

# 2005 RUTGERS Turfgrass Proceedings



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# **2005 RUTGERS TURFGRASS PROCEEDINGS**

**of the**

## **New Jersey Turfgrass Expo December 6-8, 2005 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, 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 2005 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.

Special thanks are given to those who have submitted papers for this proceedings, to the New Jersey Turfgrass Association for financial assistance, and to Barbara Fitzgerald and Marlene Karasik for administrative and secretarial support.

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

## IMPACT OF FUNGICIDES AND BIORATIONAL PRODUCTS FOR THE CONTROL OF PYTHIUM BLIGHT ON PERENNIAL RYEGRASS

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Selected fungicides were evaluated in 2005 for their ability to control Pythium blight (caused by *Pythium aphanidermatum*) on perennial ryegrass (*Lolium perenne* Paragon) at the Rutgers Turf Research Farm in North Brunswick, NJ. Turf was established 26 April 2005 with 7.8 lb seed/1000 ft<sup>2</sup> on a Norton Sandy Loam with a pH of 6.7. The pre-emergence herbicide Tupersan 4.7G (5 lb/1000 ft<sup>2</sup>) was applied at seeding to suppress weed ingress. Mowing was performed weekly at a height of 3.0 inches with clippings returned. The site was irrigated as needed to prevent drought stress. Fertilizer was applied as 10-10-10 on 26 April (1.3 lb nitrogen (N)/1000 ft<sup>2</sup>), and 16-4-8 on 12 May (0.5 lb N/1000 ft<sup>2</sup>), 10 June (0.7 lb N/1000 ft<sup>2</sup>), and 28 June (0.6 lb N/1000 ft<sup>2</sup>). Yellow nutsedge was controlled with Manage 75WG (0.67 oz/A) on 14 June and crabgrass with Acclaim Extra 0.57SC (20 oz/A) on 30 June. Prostar 70W (3.0 oz/1000 ft<sup>2</sup>) was applied to the entire test area on 14 and 30 June, 14 July, and 17 August to suppress brown patch (caused by *Rhizoctonia solani*). Plots were 3 x 9 ft and were arranged in a randomized complete block with four replications. The site was inoculated with an isolate of *P. aphanidermatum* (P-40) on 7 June using 7 g/m<sup>2</sup> of perennial ryegrass-infested seed.

Fungicides were applied in water equivalent to 3.8 gal per 1000 ft<sup>2</sup> with a CO<sub>2</sub> powered sprayer at 30 psi using Tee jet 8003VS flat fan nozzles. Treatments (trt) were initiated on 6 June, except for curative entries which were first applied on 8 June, and were reapplied as indicated in Table 1. Turf was visually evaluated for percent turf area infected with *P.*

*aphanidermatum* on 10, 13, and 30 June and 25 July, for brown patch on 13 June, and for gray leaf spot (caused by *Pyricularia grisea*) on 25 July and 31 August. Data was subjected to analysis of variance and means were separated using Waller-Duncan (ratio *k*-ratio *t*-test (*k* =100) following arcsine transformation.

Pythium was first observed on 8 June. Disease pressure was low (i.e., 5.0 to 7.8% turf area infested on untreated turf) until 30 June when the untreated control (trt 38) sustained more than 30% damage from Pythium blight. With the exception of RU 2125-05C W (trt 12), RU 2125-05C W alternated with Heritage 50WG (curative basis, trts 13-14), Cleary 3336 4F (trt 27), V-10161 4F (trts 28-29), and Gary's Green 18-3-4 (trt 36), all treatments in this study provided excellent disease control throughout June and July. It is interesting to note that curative applications of Subdue Maxx 2MC (trts 16, 17, and 23), Banol 6SC (trts 19-21, and 24), Heritage 50WG (trt 22), and V-10162 5.73F (trts 34-35) provided adequate protection from Pythium blight when applied two days post-infection.

Not surprisingly, most of the treatments containing broad spectrum fungicides (i.e., TM 473 480SC (= Disarm, trts 1-2), Cleary 3336 4F (trts 3, 27), CL-Exp-1 30LC (trts 4-5, and 7), Insignia 20WG (trt 8), and Heritage TL 0.8ME (trt 9), and Heritage 50WG (trts 10, 11, 13-15, and 22) also afforded good to excellent control of both brown patch and gray leaf spot in this study. No phytotoxicity was observed.

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Table 1. Impact of Fungicides and Biorational Products for the Control of Pythium Blight on Perennial Ryegrass, New Brunswick, NJ, 2005.

