

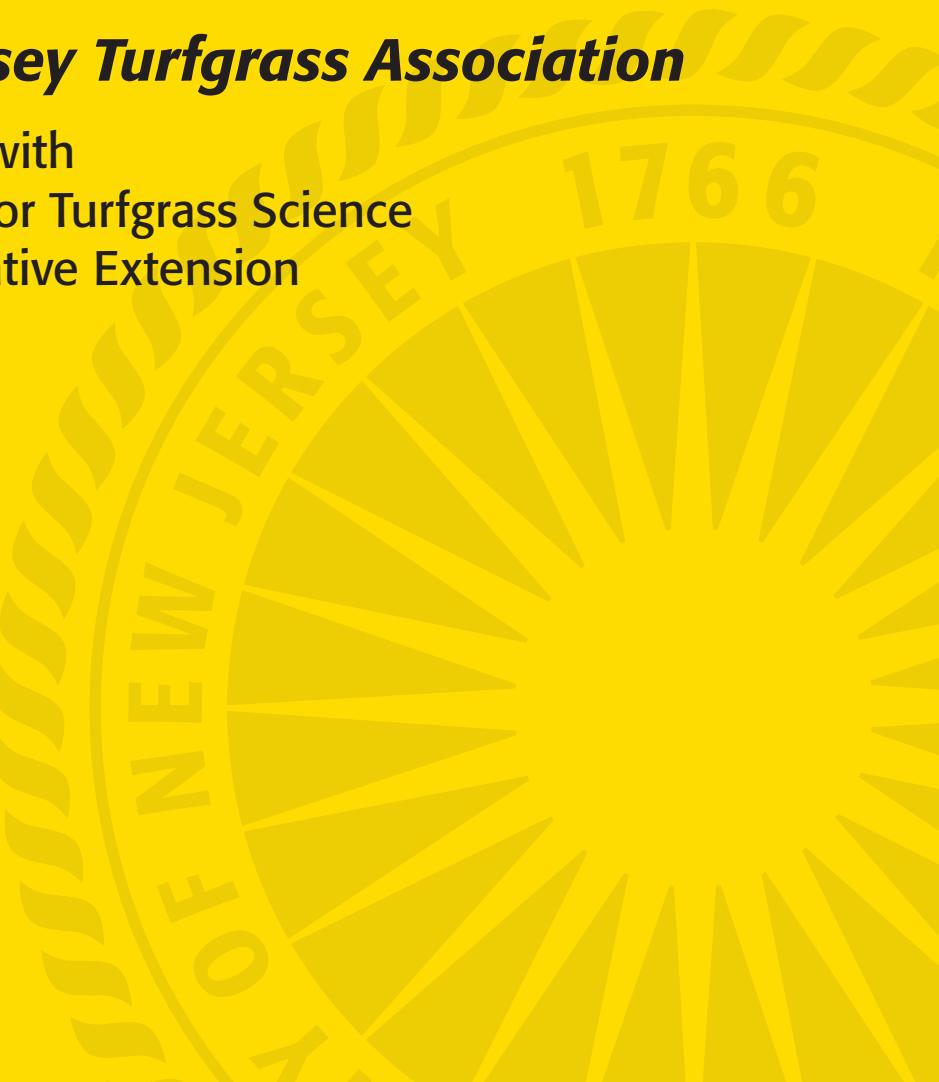
RUTGERS

New Jersey Agricultural
Experiment Station

2009 **Turfgrass Proceedings**

The New Jersey Turfgrass Association

In Cooperation with
Rutgers Center for Turfgrass Science
Rutgers Cooperative Extension



2009 RUTGERS TURFGRASS PROCEEDINGS

of the

**New Jersey Turfgrass Expo
December 8-10, 2009
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, School of Environmental and Biological Sciences, 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 2009 New Jersey Turfgrass Expo. Publication of these lectures provides a readily avail-

able 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 Anne Diglio for administrative and secretarial support.

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

IMPACT OF FUNGICIDES AND BIORATIONAL PRODUCTS FOR SUPPRESSION OF DOLLAR SPOT ON A CREEPING BENTGRASS GREEN, 2009

Bruce B. Clarke, Pradip R. Majumdar, Dennis Fitzgerald, Mark Peacos, T. J. Lawson, Andra Pitonak, J. P. Chung Yew, Katherine E. Clarke, Samantha Hampton, William K. Dickson, and Joseph B. Clark¹

Fungicides were evaluated in 2009 for their ability to control dollar spot (caused by *Sclerotinia homoeocarpa*) at the Rutgers Turf Research Farm in North Brunswick, NJ on creeping bentgrass (*Agrostis stolonifera*) maintained under golf course greens conditions. Turf was established September 2007 on a Nixon loam with a pH of 6.3. Mowing was performed daily at a height of 0.125 inches with clippings collected. The site was irrigated as needed to prevent drought stress.

Fertilizer was applied as 34-0-0 (0.4 lb nitrogen (N)/1000 ft²) on 13 May and 8 June and (0.2 lb N/1000 ft²) on 2 and 19 July. Dimension 2EW (6.27 fl oz/A) was applied on 30 April for pre-emergence weed control. Heritage 50WG (0.4 oz/1000 ft²) was applied on 16 May and ProStar 70W (3.0 oz/1000 ft²) on 18 July and 6 August to suppress brown patch (caused by *Rhizoctonia solani*). Localized dry spots were suppressed with the wetting agent Tricure 100LC (6.0 oz/1000 ft²) on 2 May, 8 June, and 2 July. Insect pests were controlled with Acelepryn 1.67SC (3.0 fl oz/A) on 16 June, Sevin SL 4L (8 qt/A) on 23 June, and Merit 75WP (0.16 oz/1000 ft²) on 7 July. Turf was topdressed with a sand root zone mix (0.3 L m⁻²) on 27 March, 29 May, 13 June, and 7 August. Plots were 3 x 5 ft and were arranged in a randomized complete block with four replications.

Fungicides were applied in water equivalent to 1.9 gal/1000 ft² with a CO₂ powered sprayer at 30 psi using TeeJet 8003VS flat fan nozzles. Treatments (trt) were initiated on 19 May when environmental conditions were conducive to dollar spot development. Fungicides were reapplied at the appropriate intervals as indicated in Tables 1A and 1B. Turf was visually evaluated for number of dollar spot infection

centers per plot on 9, 18, and 29 June, 9, 21, and 31 July, and 10 and 21 August. Turf quality was rated on 18 June and 10 and 24 August using a 1 to 9 scale, where 9 = best turf quality and 5 = acceptable quality. Phytotoxicity was assessed on 18 June using a 1 to 5 scale, where 1 = no foliar discoloration, 2 = slight chlorosis or necrosis, 3 = moderate chlorosis or necrosis, 4 = severe chlorosis or necrosis, and 5 = all turf dead. Data were subjected to analysis of variance and means were separated using the Waller-Duncan k-ratio t-test ($k = 100$).

Dollar spot was first observed on 4 June and became uniform throughout the study by 9 June (Table 1A). The disease progressed rapidly throughout June and July, peaking on 21 August at 332 lesion centers per plot on untreated turf (Tables 1A and 1B). This was considered a high level of dollar spot infestation and thus a very stringent test of a product's ability to control this disease under commercial golf course greens conditions. Less than 10 infection centers per plot represented an acceptable level of disease control for this study.

All fungicide entries provided good to excellent control of dollar spot throughout the application period (19 May to 28 July) except A17595A 0.7EC (trt 4), Trinity 1.67SC (trt 20), RU21196J-09 WG @ 0.18 oz every 21 or 28 days (trts 33, 34, respectively), RU21196J-09 WG @ 0.13 oz applied on a curative basis every 14 days (trt 39), SA-0010204 F + Phyto-Off LC (trt 44), SA-0010205 F + Phyto-Off LC (trt 45), SA-0011101 DF + Phyto-Off LC (trt 46), SA-0170101 WP (trt 52), Kestrel 1.3EC (trt 53), PEX6017 1.3MEC (trt 54), RU22112-09A SC @ 0.4 fl oz (trt 56), Daconil Ultrex 82.5WDG + 20-0-15 + 5-0-0-Fe (trt 61), 20-0-15 + 5-0-0-Fe (trt 64), Emerald 70WG @ 0.18

¹Extension Specialist in Turfgrass Pathology, Senior Laboratory Technician, Research Assistant, Senior Greenhouse and Field Technician, Principal Laboratory Technician, Research Assistant, Research Assistant, Research Assistant, Research Assistant, Turfgrass Research Farm Supervisor, and Principal Laboratory Technician, respectively, New Jersey Agricultural Experiment Station, School of Environmental and Biological Sciences, Rutgers, The State University of New Jersey, New Brunswick, NJ 08901-8520.

oz every 21 days (trt 69), and Banner MAXX 1.3ME @.2.0 fl oz (trt 79) (Table 1A). All other entries in this study provided excellent residual control (i.e., at least until 10 August; 13 to 27 days after the last application) except for RU192514K-09 EC @ 0.131 fl oz (trt 9), Curalan EG 50 WG (trt 26), SA-0011201 F (trt 47), SA-0011301 F (trt 48), SA-0190101 F + Phyte-Off LC (trt 49), Daconil Ultrex 82.5WDG (trt 60), Daconil Ultrex 82.5WDG + Sync 100LC (trt 62), Daconil Ultrex 82.5WDG + Sync 100LC + 20-0-15 + 5-0-0-Fe (trt 63), SA-0010207 F + Phyte-off LC (trt 66), and DPX-LEM17-50 50WDG @ 0.3 oz (trt 72) (Table 1B).

