1997 RUTGERS Turfgrass Proceedings



THE NEW JERSEY TURFGRASS ASSOCIATION

In Cooperation With

RUTGERS COOPERATIVE EXTENSION
NEW JERSEY AGRICULTURAL EXPERIMENT STATION
RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY
NEW BRUNSWICK

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1997 RUTGERS TURFGRASS PROCEEDINGS

of the

New Jersey Turfgrass Expo December 9-11, 1997 Trump Taj Mahal Atlantic City, New Jersey

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 University 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. Articles appearing in these proceedings are divided into two sections.

The first section (white pages) includes lecture notes of papers presented at the 1997 New Jersey Turfgrass Expo. Publication of the New Jersey Turfgrass Expo Notes provides a readily

available source of information covering a wide range of topics. The Expo Notes include technical and popular presentations of importance to the turfgrass industry.

The second section (green pages) includes technical research papers containing original research findings and reviews covering selected subjects in turfgrass science. The primary objective of these papers is to facilitate the timely dissemination of original turfgrass research for use by the turfgrass industry.

Special thanks are given to those who have submitted papers for this proceedings, to the New Jersey Turfgrass Association for financial assistance, and to those individuals who have provided support to the Rutgers Turf Research Program at Cook College - Rutgers, The State University of New Jersey.

Dr. Ann B. Gould, Editor Dr. Bruce B. Clarke, Coordinator

EVALUATION OF FUNGICIDES FOR THE CONTROL OF BROWN PATCH ON REBEL II TALL FESCUE

L. P. Tredway, B. B. Clarke, and P. R. Majumdar¹

Fungicides were evaluated in 1997 for their ability to control brown patch (caused by Rhizoctonia solani) on tall fescue (Festuca arundinacea Rebel II) at the Plant Science Research Farm in Adelphia, NJ. The turf was established September 1991 on a Freehold sandy loam with a pH of 6.4. The test area was moved at a height of 2.0 inches twice per week with no clipping collection. Irrigation was applied to avoid drought stress. Fertilizer was applied as 15-0-0 on 18 March (0.5 lb N/1000 ft²), 2 June (0.75 lb N/1000 ft²), 7 July (0.75 lb N/1000 ft²), and 4 August (1.0 lb N/1000 ft2). Dacthal 6F (5 fl oz/1000 ft2) was applied on 16 April for preemergence weed control. Plots were 3 X 9 ft and were arranged in a randomized complete block with four replications.

Fungicides were applied in water equivalent to 2 gal per 1000 ft² with a CO₂ powered sprayer at 30 psi using TeeJet 8003E nozzles. Treatments (trt) 1 to 6 were initiated on 10 June, whereas all other treatments were initiated on 2

July. Fungicides were reapplied at the appropriate intervals as indicated in Table 1. Percent turf area infected with R. solani was assessed on 15 July, 26 July, 30 July, 14 August, and 20 August. Data were subjected to analysis of variance and means separation by Waller-Duncan k-ratio t test (k = 100) following arcsine transformation.

Brown patch development was first observed on 2 July. Disease pressure was low to moderate through July and early August but intensified toward the end of August. All treatments provided some degree of brown patch suppression on each rating date. Good control was provided throughout the season by Eagle 40W (trt 9, 10), RH0753 23%SC (trt 6), BWC 011 01F 2.1E (trt 12, 13), BWC 012 03F 90WG (trt 14), BWC 012 01F 4.17SC (trt 15, 16, 17), and the 0.74 fl oz rate of BWC 014 02F 2SC (trt 19). Moderate to fair disease control was provided by Junction 45DF (trt 21, 22) and RH0753 23%SC (trt 4, 5, 7, 8).

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Impact of fungicides on severity of brown patch on Rebel II tall fescue in Adelphia, NJ.

Table 1.

