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This publication includes lecture notes of papers presented at the 2017 GREEN EXPO Turf and Landscape Conference. Publication of these lectures provides a readily available source of information

covering a wide range of topics and includes technical and popular presentations of importance to the turfgrass industry.

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

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

ANTHRACNOSE CONTROL WITH FUNGIDES AND BIORATIONAL PRODUCTS ON ANNUAL BLUEGRASS PUTTING GREEN TURF – TEST 1, 2017

Bruce B. Clarke, Pradip R. Majumdar, Kyle M. Genova, Susan C. Butterworth, Ahsen I. Malik, Chris Mus, Keith Gray, Tracy J. Lawson, James Hempfling, and Joseph B. Clark¹

Fungicides were evaluated in 2017 for their ability to control anthracnose basal rot (caused by *Colletotrichum cereale*) on an annual bluegrass (*Poa annua*) putting green turf at the Rutgers Horticultural Research Farm II in North Brunswick, NJ. The green was established in October 2004 on a Nixon loam with a pH of 6.0 by killing the existing stand of creeping bentgrass (*Agrostis stolonifera*) and annual bluegrass with Roundup Pro 3LC (3 qt per acre) and then core aerifying the site in two directions to bring dormant annual bluegrass seed to the soil surface. The site was inoculated with *C. cereale* isolate ValP-04 on 17 July 2005 using a 2 gal per 1,000 ft² water spore suspension (4 x 10⁵ conidia per ml); the disease has developed naturally on the site each year thereafter. Plots were 3 x 5 ft and were arranged in a randomized complete block with four replications. 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 urea (46-0-0; 0.1 lb nitrogen (N) per 1000 ft²) on 13 and 28 April, 11, 18, and 28 May, 1, 8, and 19 June, 6 and 26 July, 4 and 19 August, and 1 September; 0-30-0 (0.2 lb N per 1000 ft²) on 13 April, 11 May, 8 June, 6 July, 4 August, and 1 September; 0-0-62 (0.1 lb N per 1000 ft²) on 28 April and 0-0-62 (0.2 lb N per 1000 ft²) on 28 May, 26 July, and 19 August; and Harrell's Max Minors (micronutrient mixture; 4.0 fl oz per 1000 ft²) and Magnesium (4%; 3.0 fl oz per 1000 ft²) on 8 June. The growth regulators Primo MAXX 1ME (0.125 fl oz per 1000 ft²) + Proxy 2SL (5.0 fl oz per 1000 ft²) were sprayed over the trial on 30 March, 15 April, and 1 May to suppress seed heads, and Primo MAXX 1ME

(0.125 fl oz per 1000 ft²) was continued every 14 days from 5 May to 30 August.

Dollar spot (caused by *Clarireedia jacksonii*; syn. *Sclerotinia homoeocarpa*) was suppressed with Emerald 70WG (0.18 oz per 1000 ft²) on 22 June and Curalan 50EG (1.0 oz per 1000 ft²) on 8 May, 4 June, 9 and 26 July, and 3, 16, and 28 August. Brown ring patch (incited by *Rhizoctonia circinata*) was controlled with ProStar 70W (3.0 oz per 1000 ft²) on 18 April and 4 June. Brown patch (caused by *Rhizoctonia solani*) was prevented with ProStar 70W (3.0 oz per 1000 ft²) on 22 June, 26 July, and 3, 16, and 28 August. Algae (*Cyanobacteria* spp.) was controlled with Pentathlon 4LF (12 fl oz per 1000 ft²) on 10 July. Previous research by the authors has shown that Curalan 50EG, ProStar 70W, Pentathlon, and Emerald 70WG did not affect anthracnose development on the study site at the rates used in this study. Insect pests were controlled with Acelypryn 1.67SC (0.276 fl oz per 1000 ft²) on 4 May. Silvery thread moss (*Bryum argenteum*) was controlled with Quicksilver 1.9SC (0.046 fl oz per 1000 ft²) on 11 and 22 June, 9 and 11 July, and 5 and 21 August. Turf was topdressed with sand (2 ft³ per 1,000 ft²) on 30 March, 27 April, 10 May, 22 June, 9 July, and 7 August.

Fungicides were applied in water equivalent to 1.9 gal per 1000 ft² with a CO₂ powered sprayer at 30 psi using Tee Jet Air Induction AI8002 nozzles. Treatments (trt) were initiated on 19 May, prior to the development of anthracnose. Fungicides were reapplied at the appropriate intervals until 25 August as indicated in Tables 1A and 1B. Turf was visually evaluated for percent turf area infested with anthrac-

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

nose on 2, 11, 21, and 31 July, and 10, 20, and 30 August. Turf quality was evaluated on 16 June, 14 July, and 11 August using a 1 to 9 scale, where 9 = best turf quality and 5 = acceptable quality (Table 1C). Color of foliage was visually estimated on 16 June, 14 July, and 11 August using a 1 to 10 scale, where 5 = color of healthy untreated turf, less than 5 = progressively more chlorotic/necrotic turf, and greater than 5 = progressively darker green turf (Table 1C). Phytotoxicity was assessed on 16 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 not shown). Data were subjected to analysis of variance and means were separated by Waller-Duncan *k*-ratio *t*-test (*k* =100).

