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 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 Anne Diglio for administrative and secretarial support.

Dr. Ann Brooks Gould, Editor
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PREVENTIVE CONTROL OF ANTHRACNOSE WITH SELECTED FUNGICIDES AND BIORATIONAL PRODUCTS ON AN ANNUAL BLUEGRASS PUTTING GREEN, 2009

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Fungicides were evaluated in 2009 for their ability to control anthracnose basal rot (caused by *Colletotrichum cereale*) on an annual bluegrass (*Poa annua*) putting green at the Rutgers Turf Research Farm in North Brunswick, NJ. The green was established October 2004 on a Nixon loam with a pH of 6.3 by killing the existing stand of creeping bentgrass (*Agrostis stolonifera*) and annual bluegrass with Roundup Pro 3LC (3 qt/A) and then core aerifying the site in two directions to bring dormant annual bluegrass seed to the soil surface. Mowing was performed daily at a height of 0.125-inch with clippings collected. The site was irrigated as needed to prevent drought stress.

Fertilizer was applied as 21-0-0 (0.2 lb nitrogen (N)/1000 ft^2) on 13 and 18 April and 2 May, and as 34-0-0 (0.1 lb N/1000 ft^2) on 23 and 30 May, 12 June, and 23 August. Potassium (K) was applied as 0-0-50 (2.25 lb K/1000 ft^2) on 6 May. The growth regulator Primo MAXX 1ME (0.125 fl oz/1000 ft^2) + Proxy 2SL (5.0 fl oz/1000 ft^2) was sprayed over the trial on 13 and 28 April to suppress seedheads, and Primo MAXX 1ME (0.125 fl oz/1000 ft^2) was applied every 14 days from 9 May to 2 October.

Dollar spot (caused by *Sclerotinia homoeocarpa*) was suppressed with Emerald 70WG (0.18 oz/1000 ft^2) on 21 May, 1 and 15 July, and 2 August, and Curalan 50EG (1.0 oz/1000 ft^2) on 2 and 16 June and 19 August. Brown patch (incited by *Rhizoctonia solani*) was prevented with ProStar 70W (3.0 oz/1000 ft^2) on 8 and 22 June, 4 and 18 July, and 2 and19 August. Previous research by the authors has shown that Curalan 50EG, ProStar 70W, and Emerald 70WG did not affect anthracnose development on the site at the rates used in this study. Insect pests were controlled with Telstar GC 0.67F (0.4 oz/1000 ft^2) on 11 May. Turf was topdressed with a sand root zone mix (1.0 ft^3/1000 ft^2) on 27 March, 31 May, and 13 June. 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 ft^2 with a $C0_2$ powered sprayer at 30 psi using Tee Jet 8003E nozzles. Treatments (trt) were initiated on 15 May, prior to the development of anthracnose. Fungicides were reapplied at the appropriate intervals until 21 August as indicated in Tables 1A and 1B. Turf was visually evaluated for percent turf area infested with anthracnose on 3, 14, and 24 July and 7, 17, and 25 August. Phytotoxicity was assessed on 3 and 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. Turf quality was evaluated on 18 June, 24 July, and 24 August using a 1 to 9 scale, where 9 = best turf quality and 5 = acceptable quality. Data were subjected to analysis of variance and means were separated by Waller-Duncan *k*-ratio *t*-test (*k* =100).

Anthracnose developed on 26 June as a natural infection and became uniformly distributed throughout the green by 3 July. Disease severity peaked on 25 August (95% turfgrass area infested on non-fungicide treated turf). Due to the extreme severity of this natural epidemic, only a 35% of the treatments provided season-long control of anthracnose (i.e., less than 10% turf area infested from 15 May through 25 August; Tables 1A and 1B). These treatments included products containing chlorothalonil [i.e., Petro Canada Program #1 (trt 24) and #2 (trt 25), Banner MAXX 1.3 ME @ 2.0 fl oz + Daconil Ultrex 82.5WDG @ 3.6 oz (trt 26), Precision Anth.

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Program #1 (trt 49), Reserve 4.8SC @ 2.8 to 4.5 fl oz (trts 59 to 62), and the Syngenta Program #1 (trt 105)]; phosphonates alone or in combination with chlorothalonil [i.e., Phoenix Anth. Programs # 1 to 4 (trts 28 to 31, respectively), Vitalonil SL (trt 32), Gary's Green Anth. Program #2 (trt 45), Signature 80WG + Daconil Ultrex 82.5WDG (trt 96), and Rutgers Program #1 (trt 104)]; DMI fungicides alone or in combination with other products [i.e., Insignia 20WG + Trinity 1.67SC (trts 39 to 40), Tourney 50WDG (trt 41), Bayer Anth. Program #1 (trt 54), Reserve 4.8SC @ 3.2 fl oz + Signature 80WG @ 4.0 oz (trt 55), Triton Flo 3.1SC (trts 64 to 66), Banner MAXX 1.3ME @ 2.0 fl oz (trt 67), DPX-LEM17-50 50WDG + Banner MAXX 1.3ME (trt 69), and Trinity 1.67SC (trt 95)]; the mineral oil Civitas LC + Civitas Harmonizer LC (trt 23); DPX-LEM17-50 50WDG @ 0.5 oz (trt 71), and the experimental fungicides RU192514K-09 EC (trts 2 to 4), RU192514B-09 ME (trt 5), RU192514B-09 ME + RU192514K-09 EC (trt 7), RU192514B-09 ME + RU192514D-09 EC (trt 13), and RU192514L-09 ME + RU192514D-09 EC (trt 18). Several other products and product combinations [i.e., RU192514D-09 EC (trt 1), RU192514L-09 ME + RU192514K-09 EC (trt 8), RU192514A-09 F + RU192514K-09 EC (trt 9), RU192514A-09 F + RU192514D-09 EC (trt 14), Disarm C 4.25 SC (trt 17), Daconil Ultrex 82.5WDG @ 3.6 oz (trt 48), Precision Anth. Program #2 (trt 51), DPX-LEM17-50 50WDG @ 0.3 oz (trt 70), SARS-346 40WP + 3336 Plus 19.4 F (trt 72), SARS-346 40WP + Endorse 2.5W (trt 74), Daconil Ultrex 82.5WDG @ 3.2 oz (trt 80), and Chipco 26GT 2SC (trt 99) also adequately suppressed anthracnose throughout the treatment period (15 May to 21 August; Table 1A) with only a slight reduction in control on the last evaluation date (25 August; Table 1B).

It is interesting to note that fungicides in the QoI (e.g., trts 16, 36 to 38, 76, and 78), benzimidazole (e.g., trt 103), and DMI [e.g., 18, 19, 21, 27, 63, and 89, except for Triton Flo 3.1SC (trts 64 to 66), Banner MAXX 1.3ME @ 2.0 fl oz (trt 67), and Trinity 1.67SC (trt 95)], antibiotic [e.g., Endorse 2.5W (trt 77)], and phenylpyrrole [e.g., Medallion 50W (trt 97)] groups did not adequately control anthracnose during the severe epidemic in 2009, even though they typically provided acceptable levels of protection on this site prior to 2006. As in past anthracnose efficacy studies at Rutgers University, tank mixtures often controlled the disease better than the individual components [e.g., Signature 80WG @ 4.0 oz + Daconil Ultrex 82.5WDG @ 3.2 oz (trt 96) was more efficacious than the individual components Signature 80WG 4.0 oz (trt 90) or Daconil Ultrex 82.5WDG @ 3.2 oz (trt 80) on 25 August] when used alone at the same rates. The addition of ammonium nitrate 34-0-0 @ 4.0 oz every 14 days (trt 56) to turf reduced anthracnose severity 60 to 90% during the study further highlighting the importance of increasing nitrogen fertility to reduce disease severity. However, increasing the rate of ammonium nitrate 34-0-0 from 4.0 oz (trt 56) to 8.0 oz (trt 91) did not improve disease control.