Treatment	Rate (per 1000 sq ft)	Spray Interval (days) <sup>2</sup>	Turf Area Infested (%) per Plot <sup>1</sup>			Brown Patch <sup>5</sup>	Gray Leaf Spot <sup>6</sup>		
			10 June	13 June	30 June			25 July	25 July
1 TM 473 480 SC	0.2 fl oz	14	0.0 a	0.3 ab	1.7 a	3.8 ab	0.0 a	1.5 ab	89.8 g-i
2 TM 473 480 SC	0.4 fl oz	14	2.3 a	1.0 a-d	1.3 a	4.8 a-c	0.0 a	1.8 ab	72.8 de
3 Alude 46L	5.5 fl oz								
+ Cleary 3336 4F	5.0 fl oz	14	0.0 a	0.3 ab	0.0 a	3.0ab	0.0 a	1.5 ab	82.0 d-i
4 CL-EXP-1 30LC	3.0 fl oz	14	0.0 a	1.0 a-d	0.3 a	0.5 a	1.3 a-c	6.5 a-e	91.8 g-i
5 CL-EXP-1 30LC	6.25 fl oz	14	0.0 a	1.0 a-d	1.7 ab	1.5 ab	3.8 a-f	10.0 c-f	88.0 g-i
6 CL-EXP-1 30LC	9.5 fl oz	14	0.8 a	1.3 a-d	2.3 ab	0.0 a	3.0 a-e	23.0 j-p	88.5 g-i
7 CL-EXP-1 30LC	9.5 fl oz								
+ Cleary 3336 4F	5.0 fl oz	14	0.0 a	0.3 ab	0.0 a	0.8 a	0.0 a	1.0 ab	86.0 e-i
8 Insignia 20WG	0.9 oz	14	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	7.5 a
9 Heritage TL 0.8ME	2.0 fl oz	21	0.3 a	0.0 a	10.0 c-e	4.5 a-c	0.0 a	0.0 a	12.5 ab
10 Heritage 50WG	0.4 oz	21	0.3 a	0.0 a	1.3 ab	11.3 d-f	0.0 a	4.0 a-c	19.3 a-c
11 Heritage 50WG	0.2 oz								
+ Subdue MAXX 2MC	0.5 fl oz	14	0.0 a	0.0 a	1.0 ab	0.0 a	0.0 a	0.5 a	16.8 a-c
12 RU2125-05C W	0.2 oz	Once <sup>3</sup>	3.8 a	16.0 j	22.0 f	10.0 c-e	1.0 a-c	18.8 h-k	82.8 d-i
13 RU2125-05C W	0.2 oz	Once <sup>3</sup>							
/Heritage 50WG	0.2 oz	Cur/14 <sup>3</sup>	3.8 a	27.0 j	22.0 f	0.0 a	2.5 a-d	0.3 a	26.5 c
14 RU2125-05C W	0.2 oz	Once <sup>3</sup>							
/Heritage 50WG	0.4 oz	Cur/14 <sup>3</sup>	4.0 a	12.5 hi	12.7 de	0.0 a	6.8 c-i	0.0 a	14.0 a-c
15 Heritage 50WG	0.4 oz	Cur/14 <sup>4</sup>	0.0 a	0.0 a	1.0 ab	0.0 a	0.0 a	0.5 a	24.3 bc
16 RU2125-05C W	0.2 oz	Once <sup>3</sup>							
/Subdue MAXX 2MC	0.5 fl oz	Cur/14 <sup>3</sup>	0.5 a	8.3 d-h	3.7 a-c	0.0 a	2.0 a-c	2.5 ab	73.3 d-f
17 RU2125-05C W	0.2 oz	Once <sup>3</sup>							
/Subdue MAXX 2MC	1.0 fl oz	Cur/14 <sup>3</sup>	0.0 a	0.0 a	0.0 a	1.5 ab	1.5 a-c	18.0 h-j	81.8 d-i
18 Subdue MAXX 2MC	1.0 fl oz	Cur/14 <sup>4</sup>	0.5 a	0.0 a	0.7 a	0.5 a	14.8 jk	17.0 g-j	89.8 g-i
19 RU2125-05C W	0.2 oz	Once <sup>3</sup>							
/Banol 6SC	1.0 fl oz	Cur/14 <sup>3</sup>	0.0 a	1.3 a-d	0.0 a	0.0 a	0.5 ab	29.8 q-s	93.0 hi
20 RU2125-05C W	0.2 oz	Once <sup>3</sup>							
/Banol 6SC	2.0 fl oz	Cur/14 <sup>3</sup>	1.5 a	1.0 a-d	1.3 ab	0.5 a	11.0 g-l	21.3 i-n	79.3 d-h

(Continued)

Table 1 (continued).

