lb N/1000 ft²). Plots were 3 ft x 9 ft and were arranged in a randomized complete block with four replications.

Fungicides were applied in water equivalent to 1.9 gal per 1000 ft² with a CO₂ powered sprayer at 30 psi using TeeJet 8003VS flat fan nozzles. Granular materials were applied by hand using a shaker jar and were irrigated into the thatch with 0.5 gal of water per plot. Treatments (trt) were first applied on 19 November 2001. Fungicides requiring a spring application were applied on 29 January 2002 as indicated in Table 1. Turf was visually evaluated for number of infection centers per plot on 29 January 2002 and 22 March 2002. Average patch diameter was 2.5 inch. Turf quality was assessed on 22 March using a 1 to 9 scale, where 9 = best turf quality. Phytotoxicity was also evaluated on 22 March using a 1 to 5 scale, where 1 = no toxicity, 2 = slight tip burn, 3 =

moderate tip burn, 4 = severe tip burn, and 5 = most leaf tissue devoid of chlorophyll. Data were subjected to analysis of variance and means separation by the Waller-Duncan *k*-ratio *t*-test (*k*=100).

Little snow accumulation was observed during the experimental period (November 2001 to March 2002) resulting in a low incidence of Fusarium patch. Disease development was first observed on 11 December 2001 but was not uniformly distributed until 29 January. Most products tested provided excellent control of Fusarium patch throughout the study. Only Defiant 75WG applied in the fall at 4 oz and then the spring at 1.5 oz (trt 20) and Microbe-Lift PL (trt 26) sustained an incidence of disease equivalent to the untreated check (trt 32). Several treatments containing Chipco 26GT 2SC, Chipco Triton 1.67SC, Defend 4F, TADS 12529 70WG, Chipco Aliette Signature 80WG, Defiant 75WG, ParFlo 4F, and Daconil Ultrex 82.5SDG enhanced turf quality compared to untreated turf. The sterol biosynthesis inhibiting fungicides Chipco Triton 1.67SC at 2 fl oz (trt 1) and Banner MAXX 1.3MC at 4 fl oz (trt 2) caused a slight to moderate degree of foliar tip chlorosis. Although this discoloration did not persist after April, it resulted in a significant reduction in turf quality for both treatments compared to the untreated check (trt 32).

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Table 1. Efficacy of selected fungicides for the control of Fusarium patch on a bentgrass/poa green in Denville, NJ: 2001-2002.

Treatment and rate per 1000 sq ft	Application Schedule ⁴	Infection Centers per Plot ¹		Turf Quality ² 22 March	Phytotoxicity ³ 22 March
		29 January	22 March		
1. Chipco Triton 1.67SC 2.0 fl oz ⁵	F/S	1.5 a-c	0.5 a	6.5 ab	1.3 b
2. Banner MAXX 1.3MC 4.0 fl oz ⁵	F/S	0.8 ab	0.0 a	6.0 a	2.3 c
3. Chipco 26GT 2SC 4.0 fl oz					
+ Chipco Triton 1.67SC 1.0 fl oz	F/S	1.8 a-c	0.3 a	7.5 b-f	0.0 a
4. Daconil Weather Stik 6F 5.5 fl oz	F/S	0.8 ab	0.0 a	6.8 a-c	0.0 a
5. Chipco 26GT 2SC 4.0 fl oz					
+ TADS 12529 70WG 0.3 oz	F/S	1.5 a-c	0.5 a	7.3 b-e	0.8 a
6. Chipco 26GT 2SC 6.0 fl oz	F	1.3 1-c	0.8 a	7.8 c-g	0.0 a
7. Chipco 26GT 2SC 4.0 fl oz					
+ Chipco Triton 1.67SC 1.0 fl oz					
+ Defend 4F 8.0 fl oz	F/S	0.3 a	0.0 a	8.5 f-h	0.0 a
8. Daconil Ultrex 82.5SDG 6.0 oz	F	1.8 a-c	1.0 a	7.8 c-g	0.0 a
9. Chipco 26GT 2SC 4.0 fl oz					
+ TADS 12529 70WG 0.3 oz					
+ Defend 4F 8 fl oz	F/S	1.8 a-c	0.0 a	9.0 h	0.0 a
10. Heritage 50WG 0.4 oz	F	2.0 a-c	0.0 a	6.8 a-c	0.5 a
11. Chipco 26GT 2SC 4 fl oz					
+ Daconil Weather Stik 6F 5.5 fl oz.					
+ Defend 4F 8 fl oz	F/S	1.5 a-c	0.0 a	8.3 e-h	0.0 a
12. Chipco 26GT 2SC 4.0 fl oz					
+ Daconil Weather Stik 6F 5.5 fl oz	F/S	2.0 a-c	0.5 a	7.5 b-f	0.0 a
13. Chipco 26GT 2SC 4.0 fl oz					
+ TADS 12529 0.3G 70.0 oz ^{5,6}	F/S	2.8 b-e	0.3 a	7.3 b-e	0.5 a
14. Chipco 26GT 2SC 4.0 fl oz					
+ Chipco Triton 1.67SC 1.0 fl oz					
+ Chipco Aliette Signature 80WG 4.0 oz	F/S	1.0 a-c	0.0 a	7.0 b-d	0.0 a
15. Chipco 26GT 2SC 4.0 fl oz					
+ Defend 4F 8.0 fl oz					
+ Chipco Aliette Signature 80WG 4.0 oz	F/S	1.5 a-c	0.0 a	8.5 f-h	0.0 a
16. Defiant 75WG 8.0 oz	F				
/ Defiant 75WG 3.0 oz ⁷	S	1.3 a-c	0.3 a	8.5 f-h	0.0 a