Anthrachnose developed as a natural infection and became uniformly distributed throughout the green by 2 July. Disease severity peaked on 10 August (76% turf area infested with *C. cereale* on the untreated control). Due to the severity of the epidemic, only 32% of the treatments provided season-long control of anthracnose (i.e., less than 15% turf area infested from 19 May through 30 August; Tables 1A and 1B). Season long control was observed with Oreon 4.27SC @ 4.0 fl oz + Harrell's Par 100LC @ 0.37 fl oz (trt 2), Oreon 4.27SC @ 6.0 fl oz + Harrell's PAR 100LC @ 0.37 fl oz (trt 3), Oreon 4.27SC @ 8.0 fl oz + Harrell's PAR 100LC @ 0.37 fl oz (trt 4), Velista 50WDG @ 0.3 oz + Oreon 4.27SC @ 2.0 fl oz + Harrell's PAR 100LC @ 0.37 fl oz (trt 8), Velista 50WDG @ 0.3 oz + Oreon 4.27SC @ 4 fl oz + Harrell's PAR 100LC @ 0.37 fl oz (trt 9), Medallion 1.04SC @ 1.5 fl oz + Oreon 4.27SC @ 4.0 fl oz + Harrell's PAR 100LC @ 0.37 fl oz (trt 15), Chipco Signature Xtra 60WDG @ 4.0 oz + Oreon 4.27SC @ 4.0 fl oz (trt 18), Daconil Ultrex 82.5WG @ 3.2 oz + Oreon 4.27SC @ 2.0 fl oz + Harrell's PAR 100LC @ 0.37 fl oz (trt 20), Daconil Ultrex 82.5WG @ 3.2 oz + Oreon 4.27SC @ 4.0 fl oz + Harrell's PAR 100LC @ 0.37 fl oz (trt 21), 2017 Anthracnose Program #1 (trt 22), Mirage 2SC (trt 26), 2017 Anthracnose Program #2 (trt 34), 2017 Anthracnose Program #3 (trt 35), 2017 Anthracnose Program

#4 (trt 36), 2017 Anthracnose Program #5 (trt 37), Velista 50WG @ 0.5 oz + post-treatment irrigation @ 2.0 gal water per plot (trt 41), 2017 Anthracnose Program #8 (trt 49), 2017 Anthracnose Program #9 (trt 50), 2017 Anthracnose Program #12 (trt 53), Torque 3.6SC @ 1.1 fl oz (trt 59), RU-21196-17D SC @ 0.8 fl oz (trt 66), A14658H SL + Daconil Action 6.11SC (trt 72), Signature Xtra 60WG + Daconil Action 6.11SC (trt 73), and RU-1925-17B SC @ 1.19 fl oz (trt 77).

Other products and product combinations that adequately suppressed anthracnose throughout the treatment period (19 May to 25 August; Table 1B) included: Medallion 1.04SC @ 1.5 fl oz + Oreon 4.27SC @ 2.0 fl oz + Harrell's PAR 100LC @ 0.37 fl oz (trt 14), Medallion 1.04SC @ 1.5 fl oz (trt 48), RU-21196-17D SC @ 0.4 fl oz (trt 57), and RU-192514-17A WG @ 0.5 oz (trt 76). Six additional treatments [i.e., Velista 50WG @ 0.5 oz without post-treatment irrigation (trt 41), 2017 Anthracnose Programs #6 (trt 43) and #7 (trt 44), RU-21196-17D SC @ 0.8 fl oz (trt 58), RU-21196-17K SC @ 0.59 fl oz (trt 64), and Tekken 1.8SC @ 3.0 fl oz (trt 67)] provided acceptable anthracnose control during the study with the exception of an unacceptable level of disease (i.e., 16-20% turf area infested) on one or two rating dates.

Turf quality was acceptable (greater or equal to 5.0) for 56% of the treatments in this study (Table 1C). In general, turf treated with products that provided good anthracnose control exhibited acceptable quality during the study. Turf exhibiting a darker green color than the untreated control on all three evaluation dates typically contained a pigment, fertilizer, or a plant growth regulator (i.e., turf receiving trts 3, 4, 8, 9, 14, 26, 43, 44, 49, 50, 51, 52, 53, 59, 77, and 78). Phytotoxicity was observed on 16 June for turf sprayed with AMV4221 3SC @ 1.6 fl oz (trt 25), 2017 Anthracnose Program #15 (trt 56), or Torque 3.6SC @ 1.1 fl oz (trt 59; data not shown). Injury appeared as a slight foliar necrosis (1.3 to 1.5 on a 1 to 5 scale, where 1 = no injury and 2 = slight injury) that persisted for less than 10 days. No additional phytotoxicity was observed in the study.