Season-long control of dollar spot (19 May to 21 August, 24 to 38 days after the last application) was only afforded to turf treated with A6780L 1.3ME + A9180A 50WG (trts 2, 3), Headway 1.39EC + A9180A 50WG (trts 6, 7), RU192514K-09 EC @ 0.524 fl oz (trt 11), RU192514O-09 WG (trt 13), RU192514B-09 ME + RU192514K-09 EC (trt 14), BAS 500 17F 2.1SC + BAS 595 16F 1.7SC applied every 14 days (trt 17), Emerald 70WG + Iprodione Pro 2SE (trts 22, 23), Emerald 70WG + Daconil Ultrex 82.5WDG (trt 24, 25), RU21196B-09 SC @ 0.157 fl oz every 14 days (trt 27), RU21196B-09 SC @ 0.21 fl oz every 14 (trt 29) or 21

days (trt 30), RU21196J-09 WG @ 0.13 oz every 14 days (trt 32), RU21196A-09 SC (trts 35, 36, 42, and 43), RU21196B-09 SC @ 0.294 fl oz every 14 days (curative basis; trt 37), RU21196E-09 WG (trt 41), RU22112-09A SC @ 0.7 fl oz (trt 59), Emerald 70WG @ 0.13 oz every 14 days (trt 67), RU21196B-09 SC @ 0.176 fl oz every 14 days (curative basis; trt 68), DPX-LEM17-50 50WDG + Banner MAXX 1.3 ME (trt 71), and Honor 28WG @ 0.7-1.1 oz (trts 74 to 76) (Tables 1A and 1B).

Slight to moderate foliar chlorosis was noted on 18 June for turf treated with A6780L 1.3ME (trt 1), A6780L 1.3ME + A9180A 50WG (trts 2, 3), Headway 1.39EC (trt 5), Headway 1.39EC + A9180A 50WG (trts 6, 7), RU192514B-09 ME (trt 12), Kestrel 1.3EC (trt 53), Banner MAXX 1.3ME @ 1.0 fl oz (trt 55), DPX-LEM17-50 50WDG + Banner MAXX 1.3 ME (trt 71), and Banner MAXX 1.3ME @.2.0 fl oz (trt 79) (Table 1B), but the injury was only temporary and turf quickly recovered in 14 days. Turf quality evaluated on 18 June, and 10 and 24 August was closely associated with the degree of dollar spot control; treatments affording good protection from this disease had acceptable turf quality (Table 1B).

Table 1A. Impact of selected fungicides and biorational products on the suppression of dollar spot on a creeping bentgrass green: Rutgers University, 2009.

Treatment	Rate per 1000 sq ft	Application Interval (days) ²	Number of Lesion Centers per Plot ¹					
			9 June	18 June	29 June	9 July	21 July	31 July
1 A6780L 1.3ME	1.0 fl oz	14	0.0 g	9.8 d-h	11.8 e-j	7.0 i-r	0.0 h	0.5 j
2 A6780L 1.3ME	1.0 fl oz	14	0.5 fg	0.8 m-p	0.0 r	0.8 q-s	0.0 h	0.0 j
+ A9180A 50WG	0.006 oz							
3 A6780L 1.3ME	1.0 fl oz	14	0.8 fg	1.5 k-p	0.5 p-r	0.3 rs	0.0 h	0.0 j
+ A9180A 50WG	0.0121 oz							
4 A17595A 0.7EC	1.7 fl oz	14	1.8 d-g	12.5 c-d	12.3 e-i	9.8 g-m	0.3 h	2.5 ij
5 Headway 1.39EC	1.5 fl oz	14	0.0 g	7.3 e-n	10.0 f-m	8.0 h-o	0.0 h	0.5 j
6 Headway 1.39EC	1.5 fl oz	14	0.3 fg	0.8 m-p	0.5 p-r	0.8 q-s	0.0 h	0.0 j
+ A9180A 50WG	0.006 oz							
7 Headway 1.39EC	1.5 fl oz	14	0.8 fg	2.8 i-p	0.0 r	0.8 q-s	0.0 h	0.0 j
+ A9180A 50WG	0.0121 oz							
8 RU192514D-09 EC	0.63 fl oz	14	0.3 fg	0.8 m-p	4.8 j-r	1.0 p-s	0.5 h	0.0 j
RU192514K-09 EC	0.131 fl oz	14	1.0 e-g	7.0 e-o	5.3 i-r	10.8 f-l	3.5 f-h	3.0 h-j
RU192514K-09 EC	0.262 fl oz	14	0.0 g	1.5 k-p	1.5 o-r	1.5 n-s	0.0 h	0.0 j
RU192514K-09 EC	0.524 fl oz	14	0.0 g	0.3 op	0.3 qr	0.0 s	0.0 h	0.0 j
RU192514B-09 ME	1.0 fl oz	14	1.0 e-g	7.8 e-k	9.3 g-n	7.8 h-p	2.0 h	1.3 j
RU192514O-09 WG	0.13 oz	14	1.8 d-g	1.0 l-p	1.8 o-r	0.0 s	0.0 h	0.0 j
RU192514B-09 ME	1.0 fl oz	14	0.0 g	1.0 l-p	1.0 p-r	0.5 q-s	0.0 h	0.0 j
+ RU192514K-09 EC	0.262 fl oz	14	0.0 g	1.8 j-p	1.5 o-r	1.5 n-s	0.0 h	0.0 j
RU192514L-09 ME	0.247 fl oz	14	0.0 g	1.0 l-p	1.0 p-r	0.5 q-s	0.0 h	1.3 j
+ RU192514K-09 EC	0.262 fl oz	14	0.0 g	1.8 j-p	1.5 o-r	1.5 n-s	0.0 h	0.0 j
RU192514A-09 F	2.0 fl oz	14	0.0 g	0.8 m-p	0.0 r	0.5 q-s	0.0 h	
+ RU192514K-09 EC	0.262 fl oz	14	0.0 g	0.8 m-p	0.0 r	0.5 q-s	0.0 h	
17 BAS 500 17F 2.1SC	0.54 fl oz	14	0.3 fg	0.5 n-p	0.0 r	0.0 s	0.0 h	0.0 j
+ BAS 595 16F 1.7SC	1.0 fl oz	14						
BAS 500 17F 2.1SC	0.71 fl oz	14						
+ BAS 595 16F 1.7SC	1.0 fl oz	21	0.3 fg	0.0 p	5.8 i-r	4.3 l-s	2.0 h	0.0 j
BAS 500 17F 2.1SC	0.54 fl oz	14	0.0 g	0.0 p	0.0 r	0.3 rs	0.0 h	0.0 j
Trinity 1.67SC	1.0 fl oz	14	4.0 c-f	20.8 b	40.5 c	44.3 c	15.3 d	17.5 d

(Continued)

Table 1A (continued).

Treatment	Rate per 1000 sq ft	Application Interval (days) ²	Number of Lesion Centers per Plot ¹				
			9 June	18 June	29 June	9 July	21 July
21 Insignia 20WG 0.7 oz	14	0.0 g	1.0 l-p	2.0 o-r	0.3 r-s	0.0 h	0.5 j
22 Emerald 70WG 0.13 oz	14	0.0 g	0.3 op	1.5 o-r	0.5 q-s	0.0 h	0.0 j
+ Iprodione Pro 2SE 2.0 fl oz							
23 Emerald 70WG 0.13 oz	14	0.0 g	1.8 j-p	1.0 p-r	0.0 s	0.0 h	0.5 j
+ Iprodione Pro 2SE 3.0 fl oz							
24 Emerald 70WG 0.13 oz	14	0.0 g	0.0 p	0.3 qr	0.0 s	0.0 h	0.0 j
+ Daconil Ultrex 82.5WDG 1.8 oz							
25 Emerald 70WG 0.13 oz	14	0.5 fg	0.0 p	0.0 r	0.0 s	0.0 h	0.0 j
+ Daconil Ultrex 82.5WDG 3.25 oz							
26 Curalan EG 50 WG 1.0 oz	14	0.0 g	8.3 d-k	7.5 h-p	9.8 g-m	0.3 h	7.3 f-i
RU21196B-09 SC 0.157 fl oz	14	0.3 fg	1.5 k-p	1.5 o-r	0.5 q-s	0.0 h	0.0 j
27 RU21196B-09 SC 0.157 fl oz	21	2.0 d-g	2.5 j-p	5.0 j-r	1.8 n-s	1.0 h	0.0 j
RU21196B-09 SC 0.21 fl oz	14	0.3 fg	0.0 p	0.0 r	0.0 s	0.0 h	0.0 j
RU21196B-09 SC 0.21 fl oz	21	1.0 e-g	1.0 l-p	1.5 o-r	0.0 s	0.0 h	0.0 j
RU21196B-09 SC 0.21 fl oz	28	0.0 g	11.0 d-f	4.5 k-r	6.5 j-s	1.3 h	1.0 j
RU21196J-09 WG 0.13 oz	14	1.8 d-g	6.5 e-p	2.8 n-r	0.8 q-s	0.0 h	0.0 j
RU21196J-09 WG 0.18 oz	21	0.0 g	0.5 n-p	2.8 n-r	5.0 k-s	15.0 d	2.3 ij
RU21196J-09 WG 0.18 oz	28	3.3 c-q	14.8 b-d	7.3 h-q	9.8 g-m	3.3 f-h	3.8 h-j
RU21196A-09 SC 0.34 fl oz	14	0.0 g	0.0 p	0.3 qr	0.0 s	0.0 h	0.0 j
RU21196A-09 SC 0.46 fl oz	21	0.3 fg	0.0 p	0.0 r	0.0 s	0.0 h	0.0 j
RU21196B-09 SC 0.294 fl oz	14 ³	10.8 a	7.5 e-m	0.5 p-r	0.0 s	0.0 h	0.0 j
RU21196B-09 SC 0.176 fl oz							
+ RU21196D-09 SL 0.32 fl oz	14 ³	13.3 a	9.5 d-i	2.0 o-r	0.5 q-s	0.0 h	0.0 j
RU21196J-09 WG 0.13 oz	14 ³	10.3 ab	7.8 e-k	13.5 e-h	8.3 h-n	6.5 e-g	0.5 j
RU21196J-09 WG 0.18 oz	14 ³	11.3 a	10.5 d-g	8.5 g-o	3.3 m-s	1.0 h	0.0 j
RU21196E-09 WG 0.84 oz	14 ³	12.0 a	6.3 e-p	2.8 n-r	0.0 s	0.0 h	0.0 j
RU21196A-09 SC 0.317 fl oz	14 ³	12.5 a	7.0 e-o	1.3 p-r	0.5 q-s	0.0 h	0.0 j
RU21196A-09 SC 0.53 fl oz	14 ³	3.5 c-g	2.0 j-p	0.0 r	0.0 s	0.0 h	0.0 j
SA-0010204 F 3.6 fl oz	14	0.0 g	1.3 l-p	9.3 g-n	11.5 f-k	0.0 h	11.0 e-g
+ Phyte-Off LC 2.0 fl oz							