Slight to moderate foliar chlorosis was noted on 3 June for turf treated with RU192514N-09 SL (trt 11), Disarm M 3.82 SC (trt 19), Banner MAXX 1.3 ME @ 2.0 fl oz + Daconil Ultrex 82.5WDG @ 3.6 oz (trt 26), DPX-LEM17-50 50WDG + Banner MAXX 1.3ME (trt 69), RU 16297-09A L @ 18.9 fl oz (trt 84), SP2169 1.04SC @ 2.83 fl oz (trt 94), Dew Cure 100LC + Daconil Ultrex 82.5WDG (trt 101), and Syngenta Program #1 (trt 105) every 14 days (Table 1B), but the injury was only temporary and turf quickly recovered by 19 June; except for PEX6016 F (trt 33), RU 16297-09A L @ 18.9 fl oz (trt 84), SP2169 1.04SC @ 2.83 fl oz (trt 94), and Dew Cure 100LC + Daconil Ultrex 82.5WDG (trt 101) where injury remained the same or intensified. Turf quality evaluated on 18 June, 24 July, and 24 August was closely associated with the degree of anthracnose control; treatments affording good protection from this disease had good turf quality (Table 1B).

Table 1A. Preventive control of anthracnose with selected fungicides and biorational products on an annual bluegrass putting green: Rutgers University, 2009.

	Treatment	Rate per 1000 sq ft	Application Schedule (days)[2]	Turf Area Infested (%) per Plot[1]				
				3 July	14 July	24 July	7 Aug.	17 Aug.
1	RU192514D-09 EC	0.63 fl oz	14	1.5 d-f	3.5 g-r	7.5 k-w	10.8 m-z'b'	9.5 t-z'l'
2	RU192514K-09 EC	0.131 fl oz	14	1.3 d-f	2.0 k-r	9.3 j-w	9.5 p-z'b'	5.3 z'a'-l'
3	RU192514K-09 EC	0.262 fl oz	14	1.0 d-f	1.3 m-r	4.0 q-w	6.0 u-z'b'	4.3 z'b'-l'
4	RU192514K-09 EC	0.524 fl oz	14	0.8 d-f	1.3 m-r	4.8 o-w	2.8 x-z'b'	1.8 z'i'-l'
5	RU192514B-09 ME	1.0 fl oz	14	0.8 d-f	0.8 o-r	9.0 j-w	8.3 r-z'b'	3.5 z'c'-l'
6	RU192514M-09 ME	1.0 fl oz	14	1.8 d-f	5.3 f-k	18.8 g-j	27.0 h-k	36.0 j-l
7	RU192514B-09 ME	1.0 fl oz						
	+ RU192514K-09 EC	0.262 fl oz	14	1.5 d-f	1.3 m-r	8.0 j-w	6.5 t-z'b'	7.0 w-z'l'
8	RU192514L-09 ME	0.247 fl oz						
	+ RU192514K-09 EC	0.262 fl oz	14	0.8 d-f	2.0 k-r	13.0 j-s	6.8 t-z'b'	7.0 w-z'l'
9	RU192514A-09 F	2.0 fl oz						
	+ RU192514K-09 EC	0.262 fl oz	14	1.5 d-f	1.5 l-r	4.0 q-w	7.3 t-z'b'	12.8 r-z'e'
10	RU192514D-09 EC	0.314 fl oz	14	3.0 de	5.8 f-j	10.0 j-w	12.0 m-z'b'	13.3 r-z'c'
11	RU192514N-09 SL	0.61 fl oz	14	2.0 d-f	2.3 j-r	10.8 j-w	10.0 o-z'b'	6.5 y-z'l'
12	RU192514L-09 ME	0.247 fl oz	14	1.8 d-f	2.0 k-r	12.3 j-u	12.3 m-z'a'	15.3 r-z
13	RU192514B-09 ME	1.0 fl oz						
	+ RU192514D-09 EC	0.314 fl oz	14	0.5 ef	0.8 o-r	3.5 r-w	4.0 w-z'b'	2.0 z'h'-l'
14	RU192514A-09 F	2.0 fl oz						
	+ RU192514D-09 EC	0.314 fl oz	14	1.5 d-f	1.0 n-r	6.8 k-w	6.0 u-z'b'	5.0 z'a'-l'
15	RU192514L-09 ME	0.247 fl oz						
	+ RU192514D-09 EC	0.314 fl oz	14	1.5 d-f	2.3 j-r	9.0 j-w	7.0 t-z'b'	8.8 u-z'l'
16	Disarm 480SC	0.36 fl oz	14	1.8 d-f	1.8 k-r	13.3 j-r	42.8 d-f	55.8 f-h
17	Disarm C 4.25 SC	4.4 fl oz	14	0.8 d-f	1.3 m-r	7.5 k-w	5.3 u-z'b'	10.5 s-z'k'
18	Disarm M 3.82 SC	0.5 fl oz	14	2.3 d-f	3.5 g-r	27.8 fg	35.8 f-h	50.0 hi
19	Disarm M 3.82 SC	1.0 fl oz	14	1.8 d-f	2.8 h-r	12.8 j-t	21.3 i-p	28.3 l-o
20	Veranda 11.3 WDG	0.9 oz	14	1.5 d-f	4.5 f-n	17.8 h-k	18.0 j-t	17.3 p-v
21	Eagle 20EW	1.2 fl oz	14	0.0 f	2.8 h-r	17.3 h-k	27.8 h-k	31.5 k-n
22	Daconil Ultrex 82.5WDG	2.67 oz	14	1.0 d-f	0.8 o-r	9.0 j-w	9.0 q-z'b'	17.3 p-v

(Continued)

Table 1A (continued).