9.0 c-f 11.5 de 11.5 ef 15.2 h 7.2 a-f 10.8 c-e 7.5 b-e 13.8 gh 7.2 a-f 10.0 b-e 11.0 ef 12.2 e-h 7.8 a-f 10.0 b-e 11.0 ef 12.2 e-h 7.8 a-f 9.8 b-e 7.5 b-e 12.2 e-h 7.8 a-f 9.5 b-e 8.0 b-f 10.2 d-h 5.8 ab 7.2 a-d 7.8 b-f 8.5 c-g 10.2 ef 11.0 c-e 9.0 d-f 9.2 c-g 9.0 c-f 10.0 b-e 8.0 b-f 7.0 b-d 6.2 a-d 6.2 a-c 4.2 a-c 6.5 a-d 9.0 c-f 8.5 b-e 5.5 a-d 8.0 c-e 8.2 a-d 6.0 a-c 3.5 a 6.8 a-d 6.8 a-d 4.2 a-c 5.5 a-c 5.2 a 6.8 a-d 4.2 a-c 5.5 a-c 9.5 c-f 6.8 a-d 4.2 a-c 5.5 a-c 9.5 c-f 6.8 a-d 4.2 a-c 5.5 a-c 9.5 c-f 6.8 a-d 10.5 ef 7.5 b-e 9.8 d-f 7.2 a-d 8.5 b-f 6.5 a-d 10.0 ef 12.5 e 13.0 f 15.2 h 9.5 c-f 8.8 b-e 12.8 ef 8.8 c-g 6.0 a-c 6.0 a-c 10.5 ef 8.0 c-e 16.5 a-d 20.0 f 24.2 g 25.0 i			Spray		Turf a	Turf area infected (%)/plot¹)/plot¹	
HU753 23% SC 2.17 floz. Once 7.2 a-f 10.8 c-e 7.5 b-e 13.8 gh RH0753 23% SC 2.17 floz. Once 7.2 a-f 10.8 c-e 7.5 b-e 13.8 gh RH0753 23% SC 2.17 floz. 28³ 7.2 a-f 10.0 b-e 11.0 ef 12.8 f-h RH0753 23% SC 2.17 floz. 28³ 7.8 a-f 10.0 b-e 7.5 b-e 12.2 e-h 10.753 23% SC 2.17 floz. 28³ 7.8 a-f 10.0 b-e 7.5 b-e 12.2 e-h 10.753 23% SC 2.17 floz. 28³ 10.2 ef 11.0 c-e 9.0 d-f 9.5 c-g RH0753 23% SC 2.17 floz. 28³ 10.2 ef 11.0 c-e 9.0 d-f 9.2 c-g RH0753 23% SC 2.17 floz. 28³ 10.2 ef 11.0 c-e 9.0 d-f 9.2 c-g RH0753 23% SC 2.17 floz. 28³ 10.2 ef 10.0 b-e 8.0 b-f 7.8 b-f 8.5 a-d 8.0 c-f 10.0 b-e 8.0 b-f 7.0 b-d Eagle 40W 0.6 oz. 17 floz. 14 6.2 a-d 6.2 a-c 3.5 a-g 8.0 c-f 10.0 b-e 10.2 ef 10.0 b-e 10.2 ef 10.2 e	Tre	atment and rate/1000 sq ft	(days) ²	15 July	26 July	30 July	14 Aug.	20 Aug.
RH0753 23% SC 4.35 floz. — Once 7.2 a-f 10.0 b-e 11.0 ef 12.8 fh RH0753 23% SC 2.17 floz. — 28° 7.2 a-f 10.0 b-e 11.0 ef 12.8 fh RH0753 23% SC 2.17 floz. — 28° 7.8 a-f 10.0 b-e 11.0 ef 12.8 fh RH0753 23% SC 2.17 floz. — 28° 7.8 a-f 10.0 b-e 12.0 b-f 10.2 d-h RH0753 23% SC 2.17 floz. — 28° 10.2 ef 11.0 b-e 8.0 b-f 10.2 d-h RH0753 23% SC 2.17 floz. — 28° 10.2 ef 11.0 b-e 8.0 b-f 10.2 d-h RH0753 23% SC 2.17 floz. — 28° 9.0 c-f 10.0 b-e 8.0 b-f 7.0 b-d Eagle 40W 0.6 oz. — 4.2 a-c 6.2 a-c 4.2 a-c 6.5 a-d 80 c-f 8	~	23% SC 2.17 fl	Once					