(Continued)

Table 1A (continued).

Treatment	Rate per 1000 sq ft	Application Interval (days) ²	Number of Lesion Centers per Plot ¹				
			9 June	18 June	29 June	9 July	21 July
45 SA-0010205 F + Phyte-Off LC	3.6 fl oz 2.0 fl oz	14	0.0 g	5.8 e-p	11.0 f-k	12.3 f-j	0.8 h
46 SA-0011101 DF + Phyte-Off LC	3.25 oz 2.0 fl oz	14	0.3 fg 0.0 g 0.0 g	7.5 e-m 0.5 n-p 1.5 k-p	15.3 e-g 4.5 k-r 4.8 j-r	19.8 d-e 8.0 h-o 6.3 j-s	3.0 f-h 0.0 h 0.5 h
47 SA-0011201 F	7.0 fl oz	14					5.8 g-j
48 SA-0011301 F	7.0 fl oz	14					8.8 e-h
49 SA-0190101 F + Phyte-Off LC	5.0 fl oz 2.0 fl oz	14	0.0 g	2.5 j-p	0.5 p-r	0.5 q-s	0.0 h
50 Daconil Ultrex 82.5WDG + Signature 80WG	3.25 oz 4.0 oz	14	0.0 g	0.3 op	0.3 qr	0.5 q-s	0.0 h
51 Chipco 26GT 2SC + Signature 80WG	4.0 fl oz 4.0 oz	14	0.0 g				2.8 ij
52 SA-0170101 WP	1.0 oz	14	2.8 d-g	10.5 d-g	37.5 c	56.3 b	102.8 c
53 Kestrel 1.3EC	1.0 fl oz	14	1.3 e-g	10.5 d-g	18.5 de	16.5 d-g	2.8 gh
54 PEX6017 1.3MEC	1.0 fl oz	14	1.3 e-g	15.0 b-d	15.5 e-g	17.0 d-f	0.5 h
55 Banner MAXX 1.3ME	1.0 fl oz	14	0.5 fg	4.0 g-p	6.5 h-r	7.3 i-q	1.8 h
56 RU22112-09A SC	0.4 fl oz	14	0.8 fg	12.5 c-d	16.8 ef	9.5 h-m	0.0 h
57 RU22112-09A SC	0.5 fl oz	14	0.0 g	3.0 h-p	3.5 l-r	1.8 n-s	0.0 h
58 RU22112-09A SC	0.6 fl oz	14	0.0 g	3.0 h-p	3.0 m-r	0.5 q-s	0.0 h
59 RU22112-09A SC	0.7 fl oz	14	0.3 fg	2.8 i-p	2.8 n-r	0.8 q-s	0.0 h
60 Daconil Ultrex 82.5WDG	2.75 oz	14	0.3 fg	1.8 j-p	3.3 l-r	4.5 l-s	0.0 h
61 Daconil Ultrex 82.5WDG + 20-0-15	2.75 oz 4.0 fl oz	14					5.0 h-j
62 Daconil Ultrex 82.5WDG + Sync 100LC	4.0 fl oz 0.32 fl oz	14	1.0 e-g	6.8 e-p	16.8 ef	14.3 e-h	1.5 h
63 Daconil Ultrex 82.5WDG + Sync 100LC	2.75 oz 0.32 fl oz	14	0.0 g	0.3 op	0.3 qr	0.0 s	0.0 h
	+ 20-0-15 + 5-0-0-Fe	4.0 fl oz 4.0 fl oz					2.8 ij
	+ Sync 100LC + Sync 100LC	0.32 fl oz 0.32 fl oz					3.3 h-j

(Continued)

Table 1A (continued).

Treatment	Rate per 1000 sq ft	Application Interval (days) ²	Number of Lesion Centers per Plot ¹				
			9 June	18 June	29 June	9 July	21 July
64 20-0-15..... + 5-0-0-Fe.....	4.0 fl oz 4.0 fl oz	14	6.8 bc 0.0 g	10.8 d-g 1.3 l-p	60.0 b 1.8 o-r	59.3 b 2.3 n-s	107.0 b 0.0 h
65 Cleary Dollar Spot Program #1	—	VAR ⁴					50.0 b 2.8 ij
66 SA-0010207 F..... + Phyte-off LC.....	3.6 fl oz 2.0 fl oz	14	0.3 fg 0.8 fg	1.3 l-p 11.3 de	2.8 n-r 10.3 f-l	4.3 l-s 5.8 j-s	0.5 h 1.5 h
67 Emerald 70WG.....	0.13 oz	14	13.0 a	6.8 e-p 8.5 d-j	4.8 j-r 24.5 d	1.3 o-s 13.5 e-i	0.3 h 9.5 e
68 RU21196B-09 SC.....	0.176 fl oz	14 ³	5.5 cd				0.0 j 1.3 j
69 Emerald 70WG.....	0.18 oz	21					
70 DPX-LEM17-50 50WDG.....	0.3 oz	14	0.0 g	0.3 op	0.0 r	0.0 s	0.0 h 0.0 j
71 DPX-LEM17-50 50WDG..... + Daconil Ultrex 82.5WDG.....	0.3 oz	14					
72 DPX-LEM17-50 50WDG.....	1.0 fl oz	14	0.0 g	4.3 f-p	1.8 o-r	0.0 s	0.0 h 0.0 j
73 DPX-LEM17-50 50WDG.....	0.3 oz	14	0.3 fg	6.8 e-p	7.5 h-p	6.3 j-s	0.3 h 1.5 ij
74 Honor 28WG.....	0.5 oz	14	0.5 fg	4.0 g-p	2.8 n-r	3.5 m-s	0.0 h 0.5 j
75 Honor 28WG.....	0.7 oz	14	0.0 g	0.0 p	0.0 r	0.0 s	0.0 h 0.0 j
76 Honor 28WG.....	0.9 oz	21	0.5 fg	0.0 p	0.8 p-r	0.0 s	0.0 h 0.0 j
77 Insignia 20WG.....	1.1 oz	21	0.0 g	0.0 p	0.0 r	0.0 s	0.0 h 0.0 j
78 Insignia 20WG.....	0.9 oz	14	0.0 g	0.3 op	1.5 o-r	0.0 s	0.0 h 0.0 j
+ Trinity 1.67SC.....	0.7 oz						
79 Banner MAXX 1.3ME.....	1.0 fl oz	14	0.0 g	3.0 h-p	2.5 n-r	1.0 p-s	0.0 h 0.0 j
80 Untreated Check.....	2.0 fl oz	28	4.8 c-e	19.3 bc	15.5 e-g	21.8 d	7.0 ef 12.3 d-f
	—	13.3 a	41.5 a	106.8 a		119.8 a	175.5 a 77.0 a
INT ⁵	DAT ⁶	DAT	DAT	DAT	DAT	DAT	DAT
14	7	2	13	9	7	3	3
14 ³	—	9	6	2	21	10	10
21	21	9	20	9	21	10	10
28	21	2	13	23	7	17	17
VAR ⁴	7	2	13	9	7	3	3

(Continued)