	Treatment	Rate per 1000 sq ft	Application Schedule (days)[2]	Turf Area Infested (%) per Plot[1] 3 July	14 July	24 July	7 Aug.	17 Aug.
23	Civitas LC	14.5 fl oz						
	+ Civitas Harmonizer LC	0.9 fl oz	14	0.0 f	0.0 r	0.0 w	0.0 z'b'	0.0 z'l'
24	Petro Canada Program #1	—	VAR[3]	0.0 f	0.0 r	0.0 w	0.0 z'b'	0.0 z'l'
25	Petro Canada Program #2	—	VAR[4]	0.0 f	0.3 qr	0.3 w	0.0 z'b'	3.0 z'e'-l'
26	Banner MAXX 1.3 ME	2.0 fl oz						
	+ Daconil Ultrex 82.5WDG	3.6 oz	14	0.0 f	0.3 qr	4.0 q-w	5.3 u-z'b'	9.5 t-z'l'
27	Banner MAXX 1.3 ME	0.5 fl oz						
	+ Daconil Ultrex 82.5WDG	1.8 oz	14	0.3 f	1.8 k-r	10.5 j-w	14.5 l-y	12.8 r-z'e'
28	Phoenix Anth. Program #1	—	VAR[5]	0.5 ef	0.5 p-r	0.8 vw	2.5 y-z'b'	0.0 z'l'
29	Phoenix Anth. Program #2	—	VAR[6]	0.0 f	0.0 r	2.0 r-w	8.0 r-z'b'	9.3 u-z'l'
30	Phoenix Anth. Program #3	—	VAR[7]	0.0 f	0.3 qr	2.8 r-w	2.5 y-z'b'	2.0 z'h'-l'
31	Phoenix Anth. Program #4	—	VAR[8]	0.0 f	0.0 r	1.3 u-w	4.5 v-z'b'	2.0 z'h'-l'
32	Vitalonil SL	7.0 fl oz	14	0.8 d-f	1.3 m-r	1.8 s-w	6.8 t-z'b'	10.5 s-z'k'
33	PEX6016 F	3.6 fl oz	14	2.3 d-f	5.8 f-j	15.0 j-q	19.3 i-s	29.8 k-n
34	Pegasus L 6F	3.6 fl oz	14	1.8 d-f	1.0 n-r	3.5 r-w	6.3 t-z'b'	16.5 q-x
35	Daconil Weath Stik 6F	3.6 fl oz	14	0.8 d-f	1.8 k-r	5.0 n-w	5.8 u-z'b'	12.8 r-z'e'
36	Insignia 20WG	0.9 oz	14	1.0 d-f	2.3 j-r	16.8 i-l	29.5 g-i	43.0 ij
37	Honor 28 WG	0.9 oz	14	1.0 d-f	2.3 j-r	16.3 i-n	27.8 h-k	49.0 hi
38	Honor 28 WG	1.1 oz	14	0.5 ef	2.0 k-r	10.8 j-w	19.5 i-r	27.0 l-p
39	Insignia 20WG	0.7 oz						
	+ Trinity 1.67SC	1.0 fl oz	14	0.3 f	2.3 j-r	7.0 k-w	6.8 t-z'b'	3.5 z'c'-l'
40	Insignia 20WG	0.9 oz						
	+ Trinity 1.67SC	1.0 fl oz	14	0.8 d-f	1.3 m-r	7.3 k-w	5.0 u-z'b'	2.8 z'f'-l'
41	Tourney 50WDG	0.37 oz	14	0.8 d-f	2.3 j-r	7.5 k-w	4.3 w-z'b'	9.8 s-z'l'
42	Gary's Green Ultra (13-2-3)	15.0 fl oz						
	+ PK Plus (3-7-18)	6.0 fl oz	14	3.0 de	4.8 f-m	4.8 o-w	18.0 j-t	26.8 l-p
43	PK Plus (3-7-18)	6.0 fl oz	14	3.0 de	6.3 f-h	10.0 j-w	22.3 i-m	26.8 l-p
44	Gary's Green Anth. Prog #1	—	VAR[9]	1.5 d-f	3.3 g-r	4.0 q-w	10.5 n-z'b'	13.0 r-z'd'
45	Gary's Green Anth. Prog #2	—	VAR[10]	1.3 d-f	1.3 m-r	0.8 vw	10.0 o-z'b'	8.3 u-z'l'
46	Daconil Ultrex 82.5WDG	1.8 oz	14	2.3 d-f	3.5 g-r	9.5 j-w	14.8 l-x	15.3 r-z

(Continued)

Table 1A (continued).

	Treatment	Rate per 1000 sq ft	Application Schedule (days)[2]	Turf Area Infested (%) per Plot[1] 3 July	14 July	24 July	7 Aug.	17 Aug.
47	Daconil Ultrex 82.5WDG	2.75 oz	14	0.8 d-f	2.5 i-r	7.5 k-w	8.8 q-z'b'	11.8 s-z'h'
48	Daconil Ultrex 82.5WDG	3.6 oz	14	0.8 d-f	1.5 l-r	6.5 k-w	2.8 x-z'b'	11.0 s-z'j'
49	Precision Anth. Program #1	—	VAR[11]	0.0 f	0.5 p-r	3.0 r-w	7.5 s-z'b'	7.5 v-z'l'
50	Daconil Ultrex 82.5WDG	2.75 oz						
	+ Sync 100L	0.32 fl oz	14	2.5 d-f	4.0 f-p	12.5 j-u	13.0 m-z'a'	18.0 p-u
51	Precision Anth. Program #2	—	VAR[12]	0.3 f	1.3 m-r	1.5 t-w	7.5 s-z'b'	10.3 s-z'k'
52	20-0-15	4.0 fl oz						
	+ 5-0-0-5 Fe	4.0 fl oz	14	0.5 ef	2.3 j-r	26.8 f-h	41.5 d-f	53.8 gh
53	Untreated Check	—	—	11.0 a-c	21.3 ab	41.0 b-d	66.8 b	78.5 cd
54	Bayer Anth. Program #1	—	VAR[13]	0.5 ef	0.0 r	1.8 s-w	3.3 w-z'b'	1.5 z'j'-l'
55	Reserve 4.8SC	3.2 fl oz						
	+ Signature 80WG	4.0 oz	14	0.8 d-f	0.8 o-r	1.8 s-w	6.5 t-z'b'	7.5 v-z'l'
56	Ammonium Nitrate 34-0-0	4.0 oz	14[14]	1.3 d-f	4.3 f-o	8.3 j-w	19.3 i-s	26.0 m-q
57	Untreated Check	—	—	13.0 a	21.3 ab	44.3 a-c	67.8 b	83.8 a-c
58	Untreated Check	—	—	9.8 bc	19.3 bc	33.3 d-f	60.0 bc	76.0 cd
59	Reserve 4.8SC	2.8 fl oz	14	0.8 d-f	1.3 m-r	7.3 k-w	6.5 t-z'b'	5.5 z-z'l'
60	Reserve 4.8SC	3.2 fl oz	14	0.3 f	1.0 n-r	5.8 l-w	2.8 x-z'b'	4.5 z'b'-l'
61	Reserve 4.8SC	3.6 fl oz	14	0.0 f	0.5 p-r	4.8 o-w	2.3 z-z'b'	2.8 z'f'-l'
62	Reserve 4.8SC	4.5 fl oz	14	0.0 f	0.8 o-r	4.0 q-w	1.5 z'a'b'	1.5 z'j'-l'
63	Concert 4.3SE	5.0 fl oz	14	1.3 d-f	2.3 j-r	10.0 j-w	12.3 m-z'a'	16.3 q-y
64	Triton Flo 3.1SC	0.5 fl oz	14	0.5 ef	1.5 l-r	2.0 r-w	6.3 t-z'b'	3.3 z'd'-l'
65	Triton Flo 3.1SC	0.75 fl oz	14	0.0 f	1.0 n-r	2.5 r-w	1.8 z'a'b'	1.0 z'k'l'
66	Triton Flo 3.1SC	1.0 fl oz	14	0.0 f	0.3 qr	4.8 o-w	1.8 z'a'b'	0.3 z'l'
67	Banner MAX 1.3 ME	2.0 fl oz	14	1.0 d-f	3.8 f-q	6.5 k-w	4.8 u-z'b'	5.3 z'a'-l'
68	DPX-LEM17-50 50WDG	0.3 oz						
	+ Daconil Ultrex 82.5WDG	3.25 oz	14	1.3 d-f	2.5 i-r	12.3 j-u	15.0 l-w	14.5 r-z'a'
69	DPX-LEM17-50 50WDG	0.3 oz						
	+ Banner MAXX 1.3ME	1.0 fl oz	14	1.8 d-f	3.0 h-r	9.3 j-w	6.8 t-z'b'	4.3 z'b'-l'
70	DPX-LEM17-50 50WDG	0.3 oz	14	1.3 d-f	1.8 k-r	4.3 p-w	6.3 t-z'b'	6.8 x-z'l'
71	DPX-LEM17-50 50WDG	0.5 oz	14	0.3 f	1.3 m-r	3.5 r-w	3.3 w-z'b'	4.8 z'a'-l'

(Continued)

Table 1A (continued).