Table 1 (continued).

Treatment and rate per 1000 sq ft	Application Schedule ⁴	Infection Centers per Plot ¹		Turf Quality ² 22 March	Phytotoxicity ³ 22 March
		29 January	22 March		
17. Defiant 75WG 4.0 oz + Defend 4F 4.0 fl oz / Defiant 75WG 1.5 oz + Defend 4F 1.5 fl oz ⁷	F S	1.3 a-c	0.0 a	8.3 e-h	0.0 a
18. Defiant 75WG 8.0 oz + Defend 4F 8 fl oz / Defiant 75WG 3 oz + Defend 4F 3 fl oz ⁷	F S	1.0 a-c	0.0 a	8.8 gh	0.0 a
19. Defend 4F 8 fl oz / Defend 4F 3 fl oz ⁷	F S	1.5 a-c	0.3 a	8.8 gh	0.0 a
20. Defiant 75WG 4.0 oz / Defiant 75WG 1.5 oz ⁷	F S	4.5 ef	6.8 b	7.5 b-f	0.0 a
21. Defend 4F 4 fl oz / Defend 4F 1.5 fl oz ⁷	F S	2.3 a-d	0.0 a	8.5 f-h	0.0 a
22. ParFlo 4F 12 fl oz	F	1.3 a-c	0.5 a	8.3 e-h	0.0 a
23. ParFlo 4F 8.0 fl oz + Heritage 50WG 0.4 oz	F	1.0 a-c	0.0 a	8.3 e-h	0.0 a
24. ParFlo 4F 8.0 fl oz + Daconil Ultrex 82.5SDG 6.0 oz + Chipco 26GT 2SC 6.0 fl oz	F	1.8 a-c	0.0 a	9.0 h	0.0 a
25. ParFlo 4F 8.0 fl oz + Lynx 45W 2.2 oz	F	4.3 d-f	0.5 a	7.3 b-e	0.0 a
26. Microbe-Lift PL10% v/v	F/S	4.5 ef	5.8 b	8.0 d-h	0.5 a
27. Terraneb SP 65W 7.5 oz	F/S	0.5 ab	0.0 a	7.0 b-d	0.5 a
28. Chipco Triton 1.67SC 1.0 fl oz	F/S	1.8 a-c	0.0 a	7.0 b-d	0.0 a
29. Chipco 26GT 2SC 4.0 fl oz	F/S	1.3 a-c	0.0 a	8.0 d-h	0.0 a
30. Defend 4F 8.0 fl oz	F/S	0.8 ab	0.3 a	8.3 e-h	0.0 a
31. TADS 12529 70WG 0.3 oz	F/S	3.3 c-e	1.3 a	6.8 a-c	0.0 a
32. Untreated Control		6.3 f	10.3 c	7.3 b-e	0.0 a

Table 1 (continued).

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- ¹ Values are means of four replicates. Means followed by the same letter are not significantly different according to Waller-Duncan *k*-ratio *t*-test (*k* = 100). Average patch diameter = 2.5 inch.
 - ² Turf quality on a 1 to 9 scale, where 9 = best quality and 6 = acceptable turf quality.
 - ³ Phytotoxicity on a 1 to 5 scale, where 1 = no toxicity, 2 = slight tip burn, 3 = moderate tip burn, 4 = severe tip burn, and 5 = most leaf tissue devoid of chlorophyll.
 - ⁴ Fungicides were applied in the fall (F) on 19 November 2001, spring (S) on 29 January 2002, or fall and spring (F/S) on 19 November 2001 and 29 January 2002.
 - ⁵ Granular materials and treatments 1 and 2 were irrigated into the thatch with 0.5 gal of water per plot.
 - ⁶ The granular component of treatment 13 (TADS 12529 0.3G) was applied first and watered into the thatch.
 - ⁷ For treatments 16 to 21, products preceding the “/” symbol were applied on 19 November 2001, whereas products following this symbol were applied on 29 January 2002.