Table 1A. Anthracnose control with fungicides and biorational products on annual bluegrass putting green turf – Test 1: Rutgers University, 2017.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested per Plot (%) ¹			
			2 July	11 July	21 July	31 July
1 Oreon 4.27SC.....	2.0 fl oz	-				
+ Harrell's PAR 100LC.....	0.37 fl oz	14	7.3 x-z'f'	8.3 t-z'f'	11.0 o-x	18.5 p-w
2 Oreon 4.27SC.....	4.0 fl oz	-				
+ Harrell's PAR 100LC.....	0.37 fl oz	14	5.0 z-z'f'	6.3 v-z'f'	7.8 r-x	11.3 t-z'e'
3 Oreon 4.27SC.....	6.0 fl oz	-				
+ Harrell's PAR 100LC.....	0.37 fl oz	14	2.8 z'c'-z'f'	5.3 x-z'f'	6.0 t-x	12.0 t-z'd'
4 Oreon 4.27SC.....	8.0 fl oz	-				
+ Harrell's PAR 100LC.....	0.37 fl oz	14	1.5 z'e'f'	5.8 w-z'f'	5.5 t-x	7.5 z-z'e'
5 Autilius 4SC.....	6.0 fl oz	-				
+ Harrell's PAR 100LC.....	0.37 fl oz	14	7.3 x-z'f'	3.5 z'a'-z'f'	1.3 wx	20.5 o-u
6 Velista 50WDG.....	0.3 oz	14	14.3 p-x	12.3 q-z'd'	18.0 l-r	19.3 p-v
7 Secure 4.17SC.....	0.5 fl oz	14	37.3 b-e	33.0 e-i	31.5 g-j	50.8 d-g
8 Velista 50WDG.....	0.3 oz	-				
+ Oreon 4.27SC.....	2.0 fl oz	-				
+ Harrell's PAR 100LC.....	0.37 fl oz	14	1.5 z'e'f'	3.3 z'b'-z'f'	2.3 v-x	3.0 z'c'-z'e'
9 Velista 50WDG.....	0.3 oz	-				
+ Oreon 4.27SC.....	4.0 fl oz	-				
+ Harrell's PAR 100LC.....	0.37 fl oz	14	1.0 z'f'	2.3 z'e'f'	1.5 wx	2.3 z'd'e'
10 Insignia 2.1SC.....	0.5 fl oz	14	33.8 b-f	33.8 d-i	45.8 cd	59.5 b-d
11 Insignia 2.1SC.....	0.5 fl oz	-				
+ Oreon 4.27SC.....	2.0 fl oz	-				
+ Harrell's PAR 100LC.....	0.37 fl oz	14	7.8 w-z'f'	13.3 p-z'a'	16.8 l-s	27.8 l-p
12 Insignia 2.1SC.....	0.5 fl oz	-				
+ Oreon 4.27SC.....	4.0 fl oz	-				
+ Harrell's PAR 100LC.....	0.37 fl oz	14	3.8 z'c'-z'f'	2.8 z'c'-z'f'	5.0 t-x	17.3 q-x
13 Medallion 1.04SC.....	1.5 fl oz	14	18.3 m-t	17.5 m-t	13.5 l-u	15.0 r-z
14 Medallion 1.04SC.....	1.5 fl oz	-				
+ Oreon 4.27SC.....	2.0 fl oz	-				
+ Harrell's PAR 100LC.....	0.37 fl oz	14	4.8 z'a'-z'f'	4.5 y-z'f'	5.3 t-x	7.0 z-z'e'

(Continued)

Table 1A. Anthracnose control on annual bluegrass putting green turf – Test 1, 2017 (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested per Plot (%) ¹			
			2 July	11 July	21 July	31 July
15 Medallion 1.04SC	1.5 fl oz	–				
+ Oreon 4.27SC	4.0 fl oz	–				
+ Harrell's PAR 100LC	0.37 fl oz	14	1.8 z'd'-z'f'	2.3 z'e'f'	2.5 v-x	3.8 z'c'-z'e'
16 Chipco Signature Xtra 60WDG	4.0 oz	14	25.0 g-m	33.0 e-i	60.5 ab	58.0 b-e
17 Chipco Signature Xtra 60WDG	4.0 oz	–				
+ Oreon 4.27SC	2.0 fl oz	14	9.8 u-z'd'	12.8 q-z'b'	23.0 i-l	26.0 l-q
18 Chipco Signature Xtra 60WDG	4.0 oz	–				
+ Oreon 4.27SC	4.0 fl oz	14	6.8 x-z'f'	10.0 s-z'f'	12.5 m-v	9.5 v-z'e'
19 Daconil Ultrex 82.5WG	3.2 oz	14	21.3 l-p	25.5 g-m	31.8 g-j	24.0 m-q
20 Daconil Ultrex 82.5WG	3.2 oz	–				
+ Oreon 4.27SC	2.0 fl oz	–				
+ Harrell's PAR 100LC	0.37 fl oz	14	8.0 v-z'f'	12.5 q-z'c'	8.0 q-x	6.5 z-z'e'
21 Daconil Ultrex 82.5WG	3.2 oz	–				
+ Oreon 4.27SC	4.0 fl oz	–				
+ Harrell's PAR 100LC	0.37 fl oz	14	1.8 z'd'-z'f'	2.5 z'd'-z'f'	1.5 wx	3.0 z'c'-z'e'
22 2017 Anth Program #1	AMVAC	VAR ³	2.3 z'd'-z'f'	5.0 x-z'f'	5.8 t-x	6.5 z-z'e'
23 AMV4221 3SC	0.8 fl oz	14	15.5 o-w	18.3 m-s	22.8 j-m	28.5 l-p
24 AMV4221 3SC	1.0 fl oz	14	14.5 p-w	18.5 m-s	19.5 k-o	23.5 m-s
25 AMV4221 3SC	1.6 fl oz	14	13.0 q-z	12.5 q-z'c'	12.3 n-v	11.0 u-z'e'
26 Mirage 2SC	1.0 fl oz	14	2.3 z'd'-z'f'	6.0 w-z'f'	3.5 u-x	14.8 r-z'a'
27 RU-6133-17J SC	0.20 fl oz	14	35.3 b-f	35.5 c-f	33.5 f-h	58.0 b-e
28 RU-6133-17I SC	0.28 fl oz	14	41.3 b	37.0 c-f	42.8 d-f	53.8 c-f
29 RU-6133-17I SC	0.33 fl oz	14	40.0 bc	35.0 d-g	34.3 e-h	44.8 f-i
30 RU-6133-17I SC	0.41 fl oz	14	24.3 i-m	31.5 e-j	33.5 f-h	33.3 j-m
31 Lexicon 4.16SC	0.34 fl oz	14	30.3 d-k	38.0 c-f	29.3 h-k	47.8 e-h
32 Exteris Stressgard 0.27SC	2.1 fl oz	14	21.0 l-q	23.0 j-p	30.0 g-j	51.3 c-g
33 Briskway 2.71SC	0.30 fl oz	14	32.5 c-h	28.5 f-l	31.3 g-j	43.0 g-j
34 2017 Anth Program #2	Syngenta	VAR ⁴	6.0 z-z'f'	6.5 v-z'f'	1.8 wx	4.8 z-z'e'
35 2017 Anth Program #3	Syngenta	VAR ⁵	13.0 q-z	13.8 p-y	8.3 q-x	7.8 z-z'e'
36 2017 Anth Program #4	Syngenta	VAR ⁶	7.3 x-z'f'	9.3 s-z'f'	8.5 q-x	2.0 z'd'e'