	Treatment	Rate per 1000 sq ft	Application Schedule (days)[2]	Turf Area Infested (%) per Plot[1] 3 July	14 July	24 July	7 Aug.	17 Aug.
72	SARS-346 40WP	0.27 oz						
	+ 3336 Plus 19.4 F	3.0 fl oz	14	1.3 d-f	2.5 i-r	5.3 m-w	3.8 w-z'b'	5.0 z'a'-l'
73	SARS-346 40WP	0.27 oz						
	+ Heritage 50WG	0.2 oz	14	1.0 d-f	2.3 j-r	11.3 j-w	13.0 m-z'a'	16.3 q-y
74	SARS-346 40WP	0.27 oz						
	+ Endorse 2.5W	4.0 oz	14	1.8 d-f	3.8 f-q	9.3 j-w	8.5 q-z'b'	4.0 z'c'-l'
75	SARS-346 40WP	0.27 oz	14	1.8 d-f	4.0 f-p	15.8 j-o	14.3 l-z	22.3 n-r
76	Heritage 50WG	0.2 oz	14	3.3 d	2.3 j-r	26.3 f-i	39.3 e-g	80.8 b-d
77	Endorse 2.5W	4.0 oz	14	2.5 d-f	2.5 i-r	11.0 j-w	12.8 m-z'a'	17.3 p-v
78	Tartan 2.4SC	1.0 fl oz	14	0.3 f	0.8 o-r	15.5 j-p	36.3 f-h	65.5 ef
79	Emerald 70WG	0.13 oz	14	8.5 c	15.3 d	29.8 ef	49.3 de	63.5 e-g
80	Daconil Ultrex 82.5WDG	3.2 oz	14	1.0 d-f	1.3 m-r	4.5 o-w	6.0 u-z'b'	8.3 u-z'l'
81	RU 16297-09B WDG	0.37 oz	14	2.3 d-f	6.8 fg	16.5 i-m	16.8 k-u	16.8 q-w
82	RU 16297-09B WDG	0.74 oz	14	0.5 ef	5.8 f-j	15.5 j-p	14.0 l-z	14.0 r-z'b'
83	RU 16297-09A L	9.4 fl oz	14	2.0 d-f	6.0 f-i	9.8 j-w	11.0 m-z'b'	15.8 r-y
84	RU 16297-09A L	18.9 fl oz	14	1.0 d-f	3.8 f-q	8.0 j-w	8.3 r-z'b'	12.0 s-z'g'
85	RU 16297-09C DF	1.67 oz	14	2.0 d-f	3.8 f-q	12.0 j-v	11.8 m-z'b'	19.5 o-s
86	RU 16297-09C DF	3.27 oz	14	0.3 f	1.5 l-r	6.8 k-w	9.8 o-z'b'	16.8 q-w
87	RU 16297-09D SC	0.82 fl oz	14	9.0 bc	21.3 ab	47.3 ab	64.5 b	80.8 b-d
88	RU 16297-09D SC	1.67 fl oz	14	1.0 d-f	11.0 e	37.8 c-e	65.3 b	90.0 ab
89	Banner MAXX 1.3 ME	1.0 fl oz	14	1.0 d-f	3.5 g-r	8.0 j-w	12.0 m-z'b'	11.5 s-z'i'
90	Signature 80WG	4.0 oz	14	1.0 d-f	1.0 n-r	1.8 s-w	12.5 m-z'a'	19.3 o-t
91	Ammonium Nitrate 34-0-0	8.0 oz	14[14]	1.3 d-f	4.5 f-n	8.3 j-w	21.5 i-o	32.0 k-n
92	SP2169 1.04SC	0.71 fl oz	14	1.8 d-f	3.3 g-r	9.8 j-w	29.0 g-j	32.8 k-m
93	SP2169 1.04SC	1.41 fl oz	14	1.8 d-f	2.0 k-r	8.5 j-w	16.5 k-v	35.5 j-m
94	SP2169 1.04SC	2.83 fl oz	14	0.3 f	N/A[15]	5.0 n-w	22.0 i-n	92.3 a
95	Trinity 1.67SC	1.0 fl oz	14	1.5 d-f	3.8 f-q	5.3 m-w	3.5 w-z'b'	1.5 z'j'-l'
96	Signature 80WG	4.0 oz						
	+ Daconil Ultrex 82.5WDG	3.2 oz	14	0.0 f	0.3 qr	2.5 r-w	2.8 x-z'b'	2.3 z'g'-l'
97	Medallion 50W	0.33 oz	14	1.8 d-f	5.0 f-l	11.3 j-w	11.3 m-z'b'	12.3 s-z'f'

(Continued)

Table 1A (continued).

	Treatment	Rate per 1000 sq ft	Application Schedule (days)[2]	Turf Area Infested (%) per Plot[1] 3 July	14 July	24 July	7 Aug.	17 Aug.
98	Curalan EG 50WG	1.0 oz	14	9.3 bc	17.5 cd	33.0 d-f	62.5 b	78.3 cd
99	Chipco 26GT 2SC	4.0 fl oz	14	1.0 d-f	2.8 h-r	10.0 j-w	8.3 r-z'b'	5.0 z'a'-l'
100	Dew Cure 100LC	4.0 fl oz	14	2.3 d-f	7.3 f	16.3 i-n	36.0 f-h	54.0 gh
101	Dew Cure 100LC	4.0 fl oz						
	+ Daconil Ultrex 82.5WDG	2.75 oz	14	0.5 ef	1.5 l-r	17.3 h-k	20.3 i-q	76.5 cd
102	Prostar 70W	2.2 oz	14	11.3 ab	22.8 ab	34.8 d-f	51.3 cd	72.8 de
103	3336 Plus 19.4 F	3.0 fl oz	14	1.8 d-f	2.5 i-r	11.0 j-w	25.0 i-l	38.3 jk
104	Rutgers Program #1	—	VAR[16]	1.0 d-f	1.8 k-r	3.8 q-w	2.5 y-z'b'	2.0 z'h'-l'
105	Syngenta Program #1	—	VAR[17]	2.3 d-f	1.5 l-r	5.8 l-w	5.8 u-z'b'	8.8 u-z'l'
106	Untreated Check	—	—	10.5 a-c	24.3 a	50.5 a	79.0 a	84.3 a-c
			INT[18]	DAT[19]	DAT	DAT	DAT	DAT
			14	7	4	14	14	10
			VAR[3-13, 16, 17]	7	4	14	14	10

[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 15 May (all treatments), 29 May (14-day treatment), 12 June (14-day treatment), 26 June (14-day treatment), 10 July (14-day treatment), 24 July (14-day treatment), 7 August (14-day treatment), and 21 August (14-day treatment).

[3] Variable spray schedule, where treatment 24 (Petro Canada Anthracnose Program #1) consisted of Civitas LC (14.5 fl oz) + Civitas Harmonizer LC (0.9 fl oz) + Banner MAXX 1.3ME (0.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) applied on a 14-day interval.

[4] Variable spray schedule, where treatment 25 (Petro Canada Anthracnose Program #2) consisted of Civitas LC (7.25 fl oz) + Civitas Harmonizer LC (0.45 fl oz) + Banner MAXX 1.3ME (0.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) applied on a 14-day interval.

[5] Variable spray schedule, where treatment 28 (Phoenix Anthracnose Program #1) consisted of Autograph 70WDG (4.57 oz) + PEX6016 F (3.6 fl oz) applied on 15 May, 12 June,10 July, and 7 August alternated with Autograph 70WDG (4.57 oz) + PEX 6017 1.3MC (1.0 fl oz) on 29 May, 26 June, 24 July, and 21 August.

[6] Variable spray schedule, where treatment 29 (Phoenix Anthracnose Program #2) consisted of Autograph 70WDG (4.57 oz) + PEX 6017 1.3MC (1.0 fl oz) + PEX 6016 F (3.6 fl oz) applied on a 14-day interval.

(Continued)

Table 1A (continued).

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[7] Variable spray schedule, where treatment 30 (Phoenix Anthracnose Program #3) consisted of Signature 80WG (4.0 oz) + Daconil Weather Stik 6F (3.6 fl oz) applied on 15 May, 12 June ,10 July, and 7 August alternated with Signature 80WG (4.0 oz) + Banner MAXX 1.3MC (1.0 fl oz) on 29 May, 26 June, 24 July, and 21 August.