Table 1A (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).
- ² Fungicides were applied on 19 May (all treatments, except treatments 37 to 43 and 68), 2 June (14-day treatment), 9 June (21-day treatment and initiated treatments 37 to 42 and 68), 12 June (treatment 43), 16 June (14- and 28-day treatments), 23 June (treatments 37 to 42 and 68), 26 June (treatment 43), 30 June (14- and 21-day treatments), 7 July (treatments 37 to 42 and 68), 10 July (treatment 43), 14 July (14- and 28-day treatments), 21 July (21-day treatment and treatments 37 to 42 and 68), 24 July (treatment 43), and 28 July (14-day treatment).
- ³ Treatments 37 to 43 and 68 were applied on a curative basis (9 June for treatments 37 to 42 and 68; 12 June for treatment 43) when a threshold of 5 dollar spot lesion centers was exceeded on any of the four replicate plots. Once initiated, treatments were reapplied on a 14-day interval.
- ⁴ Variable spray schedule, where treatment 65 (Cleary Dollar Spot Program #1) consisted of Strider 1.3ME (2.0 fl oz) + Legend 6F (3.6 fl oz) on 19 May, 3336 Plus 19.4F (3.0 fl oz) + Legend 6F (3.6 fl oz) + Alude 46SL (6.0 fl oz) on 2 June, 26/36 3.8SC (3.0 fl oz) + Alude 46SL (6.0 fl oz) on 16 June, Heritage 50WG (0.4 oz) + Protect 75DF (4.0 oz) + Alude 46SL (6.0 fl oz) on 30 June, Spectro 90WDG (5.0 oz) + Alude 46SL (6.0 fl oz) on 14 July, and Strider 1.3ME (1.0 fl oz) + Legend 6F (3.6 fl oz) + Alude 46SL (6.0 fl oz) on 28 July.
- ⁵ Spray interval in days.
- ⁶ Days after the last treatment.

Table 1B. Impact of selected fungicides and biorational products on the suppression of dollar spot on a creeping bentgrass green: Rutgers University, 2009.

Treatment	Rate per 1000 sq ft	Application Interval (days) ⁴	Number of Lesion Centers per Plot ¹			Turf Quality ²			Phytotoxicity ³ 18 June
			10 Aug.		21 Aug.	18 June		10 Aug.	
			18 June	21 Aug.	18 June	10 Aug.	24 Aug.	18 June	
1 A6780L 1.3ME	1.0 fl oz	14	4.5	k-n	19.8 t-z'b'	6.0	g-j	5.8 e-g	5.0 c-g
2 A6780L 1.3ME +A9180A 50WG	1.0 fl oz 0.006 oz	14	0.3	n	5.3 z'b'-d'	5.5	j-i	5.5 f-h	6.0 a-c
3 A6780L 1.3ME +A9180A 50WG	1.0 fl oz 0.0121 oz	14	0.5	m-n	4.8 z'b'-d'	5.3	j	5.5 f-h	5.3 b-f
4 A17595A 0.7EC	1.7 fl oz	14	0.5	m-n	11.3 y-z'd'	7.3	b-e	6.8 a-e	5.8 a-d
5 Headway 1.39EC	1.5 fl oz	14	1.5	l-n	12.8 y-z'd'	6.8	d-g	6.3 c-g	6.3 ab
6 Headway 1.39EC +A9180A 50WG	1.5 fl oz 0.006 oz	14	0.3	n	1.8 z'c'd'	6.0	g-j	6.0 d-g	5.5 a-e
7 Headway 1.39EC +A9180A 50WG	1.5 fl oz 0.0121 oz	14	0.0	n	2.0 z'c'd'	5.8	h-j	5.3 g-h	5.5 a-e
8 RU192514D-09 EC	0.63 fl oz	14	2.5	k-n	33.0 o-u	6.8	d-g	6.0 d-g	5.5 a-e
9 RU192514K-09 EC	0.131 fl oz	14	14.8	h-k	60.5 j-l	7.3	b-e	6.3 c-g	4.5 e-h
10 RU192514K-09 EC	0.262 fl oz	14	1.0	m-n	24.3 s-z	7.0	c-f	6.3 c-g	5.3 b-f
11 RU192514K-09 EC	0.524 fl oz	14	0.0	n	3.3 z'c'd'	6.8	d-g	6.0 d-g	6.5 a
12 RU192514B-09 ME	1.0 fl oz	14	6.8	j-n	29.5 p-w	6.0	g-j	6.5 b-f	5.0 c-g
13 RU192514O-09 WG	0.13 oz	14	0.3	n	1.8 z'c'd'	7.0	c-f	7.0 a-d	6.5 a
14 RU192514B-09 ME +RU192514K-09 EC	1.0 fl oz 0.262 fl oz	14	0.0	n	1.8 z'c'd'	6.8	d-g	6.3 c-g	5.5 a-e
15 RU192514L-09 ME +RU192514K-09 EC	0.247 fl oz 0.262 fl oz	14	0.5	m-n	25.5 r-y	7.0	c-f	6.5 b-f	5.5 a-e
16 RU192514A-09 F +RU192514K-09 EC	2.0 fl oz 0.262 fl oz	14	2.3	k-n	23.0 t-z'a'	7.3	b-e	6.0 d-g	5.3 b-f
17 BAS 500 17F 2.1SC +BAS 595 16F 1.7SC	0.54 fl oz 1.0 fl oz	14	0.0	n	5.3 z'b'-d'	7.0	c-f	7.0 a-d	5.8 a-d
18 BAS 500 17F 2.1SC +BAS 595 16F 1.7SC	0.71 fl oz 1.0 fl oz	21	2.3	k-n	33.5 o-u	7.0	c-f	7.5 ab	5.8 a-d
19 BAS 500 17F 2.1SC	0.54 fl oz	14	1.0	m-n	31.8 o-v	6.8	d-g	7.0 a-d	5.5 a-e

(Continued)

Table 1B (continued).

Treatment	Rate per 1000 sq ft	Application Interval (days) ⁴	Number of Lesion Centers per Plot ¹			Turf Quality ²			Phytotoxicity ³ 18 June
			10 Aug.	21 Aug.	18 June	10 Aug.	24 Aug.	18 June	
20	Trinity 1.67SC	1.0 fl oz	14	66.5 d	139.5 d	6.8 d-g	5.5 f-h	3.8 h-j	1.3 ef
21	Insignia 20WG	0.7 oz	14	3.5 k-n	29.0 p-x	7.3 b-e	6.8 a-e	5.5 a-e	1.0 f
22	Emerald 70WG	0.13 oz							
+ Iprodione Pro 2SE	2.0 fl oz		14	8.3 j-n	8.5 z-z'd'	6.8 d-g	6.8 a-e	5.8 a-d	1.0 f
23	Emerald 70WG	0.13 oz							
+ Iprodione Pro 2SE	3.0 fl oz		14	1.0 mn	1.3 z'c'd'	6.8 d-g	6.5 b-f	5.5 a-e	1.0 f
24	Emerald 70WG	0.13 oz							
+ Daconil Ultraex 82.5WDG	1.8 oz		14	0.3 n	6.0 z'b'-d'	7.8 a-c	6.5 b-f	6.3 ab	1.0 f
25	Emerald 70WG	0.13 oz							
+ Daconil Ultraex 82.5WDG	3.25 oz		14	0.0 n	1.3 z'c'd'	7.8 a-c	6.5 b-f	6.5 a	1.0 f
26	Curalan EG 50 WG	1.0 oz	14	26.3 gh	87.0 gh	7.5 a-d	6.8 a-e	4.0 g-j	1.0 f
27	RU21196B-09 SC	0.157 fl oz	14	0.0 n	3.3 z'c'd'	6.8 d-g	6.3 c-g	5.8 a-d	1.0 f
28	RU21196B-09 SC	0.157 fl oz	21	1.3 l-n	15.0 w-z'd'	7.5 a-d	6.3 c-g	5.5 a-e	1.0 f
29	RU21196B-09 SC	0.21 fl oz	14	0.0 n	0.8 z'c'd'	7.3 b-e	6.3 c-g	6.3 ab	1.0 f
30	RU21196B-09 SC	0.21 fl oz	21	0.0 n	0.8 z'c'd'	6.0 g-j	5.5 f-h	6.0 a-c	1.0 f
31	RU21196B-09 SC	0.21 fl oz	28	8.5 j-n	30.8 o-w	7.0 c-f	6.3 c-g	5.3 b-f	1.0 f
32	RU21196J-09 WG	0.13 oz	14	0.8 mn	6.8 z'b'-d'	7.3 b-e	6.3 c-g	5.5 a-e	1.0 f
33	RU21196J-09 WG	0.18 oz	21	11.5 i-n	35.5 n-t	6.8 d-g	5.8 e-g	4.5 e-h	1.0 f
34	RU21196J-09 WG	0.18 oz	28	13.0 i-m	41.0 n-r	6.8 d-g	6.5 b-f	4.8 d-h	1.0 f
35	RU21196A-09 SC	0.34 fl oz	14	0.0 n	0.0 z'd'	8.0 ab	7.0 a-d	5.5 a-e	1.0 f
36	RU21196A-09 SC	0.46 fl oz	21	0.0 n	1.0 z'c'd'	7.0 c-f	7.0 a-d	5.5 a-e	1.0 f
37	RU21196B-09 SC	0.294 fl oz	14 ⁵	0.0 n	0.0 z'd'	6.3 f-i	6.0 d-g	5.5 a-e	1.0 f
38	RU21196B-09 SC	0.176 fl oz							
+ RU21196D-09 SL	0.32 fl oz		14 ⁵	0.5 mn	11.5 y-z'd'	6.8 d-g	7.0 a-d	6.3 ab	1.0 f
39	RU21196J-09 WG	0.13 oz	14 ⁵	8.8 j-n	15.5 w-z'd'	6.3 f-i	6.3 c-g	5.0 c-g	1.0 f
40	RU21196J-09 WG	0.18 oz	14 ⁵	1.8 l-n	12.8 y-z'd'	6.5 e-h	6.3 c-g	5.5 a-e	1.0 f
41	RU21196E-09 WG	0.84 oz	14 ⁵	0.0 n	4.0 z'b'-d'	6.8 d-g	7.5 ab	5.5 a-e	1.0 f
42	RU21196A-09 SC	0.317 fl oz	14 ⁵	0.0 n	2.8 z'c'd'	7.5 a-d	6.5 b-f	6.5 a	1.0 f
43	RU21196A-09 SC	0.53 fl oz	14 ⁵	0.0 n	0.3 z'c'd'	7.3 b-e	7.5 ab	6.3 ab	1.0 f

(Continued)

Table 1B (continued).