(Continued)

Table 1A. Anthracnose control on annual bluegrass putting green turf – Test 1, 2017 (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested per Plot (%) ¹			
			2 July	11 July	21 July	31 July
37 2017 Anth Program #5	Syngenta	VAR ⁷	4.5 z'a'-z'f'	2.8 z'c'-z'f'	1.3 wx	1.0 z'e'
38 Velista 50WG	0.5 oz	-				
+ Heritage Action 50WG	0.2 oz	14	8.0 v-z'f'	12.5 q-z'c'	12.5 m-v	20.5 o-u
39 A20581 SC	0.34 fl oz	14	33.0 c-g	45.0 bc	53.5 bc	65.8 ab
40 Velista 50WG	0.5 oz	14	4.5 z'a'-z'f'	6.8 u-z'f'	10.3 o-x	18.3 p-x
41 Velista 50WG	0.5 oz	14 ⁸	5.0 z-z'f'	5.8 w-z'f'	5.3 t-x	9.5 v-z'e'
42 Insignia 2.1SC	0.74 fl oz	-				
+ Trinity 1.69SC	1.0 fl oz	14	30.0 e-k	43.5 b-d	42.8 d-f	42.8 g-j
43 2017 Anth Program #6	Grigg Bros	14 ⁹	21.3 l-p	13.0 q-z'b'	9.3 o-x	9.8 v-z'e'
44 2017 Anth Program #7	Grigg Bros	14 ¹⁰	18.3 m-t	11.3 r-z'e'	6.0 t-x	5.0 z-z'e'
45 Manni-Plex Eagle LC	16.0 fl oz	-				
+ Nutri-Gro Magnum LC	2.0 fl oz	14	23.8 i-n	25.0 h-n	43.5 c-f	27.3 l-q
46 Manni-Plex Eagle LC	16.0 fl oz	-				
+ Nutri-Gro Magnum	2.0 fl oz	-				
+ Daconil Ultrex 82.5WG	1.8 oz	14	18.5 m-t	21.0 l-r	33.3 f-i	23.3 m-s
47 Daconil Ultrex 82.5WG	1.8 oz	14	36.0 b-f	32.5 e-j	31.5 g-j	30.5 k-o
48 Medallion 1.04SC	1.5 fl oz	14	15.8 n-w	10.5 s-z'f'	11.5 o-v	5.8 z-z'e'
49 2017 Anth Program #8	Harrells	14 ¹¹	12.0 r-z'b'	3.8 z-z'f'	3.0 v-x	5.0 z-z'e'
50 2017 Anth Program #9	Harrells	14 ¹²	11.0 t-z'c'	6.3 v-z'f'	3.3 u-x	5.3 z-z'e'
51 2017 Anth Program #10	Harrells	14 ¹³	19.5 m-r	21.0 l-r	22.3 j-n	12.0 t-z'd'
52 2017 Anth Program #11	Harrells	14 ¹⁴	24.5 h-m	21.5 k-q	5.5 t-x	4.5 z'a'-z'e'
53 2017 Anth Program #12	Harrells	14 ¹⁵	12.5 r-z'a'	8.0 t-z'f'	3.3 u-x	10.8 u-z'e'
54 2017 Anth Program #13	-	VAR ¹⁶	31.3 d-i	32.3 e-j	38.5 d-h	35.3 i-l
55 2017 Anth Program #14	-	VAR ¹⁷	28.0 f-l	31.5 e-j	34.0 e-h	34.5 i-l
56 2017 Anth Program #15	-	VAR ¹⁸	28.3 f-l	34.5 d-h	39.8 d-f	34.8 i-l
57 RU-21196-17D SC	0.4 fl oz	14	4.0 z'b'-z'f'	4.3 y-z'f'	3.5 u-x	3.0 z'c'-z'e'
58 RU-21196-17D SC	0.8 fl oz	14	1.8 z'd'-z'f'	3.3 z'b'-z'f'	2.5 v-x	2.8 z'd'e'
59 Torque 3.6SC	1.1 fl oz	14	2.8 z'd'-z'f'	4.8 y-z'f'	3.0 v-x	4.8 z-z'e'
60 RU-21196-17J SC	0.85 fl oz	14	3.3 z'c'-z'f'	4.3 y-z'f'	5.8 t-x	8.3 w-z'e'
61 Headway 1.38ME	3.0 fl oz	14	28.0 f-l	24.3 i-o	34.0 e-h	30.8 k-o