RH0753 23% SC 2.17 ft oz. 28³ 7.2 a-f 10.0 b-e 11.0 ef 12.8 f-h RH0753 23% SC 4.35 ft oz. 28³ 5.8 ab 9.8 b-e 7.5 b-e 12.2 e-h RH0753 23% SC 2.17 ft oz. 28³ 5.8 ab 7.2 a-f 9.5 b-e 8.0 b-f 10.2 d-h RH0753 23% SC 2.17 ft oz. 28³ 10.2 ef 11.0 ce 8.0 b-f 10.2 d-h RH0753 23% SC 2.17 ft oz. 28³ 10.2 ef 11.0 ce 8.0 b-f 10.2 d-h 8.5 cg RH0753 23% SC 4.35 ft oz. 28° 10.2 ef 11.0 ce 8.0 b-f 7.0 b-d Eagle 40W 0.6 oz. 28° 9.0 c-f 10.0 b-e 8.0 b-f 7.0 b-d Eagle 40W 0.6 oz. 28° 9.0 c-f 8.5 a-d 8.0 c-f 8.5 a-d 8.0 c-f 8.0 cd 8.2 a-f 6.2 a-d 6.0 a-c 3.5 a-f 8.2 cd 8.0 cg 8.0 cd 8	7	23% SC 4.35 fl	Once					19.8 gh
RH0753 23% SC 4.35 floz 284 5.8 ab 9.8 be 7.5 be 12.2 e-h RH0753 23% SC 2.17 floz 284 7.8 a-f 9.5 be 8.0 b-f 10.2 d-h RH0753 23% SC 2.17 floz 284 5.8 ab 7.2 a-d 7.8 b-f 10.2 d-h RH0753 23% SC 4.35 floz 285 10.2 e-f 11.0 c-e 9.0 d-f 9.2 c-g RH0753 23% SC 2.17 floz 285 10.2 e-f 11.0 c-e 9.0 d-f 9.2 c-g RH0753 23% SC 4.35 floz 285 9.0 c-f 10.0 b-e 8.0 b-f 7.0 b-d Eagle 40W 1.2 oz 28 9.0 c-f 6.2 a-c 4.2 a-c 6.5 a-d 8.0 c-g 8WC 011 01F 2.1E 0.35 floz	က	23% SC 2.17 fl	28³					
RH0753 23% SC 2.17 floz. 284 7.8 a-f 9.5 b-e 8.0 b-f 10.2 d-h RH0753 23% SC 4.35 floz. 284 5.8 ab 7.2 a-d 7.8 b-f 8.5 c-g RH0753 23% SC 4.35 floz. 285 10.2 ef 11.0 c-e 9.0 d-f 9.2 c-g RH0753 23% SC 2.17 floz. 285 10.2 ef 11.0 c-e 9.0 d-f 9.2 c-g RH0753 23% SC 4.35 floz. 285 9.0 c-f 10.0 b-e 8.0 b-f 7.0 b-d Eagle 40W 0.6 oz. 285 9.0 c-f 10.0 b-e 8.0 b-f 7.0 b-d Eagle 40W 1.2 oz. 28 9.0 c-f 8.5 b-e 5.5 a-d 8.0 c-e 8.0 c-f 8.0 c-f 8.2 a-f 6.2 a-c 3.5 a 8.2 c-f 8.0 c-f 8.0 c-f 8.2 a-f 6.2 a-c 3.5 a 8.2 c-f 8.0 c-f 8.0 c-f 8.0 a-c 3.5 a 8.2 c-f 8.0 c-f 8.0 c-f 8.0 a-c 3.5 a 8.2 c-f 8.0 c-f 8.0 c-f 8.0 a-c 3.5 a 8.2 a-f 8.0 a-c 3.5 a 8.0 a-f 8.0 a-c 3.0 a 8.0 a-	4	23% SC 4.35 fl	28³					
RH0753 23% SC 4.35 floz 28 ⁴ 5.8 ab 7.2 a-d 7.8 b-f 8.5 c-g RH0753 23% SC 2.17 floz 28 ⁵ 10.2 ef 11.0 c-e 9.0 d-f 9.2 c-g RH0753 23% SC 2.17 floz 28 ⁵ 9.0 c-f 10.0 b-e 8.0 b-f 7.0 b-d Eagle 40W 0.6 oz 14 6.2 a-d 6.2 a-c 4.2 a-c 6.5 a-d 8.0 c-e BWC 011 01F 2.1E 0.175 floz 14 8.2 a-f 6.2 a-c 3.5 a 8.2 c-f 8WC 011 01F 2.1E 0.35 floz 14 6.2 a-d 6.0 