Treatment	Rate per 1000 sq ft	Application Interval (days) ⁴	Number of Lesion Centers per Plot ¹			Turf Quality ²			Phytotoxicity ³ 18 June
			10 Aug.	21 Aug.	18 June	10 Aug.	24 Aug.		
44	SA-0010204 F + Phyte-Off LC	3.6 fl oz	45.5 e	122.0 e	7.8 a-c	6.3 c-g	4.5 e-h	1.0 f	
45	SA-0010205 F + Phyte-Off LC	2.0 fl oz	14	46.3 e	103.5 f	8.0 ab	6.8 a-e	4.8 d-h	1.0 f
46	SA-001101 DF + Phyte-Off LC	3.25 oz	14	66.0 d	127.3 de	7.8 a-c	6.3 c-g	4.3 f-i	1.0 f
47	SA-0011201 F	7.0 fl oz	14	30.8 fg	72.3 h-j	7.8 a-c	6.5 b-f	5.0 c-g	1.0 f
48	SA-0011301 F	7.0 fl oz	14	39.8 ef	131.0 de	8.0 ab	7.0 a-d	4.3 f-i	1.0 f
49	SA-0190101 F + Phyte-Off LC	5.0 fl oz	14	18.8 g-j	79.3 g-i	7.5 a-d	5.5 f-h	4.5 e-h	1.0 f
50	Daconil Ultrex 82.5WDG + Signature 80WG	2.0 fl oz	14	4.0 k-n	39.8 n-s	7.8 a-c	7.5 ab	6.3 ab	1.0 f
51	Chipco 26GT 2SC + Signature 80WG	3.25 oz	14	4.3 k-n	66.5 i-k	8.3 a	7.3 a-c	5.0 c-g	1.0 f
52	SA-0170101 WP	4.0 oz	14	93.5 c	210.0 c	7.3 b-e	5.5 f-h	3.0 j-k	1.0 f
53	Kestrel 1.3EC	1.0 fl oz	14	13.8 h-l	59.0 j-m	6.5 e-h	6.0 d-g	4.5 e-h	1.8 cd
54	PEX6017 1.3MEC	1.0 fl oz	14	10.0 j-n	45.5 l-o	6.3 f-i	6.5 b-f	4.8 d-h	1.3 ef
55	Banner MAXX 1.3ME	1.0 fl oz	14	6.8 j-n	29.3 p-x	6.0 g-j	7.0 a-d	4.5 e-h	1.5 de
56	RU22112-09A SC	0.4 fl oz	14	8.3 j-n	43.8 m-p	7.3 b-e	6.8 a-e	4.0 g-j	1.0 f
57	RU22112-09A SC	0.5 fl oz	14	0.0 n	13.5 x-z'd'	7.0 c-f	6.8 a-e	5.5 a-e	1.0 f
58	RU22112-09A SC	0.6 fl oz	14	0.5 mn	11.8 y-z'd'	6.8 d-g	6.8 a-e	5.5 a-e	1.0 f
59	RU22112-09A SC	0.7 fl oz	14	0.0 n	7.3 z'a'-d'	7.0 c-f	6.5 b-f	5.8 a-d	1.0 f
60	Daconil Ultrex 82.5WDG	2.75 oz	14	19.0 g-j	59.0 j-m	7.5 a-d	6.0 d-g	5.3 b-f	1.0 f
61	Daconil Ultrex 82.5WDG + 20-0-15	2.75 oz	14	45.3 e	94.3 fg	7.5 a-d	7.5 ab	4.8 d-h	1.0 f
62	+ 5-0-0-Fe	4.0 fl oz	14	14.5 h-k	43.5 m-p	7.8 a-c	6.5 b-f	5.5 a-e	1.0 f
	Daconil Ultrex 82.5WDG + Sync 100LC	2.75 oz							
	+ Sync 100LC	0.32 fl oz	14						

(Continued)

Table 1B (continued).

(Continued)

Table 1B (continued).

Treatment	Rate per 1000 sq ft	Application Interval (days) ⁴	Number of Lesion Centers per Plot ¹			Turf Quality ²			Phytotoxicity ³
			10 Aug.	21 Aug.	18 June	10 Aug.	24 Aug.	18 June	
INT ⁷		DAT ⁸	DAT	DAT	DAT	DAT	DAT	DAT	
14		13	24	2	13	27	2		
14 ⁵		20	31	9	20	34	9		
21		20	31	9	20	34	9		
28		27	38	2	27	41	2		
VAR ⁶		13	10	2	13	13	2		

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).

² Turf quality on a scale of 1 to 9, where 9 = best turf quality and 5 = commercially acceptable quality.

³ Phytotoxicity on a 1 to 5 scale, where 1 = no discoloration, 2 = slight foliar chlorosis or necrosis, 3 = moderate chlorosis or necrosis, 4 = severe chlorosis or necrosis, and 5 = all turf dead.

⁴ Fungicides were applied on 19 May (all treatments, except treatments 37 to 43 and 68), 2 June (14-day treatment), 9 June (21-day treatment and initiated treatments 37 to 42 and 68), 12 June (treatment 43), 16 June (14- and 28-day treatments), 23 June (treatments 37 to 42 and 68), 26 June (treatment 43), 30 June (14- and 21-day treatments), 7 July (treatments 37 to 42 and 68), 10 July (treatment 43), 14 July (14- and 28-day treatments), 21 July (21-day treatment and treatments 37 to 42 and 68), 24 July (treatment 43), and 28 July (14-day treatment).

⁵ Treatments 37 to 43 and 68 were applied on a curative basis (9 June for treatments 37 to 42 and 68; 12 June for treatment 43) when a threshold of 5 dollar spot lesion centers was exceeded on any of the four replicate plots. Once initiated, treatments were reapplied on a 14-day interval.

⁶ Variable spray schedule, where treatment 65 (Cleary Dollar Spot Program #1) consisted of Strider 1.3ME (2.0 fl oz) + Legend 6F (3.6 fl oz) on 19 May, 3336 Plus 19.4F (3.0 fl oz) + Alude 46SL (6.0 fl oz) + Alude 46SL (6.0 fl oz) + Alude 46SL (6.0 fl oz) on 16 June, Heritage 50WG (0.4 oz) + Protect 75DF (4.0 oz) + Alude 46SL (6.0 fl oz) on 30 June, Spectro 90WDG (5.0 oz) + Alude 46SL (6.0 fl oz) on 14 July, and Strider 1.3ME (1.0 fl oz) + Legend 6F (3.6 fl oz) + Alude 46SL (6.0 fl oz) on 28 July.

⁷ Spray interval in days.

⁸ Days after the last treatment.

Table 2A. Control of dollar spot with fungicides and biorational products on a creeping bentgrass green: Rutgers University, 2009.