(Continued)

Table 1A. Anthracnose control on annual bluegrass putting green turf – Test 1, 2017 (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested per Plot (%) ¹			
			2 July	11 July	21 July	31 July
62 RU-21196-17K SC	0.275 fl oz	14	23.0 j-o	16.5 m-u	15.3 l-t	14.5 r-z'b'
63 RU-21196-17K SC	0.433 fl oz	14	19.3 m-s	16.0 m-v	10.8 o-x	8.8 w-z'e'
64 RU-21196-17K SC	0.59 fl oz	14	17.3 m-u	13.5 p-z	6.0 t-x	7.8 y-z'e'
65 Insignia 2SC	0.7 fl oz	14	38.3 b-d	49.0 b	44.8 cd	61.3 a-c
66 RU-21196-17D SC	0.8 fl oz	14	2.0 z'd'-z'f'	3.5 z'a'-z'f'	7.0 s-x	6.3 z-z'e'
67 Tekken 1.8SC	3.0 fl oz	14	5.3 z-z'f'	13.0 q-z'b'	18.3 l-q	13.3 s-z'c'
68 2017 Anth Program #16	PBI Gordon	VAR ¹⁹	16.0 n-v	15.3 n-w	22.5 j-n	21.5 n-t
69 Traction 4SC	1.3 fl oz	14	22.3 k-p	15.5 n-w	15.0 l-t	27.8 l-p
70 Traction 4SC	1.3 fl oz	–	–	–	–	–
/Affirm 11.3WG	0.9 oz	–	–	–	–	–
+ Spectro 90WG	3.5 oz	ALT ²⁰	9.5 u-z'e'	7.3 u-z'f'	19.0 k-p	31.0 k-n
71 KaPre Averta LC	5.9 fl oz	–	–	–	–	–
/ KaPre Averta LC	2.2 fl oz	28 ²¹	24.3 i-m	31.0 e-k	44.0 c-e	54.0 c-f
72 A14658H SL	6.0 fl oz	–	–	–	–	–
+ Daconil Action 6.11SC	3.5 fl oz	14	4.3 z'b'-z'f'	4.8 y-z'f'	10.8 o-x	4.3 z'b'-z'e'
Signature Xtra 60WG	4.0 oz	–	–	–	–	–
+ Daconil Action 6.11SC	3.5 fl oz	14	6.3 y-z'f'	14.8 o-x	15.3 l-t	6.0 z-z'e'
74 RU-192514-17A WG	0.3 oz	14	11.3 s-z'c'	9.8 s-z'f'	9.0 p-x	8.0 x-z'e'
75 RU-1925-17B SC	0.72 fl oz	14	4.3 z'b'-z'f'	7.5 u-z'f'	8.5 q-x	12.0 t-z'd'
76 RU-192514-17A WG	0.5 oz	14	4.5 z'a'-z'f'	6.8 u-z'f'	7.0 s-x	10.8 u-z'e'
77 RU-1925-17B SC	1.19 fl oz	14	2.3 z'd'-z'f'	1.0 z'f'	1.0 x	7.5 z-z'e'
78 RU-192514-17C SC	6.0 fl oz	14	15.8 n-w	23.0 j-p	39.3 d-h	39.3 h-k
79 Chipco 26GT 2SC	4.0 fl oz	14	30.8 d-j	38.5 c-e	48.5 cd	43.3 g-j
80 Untreated Check	–	–	58.3 a	61.8 a	66.3 a	71.5 a

INT ²²	DAT ²³	DAT	DAT	DAT
14	2	11	7	3
28	16	25	7	17

(Continued)

Table 1A. Anthracnose control on annual bluegrass putting green turf – Test 1, 2017 (continued).