[8] Variable spray schedule, where treatment 31 (Phoenix Anthracnose Program #4) consisted of Signature 80WG (4.0 oz) + Banner MAXX 1.3MC (1.0 fl oz) + Daconil Weather Stik 6F (3.6 fl oz) applied on a 14-day interval.

[9] Variable spray schedule, where treatment 44 (Gary's Green Anthracnose Program #1) consisted of Gary's Green Ultra (13-2-3) (15.0 fl oz) + PK Plus (3-7-18) (6.0 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) applied on a 14-day interval.

[10] Variable spray schedule, where treatment 45 (Gary's Green Anthracnose Program #2) consisted of Gary's Green Ultra (13-2-3) (15.0 fl oz) + PK Plus (3-7-18) (6.0 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) applied on a 14-day interval until disease intensity was severe, then switched (on 7 August) to Gary's Green Ultra (13-2-3) (15.0 fl oz) + PK Plus (3-7-18) (6.0 fl oz) + Daconil Ultrex 82.5WDG (3.2 oz) on a 14-day interval.

[11] Variable spray schedule, where treatment 49 (Precision Anthracnose Program #1) consisted of Daconil Ultrex 82.5WDG (2.75 oz) + 20-0-15 (4.0 fl oz) + 5-0-0 Fe (4.0 fl oz) applied on a 14-day interval.

[12] Variable spray schedule, where treatment 51 (Precision Anthracnose Program #2) consisted of Daconil Ultrex 82.5WDG (2.75 oz) + Sync 100L (0.32 fl oz) + 20-0-15 (4.0 fl oz) + 5-0-0 Fe (4.0 fl oz) applied on a 14-day interval.

[13] Variable spray schedule, where treatment 54 (Bayer Anthracnose Program #1) consisted of Triton Flo 3.1SC (0.5 fl oz) + Signature 80WG (4.0 oz) applied on 15 May, 12 June,10 July, and 7 August alternated with Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 29 May, 26 June, 24 July, and 21 August.

[14] Treatment 56 and 91 were irrigated with 0.5 gal of H_2O right after foliar application.

[15] No data was obtained due to phytotoxicity (see Table 1B).

[16] Variable spray schedule, where treatment 104 (RU Anth 09 Program #1) consisted of Banner MAXX 1.3ME (1.0 fl oz) on 15 May, Daconil Ultrex 82.5WDG (3.2 oz) on 29 May, Signature 80WG (4.0 oz) + Insignia 20WG (0.9 oz) on 12 June, Endorse 2.5W (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 26 June, Signature 80WG (4.0 oz) + Chipco 26GT 2SC (4.0 fl oz) on 10 July, 3336 Plus 19.4F (3.0 fl oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 24 July, Signature 80WG (4.0 oz) + Medallion 50W (0.33 oz) on 7 August, and Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 August.

[17] Variable spray schedule, where treatment 105 (Syngenta Anthracnose Program #1) consisted of Instrata 3.6SE (4.25 fl oz) on 15 May, Headway 1.39MEC (3.0 fl oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 29 May, Concert 4.3SE (4.0 fl oz) + Medallion 50W (0.25 oz) + Fore 80WP (4.0 oz) on 12 June, Heritage TL 0.8MEC (2.0 fl oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 26 June, Concert 4.3SE (4.0 fl oz) + Medallion 50W (0.25 oz) + Fore 80WP (4.0 oz) on 10 July, Heritage TL 0.8MEC (2.0 fl oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 24 July, Concert 4.3SE (4.0 fl oz) + Medallion 50W (0.25 oz) + Fore 80WP (4.0 oz) on 7 August, and Medallion 50W (0.25 fl oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 August.

[18] Spray interval in days.

[19] Days after the last treatment.

Table 1B. Preventive control of anthracnose with selected fungicides and biorational products on an annual bluegrass putting green: Rutgers University, 2009.

	Treatment	Rate per 1000 sq ft	Application Interval (days)[4]	Turf Area Infested (%) per Plot[1]	Turf Quality[1,2]			Phytotoxicity[3]	
				25 Aug.	18 June	24 July	24 Aug.	3 June	18 June
1	RU192514D-09 EC	0.63 fl oz	14	14.3 y-z'g'	7.3 c-f	5.3 i-n	6.3 d-g	1.0 f	1.0 f
2	RU192514K-09 EC	0.131 fl oz	14	6.0 z'd'-l'	7.8 a-d	6.8 c-h	7.3 bc	1.0 f	1.0 f
3	RU192514K-09 EC	0.262 fl oz	14	3.0 z'i'-l'	8.0 a-c	6.5 d-i	7.0 cd	1.0 f	1.0 f
4	RU192514K-09 EC	0.524 fl oz	14	3.5 z'i'-l'	7.5 b-e	6.5 d-i	7.3 bc	1.0 f	1.0 f
5	RU192514B-09 ME	1.0 fl oz	14	10.3 z'a'-l'	7.0 d-g	6.3 f-j	6.5 c-f	1.3 ef	1.0 f
6	RU192514M-09 ME	1.0 fl oz	14	50.8 kl	7.5 b-e	5.8 g-l	3.8 n-q	1.0 f	1.0 f
7	RU192514B-09 ME	1.0 fl oz							
	+ RU192514K-09 EC	0.262 fl oz	14	3.5 z'i'-l'	6.5 fg	5.3 i-n	6.3 d-g	1.3 ef	1.0 f
8	RU192514L-09 ME	0.247 fl oz							
	+ RU192514K-09 EC	0.262 fl oz	14	12.3 z-z'j'	6.8 e-g	6.3 f-j	6.8 c-e	1.0 f	1.0 f
9	RU192514A-09 F	2.0 fl oz							
	+ RU192514K-09 EC	0.262 fl oz	14	5.5 z'e'-l'	7.8 a-d	7.0 b-g	6.3 d-g	1.0 f	1.0 f
10	RU192514D-09 EC	0.314 fl oz	14	16.3 v-z'c'	7.3 c-f	6.0 f-k	6.0 e-h	1.0 f	1.0 f
11	RU192514N-09 SL	0.61 fl oz	14	14.3 y-z'g'	7.3 c-f	4.3 m-o	5.8 f-i	1.8 cd	1.0 f
12	RU192514L-09 ME	0.247 fl oz	14	30.5 o-s	7.0 d-g	5.0 j-o	5.5 g-j	1.0 f	1.0 f
13	RU192514B-09 ME	1.0 fl oz							
	+ RU192514D-09 EC	0.314 fl oz	14	2.8 z'j'-l'	7.8 a-d	6.8 c-h	6.8 c-e	1.0 f	1.0 f
14	RU192514A-09 F	2.0 fl oz							
	+ RU192514D-09 EC	0.314 fl oz	14	15.8 w-z'd'	7.3 c-f	6.0 f-k	5.5 g-j	1.0 f	1.0 f
15	RU192514L-09 ME	0.247 fl oz							
	+ RU192514D-09 EC	0.314 fl oz	14	2.5 z'j'-k'	7.3 c-f	6.3 f-j	6.3 d-g	1.0 f	1.0 f
16	Disarm 480SC	0.36 fl oz	14	76.3 fg	7.8 a-d	6.0 f-k	3.8 n-q	1.0 f	1.0 f
17	Disarm C 4.25 SC	4.4 fl oz	14	21.0 s-z	7.5 b-e	6.3 f-j	6.0 e-h	1.0 f	1.0 f
18	Disarm M 3.82 SC	0.5 fl oz	14	71.5 gh	7.3 c-f	4.8 k-o	3.5 o-r	1.0 f	1.0 f
19	Disarm M 3.82 SC	1.0 fl oz	14	58.8 i-k	6.5 fg	5.0 j-o	3.8 n-q	2.0 c	1.0 f
20	Veranda 11.3 WDG	0.9 oz	14	31.0 o-s	7.3 c-f	5.8 g-l	4.8 j-m	1.0 f	1.0 f

(Continued)

Table 1B (continued).