	Treatment	Rate per 1000 sq ft	Spray Interval (days) ²	Number of Lesion Centers per Plot ¹				
				9 June	18 June	29 June	9 July	21 July
1	SARS-346 40WP + 3336 Plus 19.4F	0.27 oz 3.0 fl oz	14	0.0 g 0.0 h	0.0 p 0.0 p	0.0 p 0.0 p	0.0 i 0.0 i	0.0 i 0.0 p
2	SARS-346 40WP + Heritage 50WG	0.27 oz 0.2 oz	14	0.0 g 0.0 h	0.0 p 0.0 p	0.0 p 0.0 p	0.3 i 0.0 i	0.0 p 0.0 p
3	SARS-346 40WP + Endorse 2.5W	0.27 oz 4.0 oz	14	0.0 g 0.0 h	0.0 p 0.0 p	0.0 p 0.0 p	0.0 i 0.0 i	0.0 p 0.0 p
4	SARS-346 40WP + 3336 Plus 19.4F	0.4 oz 4.5 fl oz	21	0.0 g 0.0 h	0.0 p 0.0 p	0.0 p 0.0 p	0.0 i 0.0 i	1.5 n-p 1.5 n-p
5	SARS-346 40WP + Heritage 50WG	0.4 oz 0.3 oz	21	0.0 g 0.0 h	1.3 op 0.8 op	0.3 p 0.3 p	0.0 i 0.0 i	0.0 i 2.5 n-p
6	SARS-346 40WP	0.27 oz	14	0.0 g 0.5 fg	0.8 op 1.8 gh	0.8 p 24.8 fg	0.0 i 43.0 d	0.0 i 0.0 p
7	SARS-346 40WP	0.4 oz	21	0.3 g 0.3 g	7.8 c-e 4.3 d-h	25.0 fg 25.0 fg	33.8 fg 41.8 d	37.5 c-e 42.5 b-d
8	3336 Plus 19.4F	3.0 fl oz	14	1.8 d-g 1.8 d-g	5.3 d-h 24.0 f-h	32.8 gh 33.8 d	33.8 d 35.0 c-f	78.8 e 84.8 e
9	3336 Plus 19.4F	4.5 fl oz	21	1.3 d-g 1.3 d-g	3.0 e-h 27.0 ef	33.3 g 42.0 d	60.0 b 60.0 b	134.3 bc 132.5 bc
10	Heritage 50WG	0.2 oz	14	15.3 ab 15.3 ab	60.3 b 60.3 b	82.5 b 91.5 b	91.5 b 91.5 b	134.3 bc 134.3 bc
11	Heritage 50WG	0.3 oz	21	1.0 e-g 1.0 e-g	4.5 l-p 1.0 h	5.8 k-p 3.3 hi	6.8 hi 6.8 hi	5.5 l-p 5.5 l-p
12	Endorse 2.5W	4.0 oz	14	7.0 a-c 7.0 a-c	60.3 b 60.3 b	82.5 b 91.5 b	91.5 b 91.5 b	134.3 bc 134.3 bc
13	Tartan 2.4SC	1.0 fl oz	14	1.0 e-g 1.0 e-g	4.5 l-p 1.0 h	5.8 k-p 3.3 hi	6.8 hi 6.8 hi	5.5 l-p 5.5 l-p
14	Tartan 2.4SC	1.5 fl oz	21	1.0 e-g 1.0 e-g	1.5 gh 9.8 i-o	9.5 i-p 6.3 f-i	4.8 hi 4.8 hi	14.0 j-m 14.0 j-m
15	Emerald 70WG	0.13 oz	14	0.3 g 0.3 g	0.0 h 0.5 h	0.3 op 2.3 n-p	1.0 i 1.3 i	0.0 p 0.5 hi
16	Emerald 70WG	0.18 oz	21	0.3 g 0.3 g	0.0 h 0.5 h	0.0 p 0.0 p	0.0 i 0.0 i	0.3 op 3.5 l-p
17	Daconil Ultrex 82.5WDG	3.2 oz	14	0.0 g 0.0 g	0.0 h 0.0 h	0.0 p 0.0 p	0.8 i 0.8 i	3.8 hi 3.8 hi
18	Interface 2.27SC	4.0 fl oz	14	0.0 g 0.0 g	0.0 p 0.0 p	0.0 p 0.0 p	0.0 i 0.5 hi	0.0 p 0.5 op
19	Interface 2.27SC	5.0 fl oz	14	0.0 g 0.0 g	0.0 p 0.0 p	0.0 p 0.0 p	0.0 i 0.0 i	0.3 op 0.3 op
20	Interface 2.27SC	6.0 fl oz	14	0.0 g 0.0 g	0.0 p 0.0 p	0.0 p 0.0 p	0.0 i 0.0 i	0.0 p 0.0 p
21	Interface 2.27SC	7.0 fl oz	14	0.0 g 0.0 g	0.0 p 0.0 p	0.0 p 0.0 p	0.0 i 0.0 i	0.0 p 0.0 p
22	Instrata 3.6SE	9.3 fl oz	14	0.0 g 0.0 g	0.0 p 0.0 p	0.0 p 0.0 p	0.0 i 0.0 i	0.0 p 0.0 p
23	Tartan 2.4SC	2.0 fl oz	14	0.0 g 0.0 g	0.0 p 0.0 p	0.0 p 0.0 p	0.0 i 0.0 i	0.0 p 0.0 p
24	Iprodione Pro 2SE	5.0 fl oz	14	0.0 g 0.0 g	2.0 n-p 2.0 n-p	4.5 l-p 3.3 hi	10.8 g-i 10.8 g-i	20.5 l-k 20.5 l-k
25	Triton Flo 3.1SC	0.75 fl oz	14	2.5 d-g 2.3 f-h	14.0 i-o 14.5 h-k	7.8 e-i 11.0 g-i	24.0 ij 24.0 ij	

(Continued)

Table 2A (continued).

Treatment	Rate per 1000 sq ft	Spray Interval (days) ²	Number of Lesion Centers per Plot ¹					
			9 June	18 June	29 June	9 July	21 July	31 July
26 Bayer Dollar Spot Program #1	—	Var ³	1.0 e-g	0.0 h	7.3 j-p	4.8 l-p	5.8 f-i	10.8 g-i
27 Reserve 4.8SC	2.8 fl oz	14	1.5 d-g	0.5 h	2.5 m-p	3.0 op	0.5 i	5.3 hi
28 Reserve 4.8SC	3.2 fl oz	14	0.3 g	0.5 h	0.3 op	1.3 p	0.3 i	3.0 hi
29 Reserve 4.8SC	3.6 fl oz	14	0.8 fg	0.8 h	0.5 op	0.3 p	5.0 f-i	5.5 l-p
30 Concert 4.3SE	5.0 fl oz	14	0.0 g	0.0 h	0.0 p	0.0 p	0.0 i	5.0 l-p
31 Interface 2.27SC	3.0 fl oz	14	0.0 g	0.0 h	0.0 p	0.0 p	0.3 i	0.0 p
32 SP2169 1.04SC	0.71 fl oz	14	2.5 d-g	6.5 d-g	31.5 ef	44.0 d	54.5 bc	5.3 l-p
33 Iprodione Pro 2SE	4.0 fl oz	14	0.3 g	0.0 h	2.0 n-p	4.3 m-p	7.8 e-j	81.8 e
34 SP2169 1.04SC	1.41 fl oz	14	1.0 e-g	1.8 gh	17.0 g-i	17.5 i-k	15.8 ef	30.5 g-i
35 SP2169 1.04SC	2.83 fl oz	14	0.0 g	0.0 h	7.0 k-p	5.0 l-p	2.5 i	21.0 e-h
36 Tartan 2.4SC	1.5 fl oz	14	0.3 g	0.3 h	0.8 op	0.0 p	0.0 i	36.8 gh
37 Rubigan 1AS	0.5 fl oz	14	4.8 b-e	12.0 bc	46.8 c	71.0 bc	83.0 b	4.0 l-p
38 Rubigan 1AS	0.5 fl oz	14	5.0 b-d	14.8 ab	44.5 cd	56.3 de	65.0 c	0.0 p
+ GWN-9812 LC	0.74 fl oz	14	2.3 d-g	3.0 e-h	16.0 g-k	18.8 ij	18.0 e	30.5 g-i
39 Banner MAXX 1.3ME	0.5 fl oz	14	7.8 a-c	15.3 ab	46.3 c	62.3 cd	91.5 b	133.5 bc
40 Rubigan 1AS	1.0 fl oz	21	4.3 c-f	5.0 d-h	36.0 de	45.5 ef	61.5 c	139.5 b
41 Rubigan 1AS	1.0 fl oz	21	1.0 fl oz	21	1.0 e-g	16.8 g-j	16.0 i-m	42.0 b-d
+ GWN-9812 LC	0.74 fl oz	21	3.0 d-g	16.0 ab	42.0 cd	43.3 fg	17.3 e	98.3 d
42 Banner MAXX 1.3ME	1.0 fl oz	21	0.3 g	7.5 c-f	14.5 h-k	16.3 i-l	42.8 d	21.5 l-k
A9898A 0.83SC	0.6 fl oz	35	0.5 fg	8.3 c-e	11.0 i-n	21.0 hi	15.3 e-g	37.5 c-e
A9898A 0.83SC	0.95 fl oz	35	1.8 d-g	9.3 cd	12.0 i-m	15.3 i-n	18.0 e-i	54.5 f
A9898A 0.83SC	0.6 fl oz	28	0.5 fg	0.8 h	6.8 k-p	7.5 j-p	5.8 f-i	25.0 ij
A9898A 0.83SC	0.95 fl oz	28	0.5 fg	0.8 h	2.5 m-p	2.0 p	0.5 i	41.0 g
A9898A 0.83SC	0.6 fl oz	21	0.5 fg	0.8 h	4.5 l-p	6.3 k-p	3.5 hi	26.8 hi
A9898A 0.83SC	0.6 fl oz	21	0.0 g	0.8 h	4.3 l-p	4.3 m-p	0.0 j	11.5 k-o
Concert 4.3SE	5.4 fl oz	21	0.0 g	0.8 h	2.3 n-p	2.5 op	1.8 i	7.3 l-p
A13703 2.72SC	0.32 fl oz	14	0.0 g	1.0 h	0.5 p	4.5 g-i	0.8 j	22.8 i-k
A13703 2.72SC	0.49 fl oz	14	0.5 fg	1.0 h	4.3 l-p	4.3 m-p	1.8 i	8.0 l-p
A12910 2.34SC	0.48 fl oz	14	0.5 fg	1.0 h	2.3 n-p	2.5 op	1.8 i	7.8 l-p
A12910 2.34SC	0.76 fl oz	14	0.0 g	0.0 h	1.3 op	0.3 p	1.5 hi	0.3 op
Reserve 4.8SC	2.8 fl oz	7	0.0 g	0.0 h	0.3 op	0.0 p	0.0 i	0.0 p

(Continued)

Table 2A (continued).