- 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 42, 69, and 70), 23 May (treatments 42, 69, and 70), 2 June (14-day treatment), 16 June (14- and 28-day treatments), 30 June (14-day treatment), 14 July (14- and 28-day treatments), 28 July (14-day treatment), 11 August (14- and 28-day treatments), and 25 August (14-day treatment)
- ³ VAR = Variable spray schedule where treatment 22 (2017 Anth Prog #1) consisted of Oreon 4.27SC (8.0 fl oz) + Harrell's PAR 100LC (0.37 fl oz) applied on 19 May, Chipco Signature Xtra 60WG (4.0 oz) + Daconil Ultrex 82.5WG (3.2 oz) applied 2 June, Velista 50WG (0.3 oz) + Affirm 11.3WG (0.88 oz) applied 16 June, Oreon 4.27SC (4.0 fl oz) + Medallion 1.04SC (1.5 fl oz) + Harrell's PAR 100LC (0.37 fl oz) applied 30 June, Chipco Signature Xtra 60WG (4.0 oz) + Daconil Ultrex 82.5WG (3.2 oz) applied 14 July, Velista 50WG (0.3 oz) + Affirm 11.3WG (0.88 oz) applied 28 July, and Oreon 4.27SC (6.0 fl oz) + Harrell's PAR 100LC (0.37 fl oz) applied 11 August
- ⁴ VAR = Variable spray schedule where treatment 34 (2017 Anth Prog #2) consisted of Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied on 19 May, Velista 50WG (0.5 oz) + Appear II 4.1SC (6.0 fl oz) applied 2 June, Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 16 June, Velista 50WG (0.5 oz) + Appear II 4.1SC (6.0 fl oz) applied 30 June, Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 14 July, Velista 50WG (0.5 oz) + Appear II 4.1SC (6.0 fl oz) applied 28 July, and Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 11 August
- ⁵ VAR = Variable spray schedule where treatment 35 (2017 Anth Prog #3) consisted of Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied on 19 May, Medallion 1.04SC (1.0 fl oz) + Velista 50WG (0.3 oz) + Appear II 4.1SC (6.0 fl oz) applied 2 June, Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 16 June, Medallion 1.04SC (1.0 fl oz) + Velista 50WG (0.3 oz) + Appear II 4.1SC (6.0 fl oz) applied 30 June, Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 14 July, Medallion 1.04SC (1.0 fl oz) + Velista 50WG (0.3 oz) + Appear II 4.1SC (6.0 fl oz) applied 28 July, and Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 11 August
- ⁶ VAR = Variable spray schedule where treatment 36 (2017 Anth Prog #4) consisted of Daconil Action 6.1SC (3.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + Appear II 4.1SC (6.0 fl oz) applied on 19 May, Daconil Action 6.1SC (3.5 fl oz) + Banner MAXX 1.3ME (1.0 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 2 June, Daconil Action 6.1SC (3.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 30 June, Daconil Action 6.1SC (3.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 14 July, Daconil Action 6.1SC (3.5 fl oz) + Banner MAXX 1.3ME (1.0 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 28 July, and Daconil Action 6.1SC (3.5 fl oz) + Medallion 1.04SC (1.0 fl oz) applied 11 August
- ⁷ VAR = Variable spray schedule where treatment 37 (2017 Anth Prog #5) consisted of Velista 50WG (0.5oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied on 19 May, Briskway 2.7SC (0.5 fl oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 2 June, Medallion 1.04SC (1.0 fl oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 16 June, Velista 50WG (0.5 oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 30 June, Briskway 2.7SC (0.5 fl oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 14 July, Medallion 1.04SC (1.0 fl oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 28 July, Velista 50WG (0.5 oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 11 August, and Briskway 2.7SC (0.5 fl oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 25 August
- ⁸ Treatment 41 was irrigated with 2.0 gal of water per plot

(Continued)

Table 1A. Anthracnose control on annual bluegrass putting green turf – Test 1, 2017 (continued).

- ⁹ Treatment 43 (2017 Anth Prog #6) consisted of Gary's Green Ultra LC (12.0 fl oz) + PK Plus LC (6.0 fl oz) + Green Pig UV LC (2.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied at a 14-day interval
- ¹⁰ Treatment 44 (2017 Anth Prog #7) consisted of Gary's Green Ultra LC (12.0 fl oz) + PK Plus LC (6.0 fl oz) + Green Pig UV LC (2.5 fl oz) + Medallion 1.04SC (1.5 fl oz) applied at a 14-day interval
- ¹¹ Treatment 49 (2017 Anth Prog #8) consisted of Bio Max LC (3.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 Plus LC (3.0 fl oz) + N30 Plus LC (4.0 fl oz) + PAR 100LC (0.37 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied at a 14 day interval
- ¹² Treatment 50 (2017 Anth Prog #9) consisted of Bio Max LC (3.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 Plus LC (3.0 fl oz) + N30 Plus LC (4.0 fl oz) + PAR 100LC (0.37 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + PSX LC (2.0 fl oz) applied at a 14-day interval
- ¹³ Treatment 51 (2017 Anth Prog #10) consisted of Bio Max LC (3.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 Plus LC (3.0 fl oz) + N30 Plus LC (4.0 fl oz) + PAR 100LC (0.37 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + PSX LC (4.0 fl oz) applied at a 14-day interval
- ¹⁴ Treatment 52 (2017 Anth Prog #11) consisted of Bio Max LC (3.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 Plus LC (3.0 fl oz) + N30 Plus LC (4.0 fl oz) + PAR 100LC (0.37 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + AAX LC (1.0 fl oz) applied at a 14-day interval
- ¹⁵ Treatment 53 (2017 Anth Prog #12) consisted of Bio Max LC (3.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 Plus LC (3.0 fl oz) + N30 Plus LC (4.0 fl oz) + PAR 100LC (0.37 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + AAX LC (2.0 fl oz) applied at a 14 day interval
- ¹⁶ VAR = Variable spray schedule where treatment 54 (2017 Anth Prog #13) consisted of RU-91420-17A LC (8.5 fl oz) applied on 19 May, Alude 5.2XL (5.5 fl oz) + RU-91420-17A LC (8.5 fl oz) + Torque 3.6SC (1.1 fl oz) applied 2 June, Alude 5.2XL (5.5 fl oz) + RU-91420-17A LC (8.5 fl oz) applied 16 June, Alude 5.2XL (5.5 fl oz) + Velista 50WG (0.3 oz) applied 30 June, Alude 5.2XL (5.5 fl oz) + RU-91420-17A LC (8.5 fl oz) applied 14 July, Alude 5.2XL (5.5 fl oz) + Velista 50WG (0.3 oz) applied 30 June, Alude 5.2XL (5.5 fl oz) + RU-91420-17A LC (8.5 fl oz) applied 14 July, Alude 5.2XL (5.5 fl oz) + Compass 50WG (0.15 oz) applied 28 July, Alude 5.2XL (5.5 fl oz) + RU-91420-17A LC (8.5 fl oz) applied 11 August, and Alude 5.2XL (5.5 fl oz) + RU-91420-17A LC (8.5 fl oz) + Affirm 11.3WG (0.88 oz) applied 25 August
- ¹⁷ VAR = Variable spray schedule where treatment 55 (2017 Anth Prog #14) consisted of Alude 5.2XL (5.5 fl oz) + Torque 3.6SC (1.1 fl oz) applied on 2 June, Alude 5.2XL (5.5 fl oz) applied 16 June, Alude 5.2XL (5.5 fl oz) + Velista 50WG (0.3 oz) applied 30 June, Alude 5.2XL (5.5 fl oz) applied 14 July, Alude 5.2XL (5.5 fl oz) + Compass 50WG (0.15 oz) applied 28 July, Alude 5.2XL (5.5 fl oz) applied 11 August, and Alude 5.2XL (5.5 fl oz) + Affirm 11.3WG (0.88 oz) applied 25 August
- ¹⁸ VAR = Variable spray schedule where treatment 56 (2017 Anth Prog #15) consisted of Daconil Ultrex 82.5WG (1.8 oz) applied on 19 May, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + Torque 3.6SC (1.1 fl oz) applied 2 June, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied 16 June, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + Velista 50WG (0.3 oz) applied 30 June, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied 14 July, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + Velista 50WG (0.3 oz) applied 30 June, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied 14 July, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + Compass 50WG (0.15 oz) applied 28 July, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied 11 August, and Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + Affirm 11.3WG (0.88 oz) applied 25 August
- ¹⁹ VAR = Variable spray schedule where treatment 68 (2017 Anth Prog #16) consisted of Daconil Ultrex 82.5WG (3.25 oz) applied on 19 May, Autilus 4SC (6.0 fl oz) + Harrell's PAR 100SL (0.18 fl oz) applied 2 June, Tekken 1.8SC (3.0 fl oz) applied 16 June, Medallion 1.04SC (0.9 fl oz) applied 30 June, Tekken 1.8SC (3.0 fl oz) applied 14 July, Affirm 11.3WG (0.9 oz) applied 28 July, Tekken 1.8SC (3.0 fl oz) applied 11 August, and Autilus 4SC (6.0 fl oz) + Harrell's PAR 100SL (0.18 fl oz) applied 25 August