Treatment	Rate (per 1000 sq ft)	Spray Interval (days) <sup>2</sup>	Turf Area Infested (%) per Plot <sup>1</sup>			Brown Patch <sup>5</sup>	Gray Leaf Spot <sup>6</sup>	
			10 June	13 June	30 June			25 July
21 Banol 6SC.....	2.0 fl oz	Cur/14 <sup>4</sup>	0.0 a	0.0 a	1.0 ab	0.0 a	20.3 i-l	86.8 f-i
22 Heritage 50WG .....	0.2 oz	Cur/14 <sup>4</sup>	0.0 a	0.0 a	0.0 a	0.0 a	0.3 a	23.5 bc
23 Subdue MAXX 2MC .....	0.5 fl oz	Cur/14 <sup>4</sup>	1.8 a	7.3 a-h	3.0 ab	0.0 a	29.8 q-s	89.3 g-i
24 Banol 6SC.....	1.0 fl oz	Cur/14 <sup>4</sup>	0.5 a	0.0 a	1.0 ab	0.0 a	24.8 k-q	87.3 g-i
25 Chipco Signature 80WG .....	4.0 oz	14	0.0 a	0.8 a-c	0.0 a	3.8 ab	21.3 i-n	90.8 g-i
26 Alude 46L.....	5.5 fl oz	14	0.0 a	0.3 ab	0.7 a	7.0 b-d	19.3 h-k	86.0 e-i
27 Cleary 3336 4F .....	5.0 fl oz	14	3.0 a	5.0 a-g	16.0 ef	24.0 hi	13.0 e-h	86.3 e-i
28 V-10161 4F .....	0.075 fl oz	14	0.0 a	2.8 a-e	5.3 a-c	16.3 fg	5.5 a-d	78.3 d-g
29 V-10161 4F .....	0.15 fl oz	14	0.0 a	3.8 a-f	4.0 a-c	20.5 gh	7.5 b-e	69.5 d
30 V-10161 4F .....	0.3 fl oz	14	0.5 a	2.5 a-e	1.3 ab	5.8a-d	20.8 i-m	90.5 g-i
31 V-10162 5.73F .....	1.2 fl oz	14	0.0 a	2.5 a-e	2.7 ab	0.0 a	2.0 ab	72.8 de
32 V-10161 4F .....	0.1 fl oz	Cur/14 <sup>4</sup>	0.8 a	3.3 a-f	4.7 a-c	11.3 d-f	11.3 d-g	80.3 d-h
33 V-10161 4F .....	0.2 fl oz	Cur/14 <sup>4</sup>	0.8 a	3.3 a-f	1.7 ab	14.5 ef	22.5 j-o	95.8 i
34 V-10162 5.73F .....	0.8 fl oz	Cur/14 <sup>4</sup>	0.5 a	5.0 a-g	0.0 a	0.0 a	27.0 m-s	94.5 i
35 V-10162 5.73F .....	1.6 fl oz	Cur/14 <sup>4</sup>	0.3 a	3.0 a-e	0.3 a	3.5 ab	15.0 f-i	87.8 g-i
36 Gary's Green 18-3-4 .....	6.0 fl oz							
+ Ultralex 18-3-4 .....	3.0 fl oz							
+ EXPGB05BSU .....	1.0 fl oz	14	0.5 a	7.5 b-h	12.3 de	26.8 i	25.3 k-r	71.8 d
37 Gary's Green 18-3-4 .....	6.0 fl oz							
+ Ultralex 18-3-4 .....	3.0 fl oz							
+ GGEXPO3B .....	1.0 fl oz	14	3.8 a	8.0 c-h	7.3 b-d	20.5 gh	26.3 l-s	78.3 d-g
38 Untreated check.....	--	--	5.0 b	7.8 c-h	32.7 g	24.3 hi	31.8 rs	92.0 g-i

INT <sup>7</sup>	DAT <sup>8</sup>	DAT	DAT	DAT	DAT	DAT	DAT
Once	4	7	24	49	7	49	86
14	4	7	10	7	7	10	44
Cur/14	2	5	10	7	7	10	44
21	4	7	3	7	7	3	44

(Continued)

Table 1 (continued).

- <sup>1</sup> Values are means of four replicates. Means followed by the same letter are not significantly different according to Waller-Duncan  $k$ -ratio  $t$ -test ( $k=100$ ).
- <sup>2</sup> Fungicides were applied on 6 June (all treatments, except curative treatments), 8 June (all curative treatments), 20 June (14 day treatment), 27 June (21 day treatment), 5 July (14 day treatment), 18 July (14 and 21 day treatments).
- <sup>3</sup> The RU2125-05C W (0.2 oz) component of treatments 12, 13, 14, 16, 17, 19, and 20 was applied only once on 6 June; whereas the second component of treatment 13 (Heritage 50WG @ 0.2 oz), treatment 14 (Heritage 50WG @ 0.4 oz), treatment 16 (Subdue MAXX 2MC @ 0.5 fl oz), treatment 17 (Subdue MAXX 2MC @ 1 fl oz), treatment 19 (Banol 6SC @ 1 fl oz), and treatment 20 (Banol 6SC @ 2 fl oz) was applied on a curative basis every 14 days starting 8 June.
- <sup>4</sup> Trt 15, 18, 21-24, and 32-35 was applied on a curative basis every 14 days, starting 8 June.
- <sup>5</sup> Percent turf infested with *Rhizoctonia solani*.
- <sup>6</sup> Percent turf area infested with *Pyricularia grisea*.
- <sup>7</sup> Spray intervals in days
- <sup>8</sup> Days after treatment (DAT) for each spray interval.