Treatment	Rate per 1000 sq ft	Spray Interval (days) ²	Number of Lesion Centers per Plot ¹						
			9 June	18 June	29 June	9 July	21 July	31 July	10 Aug.
54 SARS-351 20SC	0.125 fl oz	14 ⁴	0.5 fg	2.0 gh	12.3 i-h	11.3 i-p	4.3 g-i	9.3 hi	12.5 k-n
55 SARS-351 20SC	0.25 fl oz	14 ⁴	0.3 g	1.0 h	3.8 l-p	3.8 n-p	0.0 i	3.0 hi	3.0 m-p
56 SARS-351 20SC	0.5 fl oz	14 ⁴	0.0 g	1.0 h	0.8 op	0.0 p	0.0 i	0.0 i	0.0 p
57 Untreated Control	—	8.5 ab	17.8 a	87.3 a	114.8 a	126.5 a	91.3 a	173.8 a	173.8 a
<hr/>									
INT ⁵	DAT ⁶	DAT	DAT	DAT	DAT	DAT	DAT	DAT	DAT
7	5	7	4	7	5	5	1	4	4
14	5	14	11	7	5	5	1	11	11
21	19	7	18	7	19	8	8	18	18
28	19	28	11	21	5	15	25	25	25
35	19	28	4	14	26	1	11	11	11
VAR ³	5	7	11	7	5	5	1	11	11

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).

² Fungicides were applied on 21 May (all treatments, except treatments 54 to 56), 28 May (7-day treatment), 4 June (7- and 14-day treatments), 11 June (7- and 21-day treatments), 18 June (7-, 14-, and 28-day treatments; and initiated treatments 54 to 56), 25 June (7- and 35-day treatments), 2 July (7-, 14-, and 21-day treatments), 9 July (7-day treatment), 16 July (7-, 14-, and 28-day treatments), 23 July (7- and 21-day treatments), 30 July (7-, 14-, and 35-day treatments), and 6 August (7-day treatment).

³ Variable spray schedule, where treatment 26 (Bayer Dollar Spot Program #1) consisted of Triton Flo 3:1SC (0.5 fl oz) + Signature 80WG (4 oz) applied on 21 May, 18 June, and 16 July, and Signature 80WG (4 oz) + Daconil Ultrex 82.5WDG (3.2 oz) applied on 4 June, 2 July, and 30 July.

⁴ Treatments 54 to 56 received Daconil Ultrex 82.5WDG (3.2 oz) on 27 May and SARS-351 20SC every 14 days from 18 June to 30 July.

⁵ Spray intervals in days.

⁶ Days after the last treatment.

Table 2B. Control of dollar spot with fungicides and biorational products on a creeping bentgrass green: Rutgers University, 2009.

Treatment	Rate per 1000 sq ft	Spray Interval (days) ⁴	Number of Lesion Centers Per Plot ¹	Algae (%)				Turf Quality ²			Phyto-toxicity ³ 18 June
				21 Aug.		24 Aug.		18 June		10 Aug.	
				21 July	24 July	21 Aug.	24 Aug.	18 June	10 Aug.	24 Aug.	
1 SARS-346 40WP + 3336 Plus 19.4F	0.27 oz	14	17.3 s-u	7.8 d-i	18.0 d-i	7.0 e-h	7.8 a-c	7.0 b	7.0 b	7.0 b	1.0 d
2 SARS-346 40WP + Heritage 50WG	0.27 oz	14	23.0 r-t	13.3 b-i	15.8 d-i	7.8 b-e	7.5 b-d	6.0 cd	6.0 cd	6.0 cd	1.0 d
3 SARS-346 40WP + Endorse 2.5W	0.27 oz	14	23.5 q-t	6.3 d-i	12.3 f-i	7.3 d-g	7.3 b-e	6.8 bc	6.8 bc	6.8 bc	1.0 d
4 SARS-346 40WP + 3336 Plus 19.4F	0.4 oz	21	113.5 hi	6.3 d-i	18.0 d-i	7.0 e-h	7.3 b-e	5.3 d-g	5.3 d-g	5.3 d-g	1.0 d
5 SARS-346 40WP + Heritage 50WG	0.4 oz	21	75.3 j-l	3.5 f-i	11.8 f-i	7.0 e-h	7.5 b-d	5.5 d-f	5.5 d-f	5.5 d-f	1.0 d
6 SARS-346 40WP	0.27 oz	14	14.3 s-u	8.3 d-i	15.5 d-i	7.5 c-f	7.3 b-e	7.3 b	7.3 b	7.3 b	1.0 d
7 SARS-346 40WP	0.4 oz	21	104.5 i	9.3 d-i	13.0 f-i	7.8 b-e	7.5 b-d	5.0 e-h	5.0 e-h	5.0 e-h	1.0 d
8 3336 Plus 19.4F	3.0 fl oz	14	205.0 d	0.8 i	22.5 a-l	7.3 d-g	5.0 k-n	3.5 k-l	3.5 k-l	3.5 k-l	1.0 d
9 3336 Plus 19.4F	4.5 fl oz	21	207.5 d	3.0 f-i	15.8 d-i	7.3 d-g	4.5 m-o	3.3 l	3.3 l	3.3 l	1.0 d
10 Heritage 50WG	0.2 oz	14	160.0 e	8.5 d-i	22.5 a-l	7.3 d-g	5.0 k-n	3.5 k-l	3.5 k-l	3.5 k-l	1.0 d
11 Heritage 50WG	0.3 oz	21	202.5 d	8.0 d-i	35.3 a-e	6.5 g-j	4.8 l-n	3.8 j-h	3.8 j-h	3.8 j-h	1.0 d
12 Endorse 2.5W	4.0 oz	14	252.5 a	11.0 c-i	28.0 a-i	7.3 d-g	3.8 op	2.3 m	2.3 m	2.3 m	1.0 d
13 Tartan 2.4SC	1.0 fl oz	14	26.8 p-s	15.8 a-i	18.8 b-i	7.5 c-f	6.5 e-h	5.5 d-f	5.5 d-f	5.5 d-f	1.0 d
14 Tartan 2.4SC	1.5 fl oz	21	59.5 k-o	27.8 ab	27.5 a-j	7.3 d-g	6.0 g-j	4.5 g-j	4.5 g-j	4.5 g-j	1.3 cd
15 Emerald 70WG	0.13 oz	14	1.5 u	15.5 a-i	25.0 a-l	7.0 e-h	7.8 a-c	7.0 b	7.0 b	7.0 b	1.0 d
16 Emerald 70WG	0.18 oz	21	13.8 s-u	1.8 hi	10.0 g-i	7.3 d-g	7.0 c-f	7.5 b	7.5 b	7.5 b	1.0 d
17 Daconil Ultrex 82.5WDG	3.2 oz	14	55.3 l-o	0.0 i	4.0 kl	7.5 c-f	6.3 f-i	5.5 d-f	5.5 d-f	5.5 d-f	1.0 d
18 Interface 2.27SC	4.0 fl oz	14	61.3 k-o	8.0 d-i	27.3 a-j	8.8 a	8.0 ab	5.0 e-h	5.0 e-h	5.0 e-h	1.0 d
19 Interface 2.27SC	5.0 fl oz	14	46.3 op	3.3 f-i	20.0 b-l	8.3 a-c	7.5 b-d	5.8 de	5.8 de	5.8 de	1.0 d
20 Interface 2.27SC	6.0 fl oz	14	49.5 m-o	1.8 hi	5.0 kl	7.8 b-e	8.5 a	6.0 cd	6.0 cd	6.0 cd	1.0 d
21 Interface 2.27SC	7.0 fl oz	14	27.8 p-s	0.8 i	7.0 h-l	8.5 ab	8.5 a	6.0 cd	6.0 cd	6.0 cd	1.0 d
22 Instrata 3.6SE	9.3 fl oz	14	0.0 u	0.0 i	6.0 ij	4.5 m-o	7.5 b	2.5 a	2.5 a	2.5 a	1.0 d
23 Tartan 2.4SC	2.0 fl oz	14	0.0 u	26.0 a-c	25.8 a-k	7.5 c-f	7.3 b-e	5.8 de	5.8 de	5.8 de	1.0 d

(Continued)

Table 2B (continued).