(Continued)

Table 1A. Anthracnose control on annual bluegrass putting green turf – Test 1, 2017 (continued).

²⁰ ALT = Alteration treatment where treatment 70 consisted of Traction 4SC (1.3 fl oz) applied on 19 May, 16 June, 14 July, and 11 August, and Af-firm 11.3WG (0.9 oz) + Spectro 90WG (3.5 oz) applied on 2 June, 30 June, and 28 July

²¹ Treatment 71 was initiated with KaPre Averta LC (5.9 fl oz) on 19 May and then applications of KaPre Averta LC (2.2 fl oz) at a 28-day interval starting 2 June

²² INT = Spray interval in days

²³ DAT = Days after the last treatment

Table 1B. Anthracnose control with fungicides and biorational products on annual bluegrass putting green turf – Test 1: Rutgers University, 2017.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested per Plot (%) ¹		
			10 Aug.	20 Aug.	30 Aug.
1 Oreon 4.27SC.....	2.0 fl oz	–			
+ Harrell's PAR 100LC.....	0.37 fl oz	14	16.3 n-r	14.3 n-w	10.5 v-zj'
2 Oreon 4.27SC.....	4.0 fl oz	–			
+ Harrell's PAR 100LC.....	0.37 fl oz	14	9.8 q-x	10.3 r-z'e'	5.5 z'c'-z'j'
3 Oreon 4.27SC.....	6.0 fl oz	–			
+ Harrell's PAR 100LC.....	0.37 fl oz	14	8.3 q-x	9.0 s-z'e'	9.0 y-z'j'
4 Oreon 4.27SC.....	8.0 fl oz	–			
+ Harrell's PAR 100LC.....	0.37 fl oz	14	4.8 s-x	5.5 u-z'e'	3.8 z'f'-z'j'
5 Autilus 4SC.....	6.0 fl oz	–			
+ Harrell's PAR 100LC.....	0.37 fl oz	14	23.0 l-p	21.0 l-r	8.8 y-z'j'
6 Velista 50WDG.....	0.3 oz	14	41.8 e-g	30.3 h-l	33.5 g-k
7 Secure 4.17SC.....	0.5 fl oz	14	51.3 de	30.8 h-l	31.5 h-n
8 Velista 50WDG.....	0.3 oz	–			
+ Oreon 4.27SC.....	2.0 fl oz	–			
+ Harrell's PAR 100LC.....	0.37 fl oz	14	2.0 wx	2.8 y-z'e'	10.0 x-z'j'
9 Velista 50WDG.....	0.3 oz	–			
+ Oreon 4.27SC.....	4.0 fl oz	–			
+ Harrell's PAR 100LC.....	0.37 fl oz	14	1.8 wx	3.3 x-z'e'	7.8 z-z'j'
10 Insignia 2.15C.....	0.5 fl oz	14	69.3 a-c	47.5 b-e	46.8 b-f
11 Insignia 2.15C.....	0.5 fl oz	–			
+ Oreon 4.27SC.....	2.0 fl oz	–			
+ Harrell's PAR 100LC.....	0.37 fl oz	14	29.5 i-l	29.3 i-m	30.0 i-o
12 Insignia 2.15C.....	0.5 fl oz	–			
+ Oreon 4.27SC.....	4.0 fl oz	–			
+ Harrell's PAR 100LC.....	0.37 fl oz	14	15.3 o-s	15.8 n-u	23.3 k-s
13 Medallion 1.04SC.....	1.5 fl oz	14	27.0 j-n	13.5 o-y	25.3 k-r
14 Medallion 1.04SC.....	1.5 fl oz	–			
+ Oreon 4.27SC.....	2.0 fl oz	–			
+ Harrell's PAR 100LC.....	0.37 fl oz	14	12.0 p-w	14.0 n-x	22.5 k-u