	Treatment	Rate per 1000 sq ft	Application Interval (days)[4]	Turf Area Infested (%) per Plot[1] 25 Aug.	Turf Quality[1,2] 18 June	Turf Quality[1,2] 24 July	Turf Quality[1,2] 24 Aug.	Phytotoxicity[3] 3 June	Phytotoxicity[3] 18 June
21	Eagle 20EW	1.2 fl oz	14	61.5 h-j	6.5 fg	5.0 j-o	4.0 m-p	1.3 ef	1.3 e
22	Daconil Ultrex 82.5WDG	2.67 oz	14	11.8 z-z'j'	7.8 a-d	6.0 f-k	6.0 e-h	1.0 f	1.0 f
23	Civitas LC	14.5 fl oz							
	+ Civitas Harmonizer LC	0.9 fl oz	14	0.3 z'l'	8.5 a	8.0 a-c	8.3 a	1.0 f	1.0 f
24	Petro Canada Program #1	—	VAR[5]	1.0 z'l'	8.5 a	8.3 ab	8.3 a	1.0 f	1.0 f
25	Petro Canada Program #2	—	VAR[6]	4.3 z'g'-l'	7.8 a-d	7.8 a-d	8.0 ab	1.0 f	1.0 f
26	Banner MAXX 1.3 ME	2.0 fl oz							
	+ Daconil Ultrex 82.5WDG	3.6 oz	14	7.3 z'c'-l'	6.8 e-g	6.5 d-i	6.0 e-h	1.8 cd	1.5 d
27	Banner MAXX 1.3 ME	0.5 fl oz							
	+ Daconil Ultrex 82.5WDG	1.8 oz	14	25.3 p-w	7.3 c-f	5.0 j-o	5.8 f-i	1.0 f	1.0 f
28	Phoenix Anth. Program #1	—	VAR[7]	0.5 z'l'	8.0 a-c	7.3 a-f	7.0 cd	1.0 f	1.0 f
29	Phoenix Anth. Program #2	—	VAR[8]	9.5 z'a'-l'	7.8 a-d	7.5 a-e	6.8 c-e	1.0 f	1.0 f
30	Phoenix Anth. Program #3	—	VAR[9]	5.3 z'e'-l'	8.0 a-c	6.3 f-j	6.0 e-h	1.0 f	1.0 f
31	Phoenix Anth. Program #4	—	VAR[10]	1.5 z'k'l'	8.3 ab	7.5 a-e	7.3 bc	1.0 f	1.0 f
32	Vitalonil SL	7.0 fl oz	14	6.0 z'd'-l'	7.8 a-d	7.0 b-g	5.8 f-i	1.0 f	1.0 f
33	PEX6016 F	3.6 fl oz	14	24.0 r-y	5.3 i	5.0 j-o	5.3 h-k	1.0 f	2.5 b
34	Pegasus L 6F	3.6 fl oz	14	15.0 x-z'e'	7.5 b-e	5.5 h-m	6.0 e-h	1.0 f	1.0 f
35	Daconil Weath Stik 6F	3.6 fl oz	14	17.3 u-z'c'	7.5 b-e	7.0 b-g	6.0 e-h	1.0 f	1.0 f
36	Insignia 20WG	0.9 oz	14	74.5 fg	7.5 b-e	5.0 j-o	3.8 n-q	1.0 f	1.0 f
37	Honor 28 WG	0.9 oz	14	63.3 hi	7.8 a-d	5.5 h-m	3.3 p-s	1.0 f	1.0 f
38	Honor 28 WG	1.1 oz	14	51.3 kl	7.5 b-e	5.3 i-n	4.0 m-p	1.0 f	1.0 f
39	Insignia 20WG	0.7 oz							
	+ Trinity 1.67SC	1.0 fl oz	14	3.8 z'i'-l'	7.0 d-g	5.0 j-o	6.5 c-f	1.0 f	1.0 f
40	Insignia 20WG	0.9 oz							
	+ Trinity 1.67SC	1.0 fl oz	14	5.5 z'e'-l'	7.3 c-f	5.0 j-o	6.5 c-f	1.0 f	1.0 f
41	Tourney 50WDG	0.37 oz	14	10.3 z'a'-l'	6.3 gh	4.0 no	5.5 g-j	1.0 f	1.3 e
42	Gary's Green Ultra (13-2-3)	15.0 fl oz							
	+ PK Plus (3-7-18)	6.0 fl oz	14	34.5 n-q	8.5 a	8.3 ab	4.8 j-m	1.0 f	1.0 f

(Continued)

Table 1B (continued).

	Treatment	Rate per 1000 sq ft	Application Interval (days)[4]	Turf Area Infested (%) per Plot[1] 25 Aug.	Turf Quality[1,2] 18 June	Turf Quality[1,2] 24 July	Turf Quality[1,2] 24 Aug.	Phytotoxicity[3] 3 June	Phytotoxicity[3] 18 June
43	PK Plus (3-7-18)	6.0 fl oz	14	47.3 lm	8.0 a-c	6.0 f-k	4.3 l-o	1.0 f	1.0 f
44	Gary's Green Anth. Prog #1	—	VAR[11]	12.5 z-z'j'	8.3 ab	8.3 ab	6.8 c-e	1.0 f	1.0 f
45	Gary's Green Anth. Prog #2	—	VAR[12]	8.8 z'a'-l'	8.3 ab	8.3 ab	7.3 bc	1.0 f	1.0 f
46	Daconil Ultrex 82.5WDG	1.8 oz	14	26.0 p-v	7.5 b-e	6.8 c-h	5.0 i-l	1.0 f	1.0 f
47	Daconil Ultrex 82.5WDG	2.75 oz	14	23.5 r-y	7.0 d-g	6.3 f-j	5.8 f-i	1.0 f	1.0 f
48	Daconil Ultrex 82.5WDG	3.6 oz	14	18.0 t-z'b'	7.5 b-e	7.0 b-g	6.0 e-h	1.0 f	1.0 f
49	Precision Anth. Program #1	—	VAR[13]	6.0 z'd'-l'	8.0 a-c	8.0 a-c	7.0 cd	1.0 f	1.0 f
50	Daconil Ultrex 82.5WDG	2.75 oz							
	+ Sync 100L	0.32 fl oz	14	18.0 t-z'b'	7.3 c-f	5.8 g-l	6.3 d-g	1.0 f	1.0 f
51	Precision Anth. Program #2	—	VAR[14]	11.3 z-z'k'	7.8 a-d	7.3 a-f	7.0 cd	1.0 f	1.0 f
52	20-0-15	4.0 fl oz							
	+ 5-0-0-5 Fe	4.0 fl oz	14	76.0 fg	7.8 a-d	6.0 f-k	3.5 o-r	1.0 f	1.0 f
53	Untreated Check	—	—	78.5 e-g	7.5 b-e	4.8 k-o	2.8 r-t	1.0 f	1.0 f
54	Bayer Anth. Program #1	—	VAR[15]	1.5 z'k'l'	8.3 ab	7.3 a-f	7.3 bc	1.0 f	1.0 f
55	Reserve 4.8SC	3.2 fl oz							
	+ Signature 80WG	4.0 oz	14	4.5 z'f'-l'	7.8 a-d	7.5 a-e	7.0 cd	1.0 f	1.0 f
56	Ammonium Nitrate 34-0-0	4.0 oz	14[16]	38.0 m-o	8.0 a-c	8.0 a-c	4.5 k-n	1.0 f	1.0 f
57	Untreated Check	—	—	78.5 e-g	7.3 c-f	4.8 k-o	3.0 q-t	1.0 f	1.0 f
58	Untreated Check	—	—	83.5 b-f	7.5 b-e	4.8 k-o	3.0 q-t	1.0 f	1.0 f
59	Reserve 4.8SC	2.8 fl oz	14	5.5 z'e'-l'	8.0 a-c	6.0 f-k	6.8 c-e	1.0 f	1.0 f
60	Reserve 4.8SC	3.2 fl oz	14	5.0 z'e'-l'	8.3 ab	6.5 d-i	6.3 d-g	1.0 f	1.0 f
61	Reserve 4.8SC	3.6 fl oz	14	4.5 z'f'-l'	8.0 a-c	6.5 d-i	6.5 c-f	1.0 f	1.0 f
62	Reserve 4.8SC	4.5 fl oz	14	3.0 z'i'-l'	8.0 a-c	6.5 d-i	6.8 c-e	1.0 f	1.0 f
63	Concert 4.3SE	5.0 fl oz	14	13.0 z-z'i'	7.3 c-f	6.5 d-i	5.3 h-k	1.3 ef	1.0 f
64	Triton Flo 3.1SC	0.5 fl oz	14	9.3 z'a'-l'	7.8 a-d	6.5 d-i	6.0 e-h	1.0 f	1.0 f
65	Triton Flo 3.1SC	0.75 fl oz	14	5.5 z'e'-l'	7.8 a-d	5.8 g-l	6.3 d-g	1.0 f	1.0 f
66	Triton Flo 3.1SC	1.0 fl oz	14	2.5 z'j'-l'	8.5 a	5.3 i-n	6.8 c-e	1.0 f	1.3 e
67	Banner MAX 1.3 ME	2.0 fl oz	14	4.0 z'h'-l'	6.8 e-g	5.3 i-n	6.5 c-f	1.3 ef	1.0 f