Treatment	Rate per 1000 sq ft	Spray Interval (days) ⁴	Number of Lesion Centers Per Plot ¹			Algae (%)			Turf Quality ²			Phyto-toxicity ³
			21 Aug.		24 Aug.	18 June		10 Aug.	24 Aug.	18 June	10 Aug.	
			21 July	24 Aug.	21 July	24 Aug.	18 June	10 Aug.	24 Aug.	18 June	10 Aug.	
24 Iprodione Pro 2SE.....	5.0 fl oz	14	123.3 g-i	2.0	hi	14.3 e-l	7.5 c-f	6.8 d-g	4.8 f-i	1.0 d		
25 Triton Flo 3.1SC.....	0.75 fl oz	14	68.3 j-n	19.8 a-e	f-i	13.0 f-i	7.8 b-e	6.8 d-g	5.3 d-g	1.0 d		
26 Bayer Dollar Spot Program #1.....	—	Var ⁵	82.8 j	0.0	i	11.8 f-i	8.5 ab	7.3 b-e	5.0 e-h	1.0 d		
27 Reserve 4.8SC.....	2.8 fl oz	14	55.5 l-o	0.0	i	17.3 d-l	8.0 a-d	7.0 c-f	5.8 de	1.0 d		
28 Reserve 4.8SC.....	3.2 fl oz	14	44.5 o-q	0.0	i	18.5 c-l	8.3 a-c	8.0 ab	5.0 e-h	1.0 d		
29 Reserve 4.8SC.....	3.6 fl oz	14	41.3 o-r	0.0	i	6.5 i-l	8.0 a-d	7.8 a-c	6.0 cd	1.0 d		
30 Concert 4.3SE.....	5.0 fl oz	14	1.0 u	0.0	i	3.8 l	7.8 b-e	5.5 i-l	7.5 b	1.0 d		
31 Interface 2.27SC.....	3.0 fl oz	14	75.3 j-l	8.0 d-i	a-l	22.0 a-l	7.8 b-e	7.5 b-d	4.3 h-k	1.0 d		
32 SP2169 1.04SC.....	0.71 fl oz	14	205.0 d	27.8 ab	a-l	21.0 a-l	6.3 h-j	4.8 l-n	3.8 j-l	1.5 b-d		
33 Iprodione Pro 2SE.....	4.0 fl oz	14	130.5 f-h	0.0	i	12.8 f-i	6.8 f-i	6.5 e-h	4.8 f-i	1.0 d		
34 SP2169 1.04SC.....	1.41 fl oz	14	69.0 j-m	21.0 a-d	b-l	19.5 b-l	6.0 ij	5.5 i-l	4.8 f-i	2.0 ab		
35 SP2169 1.04SC.....	2.83 fl oz	14	2.8 tu	21.3 a-d	a-g	29.0 a-g	5.8 j	7.0 c-f	5.0 e-h	2.0 ab		
36 Tartan 2.4SC.....	1.5 fl oz	14	4.0 tu	25.3 a-c	a	42.0 a	7.3 d-g	7.3 b-e	5.3 d-g	1.0 d		
37 Rubigan 1AS.....	0.5 fl oz	14	220.0 b-d	8.8 d-i	a-h	28.5 a-h	6.3 h-j	4.3 n-p	3.5 kl	1.0 d		
38 Rubigan 1AS.....	0.5 fl oz	14	227.5 bc	8.5 d-i	j-l	6.8 f-i	4.3 n-p	3.8 j-l	1.3 cd			
+ GWN-9812 LC.....	0.74 fl oz	14	137.3 fg	27.5 ab	a-j	27.0 a-j	6.8 f-i	6.0 g-j	3.5 kl	1.0 d		
39 Banner MAXX 1.3ME.....	0.5 fl oz	21	210.0 cd	2.3 g-i	20.5 a-l	6.8 f-i	4.5 m-o	3.3 l	1.0 d			
40 Rubigan 1AS.....	1.0 fl oz											
41 Rubigan 1AS.....	1.0 fl oz											
+ GWN-9812 LC.....	0.74 fl oz	21	163.8 e	19.8 a-e	8.5 g-h	6.3 h-j	4.5 m-o	4.0 i-l	1.3 cd			
42 Banner MAXX 1.3ME.....	1.0 fl oz	21	116.8 g-i	29.0 a	32.3 a-f	7.5 c-f	6.3 f-i	4.0 i-l	1.3 cd			
43 A9898A 0.83SC.....	0.6 fl oz	35	147.3 ef	17.0 a-h	40.3 ab	7.0 e-h	4.8 l-n	3.5 kl	1.5 b-d			
44 A9898A 0.83SC.....	0.95 fl oz	35	47.8 n-p	14.3 a-i	6.8 i-h	6.0 ij	5.3 j-m	5.8 de	1.8 bc			
45 A9898A 0.83SC.....	0.6 fl oz	28	131.5 f-h	13.0 b-i	28.5 a-h	6.8 f-i	5.5 i-l	3.8 j-l	1.3 cd			
46 A9898A 0.83SC.....	0.95 fl oz	28	110.8 hi	27.0 ab	15.3 d-l	6.8 f-i	6.0 g-j	4.5 g-j	1.3 cd			
47 A9898A 0.83SC.....	0.6 fl oz	21	61.5 k-o	18.3 a-f	24.3 a-l	6.8 f-i	6.3 f-i	4.8 f-i	1.5 b-d			
48 Concert 4.3SE.....	5.4 fl oz	21	52.8 m-o	1.3 i	18.0 d-l	7.3 d-g	5.8 h-k	5.3 d-g	1.0 d			
49 A13703 2.72SC.....	0.32 fl oz	14	104.0 i	3.0 f-i	17.0 d-l	6.8 f-i	6.8 d-g	4.3 h-k	1.0 d			

(Continued)

Table 2B (continued).

Treatment	Rate per 1000 sq ft	Spray Interval (days) ⁴	Number of Lesion Centers Per Plot ¹			Algae (%)			Turf Quality ²			Phytotoxicity ³
			21 Aug.		21 July	24 Aug.		18 June	10 Aug.		24 Aug.	
			21 Aug.	21 July	24 Aug.	18 June	10 Aug.	24 Aug.	18 June	10 Aug.	24 Aug.	
50 A13703 2.72SC.....	0.49 fl oz	14	79.3 jk	5.0 e-i	14.0 e-l	7.0 e-h	7.8 a-c	5.5 d-f	1.0 d			
51 A12910 2.34SC.....	0.48 fl oz	14	52.0 m-o	17.8 a-g	22.0 a-l	6.8 f-i	7.3 b-e	5.3 d-g	1.3 cd			
52 A12910 2.34SC.....	0.76 fl oz	14	9.5 s-u	15.0 a-i	40.0 a-c	6.5 g-j	6.3 f-i	5.3 d-g	1.3 cd			
53 Reserve 4.8SC.....	2.8 fl oz	7	0.8 u	0.0 i	8.5 g-l	8.3 a-c	8.5 a	8.5 a	1.0 d			
54 SARS-351 20SC.....	0.125 fl oz	14 ⁶	82.8 j	21.5 a-d	12.3 f-l	8.0 a-d	5.8 h-k	5.3 d-g	1.0 d			
55 SARS-351 20SC.....	0.25 fl oz	14 ⁶	60.8 k-o	21.5 a-d	25.0 a-l	7.5 c-f	7.5 b-d	5.5 d-f	1.0 d			
56 SARS-351 20SC.....	0.5 fl oz	14 ⁶	27.5 p-s	10.8 c-i	12.5 f-l	7.8 b-e	7.8 a-c	7.0 b	1.0 d			
57 Untreated Control.....	—	—	237.5 ab	20.8 a-d	36.5 a-d	7.0 e-h	3.5 p	3.3 l	1.0 d			
			INT ⁷	DAT ⁷	DAT	DAT	DAT	DAT	DAT	DAT	DAT	DAT
			7	15	5	18	7	4	18	7	18	7
			14	22	5	25	14	11	25	14	32	14
			21	29	19	32	7	18	25	39	28	28
			28	36	5	39	28	28	11	25	28	28
			35	22	26	25	25	7	11	25	7	7
			VAR ⁵	22	5	25	7	11	25	7		

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).

² Turf quality on a scale of 1 to 9, where 9 = best turf quality and 5 = commercially acceptable quality.

³ Phytotoxicity on a 1 to 5 scale, where 1 = no discoloration, 2 = slight foliar chlorosis or necrosis, 3 = moderate chlorosis or necrosis, 4 = severe chlorosis or necrosis, and 5 = all turf dead.

⁴ Fungicides were applied on 21 May (all treatments, except treatments 54 to 56), 28 May (7-day treatment), 4 June (7- and 14-day treatments), 11 June (7- and 21-day treatments), 18 June (7-, 14-, and 28-day treatments and initiated treatments 54 to 56), 25 June (7- and 35-day treatments), 2 July (7-, 14-, and 21-day treatments); 9 July (7-, 14-, and 28-day treatments), 16 July (7-, 14-, and 21-day treatments), 23 July (7- and 21-day treatments), 30 July (7-, 14-, and 35-day treatments), and 6 August (7-day treatment).

(Continued)

Table 2B (continued).

⁵ Variable spray schedule, where treatment 26 (Bayer Dollar Spot Program #1) consisted of Triton Flo 3.1SC (0.5 fl oz) + Signature 80WG (4 oz) applied on 21 May, 18 June, and 16 July, and Signature 80WG (4 oz) + Daconil Ultrex 82.5WDG (3.2 oz) applied on 4 June, 2 July, and 30 July.

⁶ Treatments 54 to 56 received Daconil Ultrex 82.5WDG (3.2 oz) on 27 May and SARS-351 20SC every 14 days from 18 June to 30 July.

⁷ Spray intervals in days.
⁸ Days after the last treatment.