a-c 3.5 a 6.8 a-d 8WC 011 01F 2.1E 0.77 floz 14 6.8 a-e 7.0 a-d 2.0 a 5.2 a-c 8WC 011 01F 2.1E 0.77 floz 14 6.8 a-e 7.0 a-d 2.0 a 5.5 a-c 8WC 012 01F 4.17SC 0.088 floz 14 6.8 a-d 4.8 a-d 8.8 c-g 8WC 012 01F 4.17SC 0.35 floz 14 6.0 a-c 4.0 a 2.8 a 3.5 a 8WC 014 02F 2SC 0.37 floz 14 10.0 ef 12.5 e 13.0 f 15.2 h Junction 45DF 4 oz 14 9.5 c-f 8.8 b-e 12.8 ef 8.8 c-g Junction 45DF 8 oz 14 6.0 a-c 6.0 a-c 10.5 ef 8.0 c-e Untreated Check 14 6.5 a 20.0 f 24.2 g 25.0 i	2	53 23% SC 2.17 fl	284					
RH0753 23% SC 2.17 fl oz. 28° 10.2 ef 11.0 c-e 9.0 d-f 9.2 c-g RH0753 23% SC 4.35 fl oz. 28° 9.0 c-f 10.0 b-e 8.0 b-f 7.0 b-d Eagle 40W 0.6 oz. 28° 9.0 c-f 10.0 b-e 8.0 b-f 7.0 b-d Eagle 40W 1.2 oz. 28° 9.0 c-f 8.5 b-e 5.5 a-d 8.0 c-e 8.0 b-f 7.0 b-d 8.0 c-f 8.5 b-e 5.5 a-d 8.0 c-e 8.0 c-f 8.2 a-f 6.2 a-d 6.0 a-c 3.5 a 8.2 c-f 8.0 c-f 8.0 c-f 8.0 a-c 3.5 a 8.2 c-f 8.0 c-f 8.0 a-c 3.5 a 8.0 c-f 8.0 c-f 8.0 c-f 8.0 a-c 3.5 a 8.0 c-f 8.0 c-f 8.0 c-f 8.0 a-c 3.5 a 8.0 c-f 8.0 c-f 8.0 a-c 3.5 a 8.0 c-f 8.0 c	9	23% SC 4.35 fl	284					
RH0753 23% SC 4.35 floz. 285 9.0 c-f 10.0 b-e 8.0 b-f 7.0 b-d Eagle 40W 0.6 oz. 14 6.2 a-d 6.2 a-c 4.2 a-c 6.5 a-d Eagle 40W 1.2 oz. 28 9.0 c-f 8.5 b-e 5.5 a-d 8.0 c-e BWC 011 01F 2.1E 0.175 floz. 14 6.2 a-d 6.0 a-c 3.5 a 8.2 c-f BWC 011 01F 2.1E 0.7 floz. 14 6.8 a-d 6.0 a-c 3.5 a 8.2 c-f BWC 011 01F 2.1E 0.7 floz. 14 6.8 a-d 6.0 a-c 3.5 a 8.2 c-f BWC 011 01F 2.1E 0.7 floz. 14 6.8 a-d 7.0 a-d 2.0 a 5.2 a-c BWC 012 01F 4.17SC 0.088 floz. 14 9.5 c-f 6.8 a-d 4.8 a-d 8.8 c-g BWC 012 01F 4.17SC 0.088 floz. 14 9.5 c-f 6.8 a-d 4.8 a-d 8.8 c-g BWC 012 01F 4.17SC 0.35 floz. 14 10.8 f 11.5 de 10.5 ef 7.5 b-e BWC 014 02F 2SC 0.37 floz. 14 10.8 f 7.2 a-d 8.5 b-f 6.5 a-d QST153 3.7 floz. 14 9.5 c-f 8.8 b-e 12.6 g 15.0 f	7	SC 2.17 fl	285					
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Eagle 40W 1.2 oz	တ		41					