(Continued)

Table 1B (continued).

	Treatment	Rate per 1000 sq ft	Application Interval (days)[4]	Turf Area Infested (%) per Plot[1] 25 Aug.	Turf Quality[1,2] 18 June	Turf Quality[1,2] 24 July	Turf Quality[1,2] 24 Aug.	Phytotoxicity[3] 3 June	Phytotoxicity[3] 18 June
68	DPX-LEM17-50 50WDG	0.3 oz							
	+ Daconil Ultrex 82.5WDG	3.25 oz	14	27.3 p-u	7.8 a-d	6.0 f-k	5.5 g-j	1.0 f	1.0 f
69	DPX-LEM17-50 50WDG	0.3 oz							
	+ Banner MAXX 1.3ME	1.0 fl oz	14	9.8 z'a'-l'	7.3 c-f	6.3 f-j	6.3 d-g	1.5 de	1.0 f
70	DPX-LEM17-50 50WDG	0.3 oz	14	11.3 z-z'k'	8.0 a-c	6.5 d-i	6.3 d-g	1.0 f	1.0 f
71	DPX-LEM17-50 50WDG	0.5 oz	14	5.0 z'e'-l'	8.3 ab	7.3 a-f	7.0 cd	1.0 f	1.0 f
72	SARS-346 40WP	0.27 oz							
	+ 3336 Plus 19.4 F	3.0 fl oz	14	14.3 y-z'g'	6.8 e-g	6.8 c-h	7.0 cd	1.0 f	1.0 f
73	SARS-346 40WP	0.27 oz							
	+ Heritage 50WG	0.2 oz	14	27.5 p-t	7.5 b-e	5.5 h-m	5.3 h-k	1.0 f	1.0 f
74	SARS-346 40WP	0.27 oz							
	+ Endorse 2.5W	4.0 oz	14	12.3 z-z'j'	7.0 d-g	6.8 c-h	6.3 d-g	1.0 f	1.0 f
75	SARS-346 40WP	0.27 oz	14	25.8 p-w	7.5 b-e	5.8 g-l	5.3 h-k	1.0 f	1.0 f
76	Heritage 50WG	0.2 oz	14	82.3 d-f	7.5 b-e	5.0 j-o	2.8 r-t	1.0 f	1.0 f
77	Endorse 2.5W	4.0 oz	14	31.3 o-r	7.0 d-g	5.8 g-l	5.3 h-k	1.0 f	1.0 f
78	Tartan 2.4SC	1.0 fl oz	14	84.5 b-f	7.3 c-f	5.8 g-l	2.8 r-t	1.0 f	1.0 f
79	Emerald 70WG	0.13 oz	14	93.3 ab	7.8 a-d	5.0 j-o	3.0 q-t	1.0 f	1.0 f
80	Daconil Ultrex 82.5WDG	3.2 oz	14	18.5 t-z'a'	7.5 b-e	6.8 c-h	6.0 e-h	1.0 f	1.0 f
81	RU 16297-09B WDG	0.37 oz	14	16.3 v-z'c'	6.8 e-g	5.8 g-l	6.0 e-h	1.0 f	1.0 f
82	RU 16297-09B WDG	0.74 oz	14	12.0 z-z'j'	7.5 b-e	5.5 h-m	5.8 f-i	1.0 f	1.0 f
83	RU 16297-09A L	9.4 fl oz	14	34.3 n-q	7.5 b-e	6.3 f-j	5.0 i-l	1.0 f	1.0 f
84	RU 16297-09A L	18.9 fl oz	14	14.5 x-z'f'	5.5 hi	6.0 f-k	6.3 d-g	2.5 b	2.3 c
85	RU 16297-09C DF	1.67 oz	14	35.0 n-p	7.0 d-g	5.8 g-l	5.0 i-l	1.0 f	1.0 f
86	RU 16297-09C DF	3.27 oz	14	34.8 n-p	7.3 c-f	5.8 g-l	5.0 i-l	1.0 f	1.0 f
87	RU 16297-09D SC	0.82 fl oz	14	89.5 a-d	6.8 e-g	4.3 m-o	2.5 st	1.0 f	1.0 f
88	RU 16297-09D SC	1.67 fl oz	14	92.5 a-c	7.0 d-g	4.5 l-o	2.5 st	1.0 f	1.0 f
89	Banner MAXX 1.3 ME	1.0 fl oz	14	14.0 y-z'h'	7.0 d-g	5.3 i-n	5.0 i-l	1.3 ef	1.0 f
90	Signature 80WG	4.0 oz	14	21.0 s-z	8.0 a-c	6.8 c-h	5.5 g-j	1.0 f	1.0 f

(Continued)

Table 1B (continued).

	Treatment	Rate per 1000 sq ft	Application Interval (days)[4]	Turf Area Infested (%) per Plot[1] 25 Aug.	Turf Quality[1,2] 18 June	Turf Quality[1,2] 24 July	Turf Quality[1,2] 24 Aug.	Phytotoxicity[3] 3 June	Phytotoxicity[3] 18 June
91	Ammonium Nitrate 34-0-0	8.0 oz	14[16]	47.5 lm	8.5 a	8.5 a	3.8 n-q	1.0 f	1.0 f
92	SP2169 1.04SC	0.71 fl oz	14	42.5 l-n	7.5 b-e	5.8 g-l	5.0 i-l	1.0 f	1.0 f
93	SP2169 1.04SC	1.41 fl oz	14	24.5 q-x	6.5 fg	5.5 h-m	4.8 j-m	1.3 ef	1.5 d
94	SP2169 1.04SC	2.83 fl oz	14	40.3 m-o	5.0 ij	3.8 o	4.5 k-n	1.8 cd	2.5 b
95	Trinity 1.67SC	1.0 fl oz	14	2.5 z'j'-l'	7.3 c-f	5.5 h-m	6.5 c-f	1.0 f	1.0 f
96	Signature 80WG	4.0 oz							
	+ Daconil Ultrex 82.5WDG	3.2 oz	14	1.0 z'l'	8.0 a-c	7.3 a-f	6.5 c-f	1.0 f	1.0 f
97	Medallion 50W	0.33 oz	14	14.5 x-z'f'	6.8 e-g	6.0 f-k	5.3 h-k	1.0 f	1.0 f
98	Curalan EG 50WG	1.0 oz	14	82.5 c-f	7.8 a-d	5.3 i-n	2.8 r-t	1.0 f	1.0 f
99	Chipco 26GT 2SC	4.0 fl oz	14	16.8 v-z'c'	7.5 b-e	7.0 b-g	6.3 d-g	1.0 f	1.0 f
100	Dew Cure 100LC	4.0 fl oz	14	51.5 j-l	6.5 fg	5.5 h-m	4.3 l-o	1.0 f	1.3 e
101	Dew Cure 100LC	4.0 fl oz							
	+ Daconil Ultrex 82.5WDG	2.75 oz	14	8.0 z'b'-l'	4.3 j	5.5 h-m	6.5 c-f	3.0 a	3.8 a
102	Prostar 70W	2.2 oz	14	86.8 a-e	6.8 e-g	5.5 h-m	2.8 r-t	1.0 f	1.0 f
103	3336 Plus 19.4 F	3.0 fl oz	14	43.5 l-n	7.0 d-g	6.3 f-j	4.3 l-o	1.0 f	1.0 f
104	Rutgers Program #1	—	VAR[17]	5.5 z'e'-l'	8.3 ab	6.8 c-h	7.0 cd	1.0 f	1.0 f
105	Syngenta Program #1	—	VAR[18]	5.8 z'd'-l'	7.3 c-f	6.5 d-i	5.8 f-i	1.8 cd	1.0 f
106	Untreated Check	—	—	94.8 a	7.5 b-e	4.3 m-o	2.3 t	1.0 f	1.0 f
			INT[19]	DAT	DAT[20]	DAT	DAT	DAT	DAT
			14	4	6	14	3	5	6
			21	4	6	14	3	6	6

[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.

(Continued)

Table 1B (continued).

[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, 5 = all turf dead.

[4] Fungicides were applied on 15 May (all treatments), 29 May (14-day treatment), 12 June (14-day treatment), 26 June (14-day treatment), 10 July (14-day treatment), 24 July (14-day treatment), 7 August (14-day treatment), and 21 August (14-day treatment).

[5] Variable spray schedule, where treatment 24 (Petro Canada Anthracnose Program #1) consisted of Civitas LC (14.5 fl oz) + Civitas Harmonizer LC (0.9 fl oz) + Banner MAXX 1.3ME (0.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) applied on a 14-day interval.

[6] Variable spray schedule, where treatment 25 (Petro Canada Anthracnose Program #2) consisted of Civitas LC (7.25 fl oz) + Civitas Harmonizer LC (0.45 fl oz) + Banner MAXX 1.3ME (0.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) applied on a 14-day interval.

[7] Variable spray schedule, where treatment 28 (Phoenix Anthracnose Program #1) consisted of Autograph 70WDG (4.57 oz) + PEX6016 F (3.6 fl oz) applied on 15 May, 12 June,10 July, and 7 August alternated with Autograph 70WDG (4.57 oz) + PEX 6017 1.3MC (1.0 fl oz) on 29 May, 26 June, 24 July, and 21 August.

[8] Variable spray schedule, where treatment 29 (Phoenix Anthracnose Program #2) consisted of Autograph 70WDG (4.57 oz) + PEX 6017 1.3MC (1.0 fl oz) + PEX 6016 F (3.6 fl oz) applied on a 14-day interval.

[9] Variable spray schedule, where treatment 30 (Phoenix Anthracnose Program #3) consisted of Signature 80WG (4.0 oz) + Daconil Weather Stik 6F (3.6 fl oz) applied on 15 May, 12 June ,10 July, and 7 August alternated with Signature 80WG (4.0 oz) + Banner MAXX 1.3MC (1.0 fl oz) on 29 May, 26 June, 24 July, and 21 August.

[10] Variable spray schedule, where treatment 31 (Phoenix Anthracnose Program #4) consisted of Signature 80WG (4.0 oz) + Banner MAXX 1.3MC (1.0 fl oz) + Daconil Weather Stik 6F (3.6 fl oz) applied on a 14-day interval.

[11] Variable spray schedule, where treatment 44 (Gary's Green Anthracnose Program #1) consisted of Gary's Green Ultra (13-2-3) (15.0 fl oz) + PK Plus (3-7-18) (6.0 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) applied on a 14-day interval.

[12] Variable spray schedule, where treatment 45 (Gary's Green Anthracnose Program #2) consisted of Gary's Green Ultra (13-2-3) (15.0 fl oz) + PK Plus (3-7-18) (6.0 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) applied on a 14-day interval until disease intensity was severe, then switched (on 7 August) to Gary's Green Ultra (13-2-3) (15.0 fl oz) + PK Plus (3-7-18) (6.0 fl oz) + Daconil Ultrex 82.5WDG (3.2 oz) on a 14-day interval.

[13] Variable spray schedule, where treatment 49 (Precision Anthracnose Program #1) consisted of Daconil Ultrex 82.5WDG (2.75 oz) + 20-0-15 (4.0 fl oz) + 5-0-0 Fe (4.0 fl oz) applied on a 14-day interval.

[14] Variable spray schedule, where treatment 51 (Precision Anthracnose Program #2) consisted of Daconil Ultrex 82.5WDG (2.75 oz) + Sync 100L (0.32 fl oz) + 20-0-15 (4.0 fl oz) + 5-0-0 Fe (4.0 fl oz) applied on a 14-day interval.

[15] Variable spray schedule, where treatment 54 (Bayer Anthracnose Program #1) consisted of Triton Flo 3.1SC (0.5 fl oz) + Signature 80WG (4.0 oz) applied on 15 May, 12 June,10 July, and 7 August alternated with Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 29 May, 26 June, 24 July, and 21 August.

[16] Treatment 56 and 91 were irrigated with 0.5 gal of H_2O right after foliar application.

[17] Variable spray schedule, where treatment 104 (RU Anth 09 Program #1) consisted of Banner MAXX 1.3ME (1.0 fl oz) on 15 May, Daconil Ultrex 82.5WDG (3.2 oz) on 29 May, Signature 80WG (4.0 oz) + Insignia 20WG (0.9 oz) on 12 June, Endorse 2.5W (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 26 June, Signature 80WG (4.0 oz) + Chipco 26GT 2SC (4.0 fl oz) on 10 July, 3336 Plus 19.4F (3.0 fl oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 24 July, Signature 80WG (4.0 oz) + Medallion 50W (0.33 oz) on 7 August, and Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 August.

(Continued)

Table 1B (continued).

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[18] Variable spray schedule, where treatment 105 (Syngenta Anthracnose Program #1) consisted of Instrata 3.6SE (4.25 fl oz) on 15 May, Headway 1.39MEC (3.0 fl oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 29 May, Concert 4.3SE (4.0 fl oz) + Medallion 50W (0.25 oz) + Fore 80WP (4.0 oz) on 12 June, Heritage TL 0.8MEC (2.0 fl oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 26 June, Concert 4.3SE (4.0 fl oz) + Medallion 50W (0.25 oz) + Fore 80WP (4.0 oz) on 10 July, Heritage TL 0.8MEC (2.0 fl oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 24 July, Concert 4.3SE (4.0 fl oz) + Medallion 50W (0.25 oz) + Fore 80WP (4.0 oz) on 7 August, and Medallion 50W (0.25 fl oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 August.

[19] Spray interval in days.

[20] Days after the last treatment.