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BWC 012 03F 90WG 0.1 oz. 14 5.2 a 6.8 a-d 4.2 a-c 5.5 a-c BWC 012 01F 4.17SC 0.088 fl oz. 14 9.5 c-f 6.8 a-d 4.8 a-d 8.8 c-g BWC 012 01F 4.17SC 0.075 fl oz. 14 8.8 b-f 5.8 ab 3.0 a 3.5 a BWC 012 01F 4.17SC 0.35 fl oz. 14 6.0 a-c 4.0 a 2.8 a 3.5 a BWC 014 02F 2SC 0.37 fl oz. 14 10.8 f 11.5 de 10.5 ef 7.5 b-e BWC 014 02F 2SC 0.74 fl oz. 14 9.8 d-f 7.2 a-d 8.5 b-f 6.5 a-d QST153 3.7 fl oz. 14 10.0 ef 12.5 e 13.0 f 15.2 h Junction 45DF 4 oz. 14 9.5 c-f 8.8 b-e 8.8 c-g Junction 45DF 8 oz. 14 6.0 a-c 6.0 a-c 10.5 ef Untreated Check 16.5 g 20.0 f 24.2 g 25.0 i	13	011 01F 2.1E	41					
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BWC 014 02F 2SC 0.37 floz 14 10.8 f 11.5 de 10.5 ef 7.5 b-e BWC 014 02F 2SC 0.74 floz 14 9.8 d-f 7.2 a-d 8.5 b-f 6.5 a-d QST153 3.7 floz 14 10.0 ef 12.5 e 13.0 f 15.2 h Junction 45DF 4 oz 14 9.5 c-f 8.8 b-e 12.8 ef 8.8 c-g Junction 45DF 8 oz 14 6.0 a-c 10.5 ef 8.0 c-e Untreated Check 16.5 g 20.0 f 24.2 g 25.0 i	17	012 01F 4.17SC	41					
BWC 014 02F 2SC 0.74 floz 14 9.8 d-f 7.2 a-d 8.5 b-f 6.5 a-d QST153 3.7 floz 12.5 e 13.0 f 15.2 h 15.2 h <td>18</td> <td>014 02F 2SC</td> <td>41</td> <td></td> <td></td> <td></td> <td></td> <td></td>	18	014 02F 2SC	41					
QST153 3.7 floz. 14 10.0 ef 12.5 e 13.0 f 15.2 h Junction 45DF 4 oz. 14 9.5 c-f 8.8 b-e 12.8 ef 8.8 c-g Junction 45DF 8 oz. 14 6.0 a-c 6.0 a-c 10.5 ef 8.0 c-e Untreated Check 16.5 g 20.0 f 24.2 g 25.0 i	19	014 02F 2SC	41					
Junction 45DF 4 oz. 14 9.5 c-f 8.8 b-e 12.8 ef 8.8 c-g Junction 45DF 8 oz. 14 6.0 a-c 6.0 a-c 10.5 ef 8.0 c-e Untreated Check 16.5 g 20.0 f 24.2 g 25.0 i	20		14					
Junction 45DF 8 oz	21		41					
Untreated Check	22	∞	14					
	23	Untreated Check	 					-

Table 1 (continued).

- ¹ Values are means of four replicates. Means followed by the same letter are not significantly different according to Waller-Duncan kratio t test (k = 100).
 - ² Fungicides were applied 10 June (treatments 2 through 7 only), 2 July (all treatments except treatment 2 and 3), 17 July (14 day treatments only), 1 Aug. (14 and 28 day treatments), and 19 Aug. (14 day treatments only).
 - ³ Treatments 4 and 5 were applied on 10 June and 2 July only.
- ⁴ Treatments 6 and 7 were applied on 10 June, 2 July, and 1 Aug. only.
 - ⁵ Treatments 8 and 9 were applied on 2 July and 1 Aug. only.