(Continued)

Table 1B. Anthracnose control on annual bluegrass putting green turf – Test 1, 2017 (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested per Plot (%) ¹		
			10 Aug.	20 Aug.	30 Aug.
15 Medallion 1.04SC.....	1.5 fl oz	–			
+ Oreon 4.27SC.....	4.0 fl oz	–			
+ Harrell's PAR 100LC.....	0.37 fl oz	14	5.5 f-x	8.0 s-z'e'	8.5 y-z'j'
16 Chipco Signature Xtra 60WDG.....	4.0 oz	14	39.3 f-i	39.3 d-j	52.3 a-c
17 Chipco Signature Xtra 60WDG.....	4.0 oz	–			
+ Oreon 4.27SC.....	2.0 fl oz	14	12.5 p-w	10.5 r-z'e'	27.5 j-p
18 Chipco Signature Xtra 60WDG.....	4.0 oz	–			
+ Oreon 4.27SC.....	4.0 fl oz	14	3.0 v-x	2.0 z'a'-z'e'	11.8 t-z'j'
19 Daconil Ultrex 82.5WG.....	3.2 oz	14	36.8 f-j	20.3 l-r	22.0 l-u
20 Daconil Ultrex 82.5WG.....	3.2 oz	–			
+ Oreon 4.27SC.....	2.0 fl oz	–			
+ Harrell's PAR 100LC.....	0.37 fl oz	14	5.3 f-x	3.8 w-z'e'	11.8 t-z'j'
21 Daconil Ultrex 82.5WG.....	3.2 oz	–			
+ Oreon 4.27SC.....	4.0 fl oz	–			
+ Harrell's PAR 100LC.....	0.37 fl oz	14	1.5 wx	2.5 z-z'e'	4.8 z'd'-z'j'
22 2017 Anth Program #1.....	AMVAC	VAR ³	1.8 wx	1.0 z'd'e'	14.8 r-z'g'
23 AMV4221 3SC.....	0.8 fl oz	14	35.0 f-k	20.0 l-r	39.5 e-i
24 AMV4221 3SC.....	1.0 fl oz	14	29.0 i-m	20.5 l-r	33.5 g-j
25 AMV4221 3SC.....	1.6 fl oz	14	27.0 j-n	15.8 n-u	30.3 i-o
26 Mirage 2SC.....	1.0 fl oz	14	5.8 f-x	5.0 u-z'e'	7.0 z-z'j'
27 RU-6133-17J SC.....	0.20 fl oz	14	62.5 b-c	44.8 c-g	40.5 d-i
28 RU-6133-17I SC.....	0.28 fl oz	14	72.5 ab	49.8 a-d	51.8 a-d
29 RU-6133-17I SC.....	0.33 fl oz	14	69.5 a-c	44.8 c-g	37.5 f-j
30 RU-6133-17I SC.....	0.41 fl oz	14	68.8 a-c	43.5 c-g	41.3 c-i
31 Lexicon 4.16SC.....	0.34 fl oz	14	75.0 a	51.3 a-c	50.8 a-e
32 Exteris Stressgard 0.27SC.....	2.1 fl oz	14	43.8 ef	20.3 l-r	23.3 k-s
33 Briskway 2.71SC.....	0.30 fl oz	14	51.8 de	40.8 c-h	41.3 c-i
34 2017 Anth Program #2.....	Syngenta	VAR ⁴	1.8 wx	7.0 t-z'e'	15.0 q-z'f'
35 2017 Anth Program #3.....	Syngenta	VAR ⁵	3.8 t-x	5.8 u-z'e'	12.5 s-z'i'
36 2017 Anth Program #4.....	Syngenta	VAR ⁶	1.3 wx	1.0 z'd'e'	4.5 z'e'-z'j'

(Continued)

Table 1B. Anthracnose control on annual bluegrass putting green turf – Test 1, 2017 (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested per Plot (%) ¹		
			10 Aug.	20 Aug.	30 Aug.
37 2017 Anth Program #5	Syngenta	VAR ⁷	0.3 x	0.3 z'e'	1.3 z'i'j'
38 Velista 50WG	0.5 oz	–			
+ Heritage Action 50WG	0.2 oz	14	43.5 ef	34.3 g-k	42.8 c-h
39 A20581 SC	0.34 fl oz	14	67.5 a-c	57.0 ab	58.3 a
40 Velista 50WG	0.5 oz	14	14.3 o-v	20.0 l-r	33.0 g-l
41 Velista 50WG	0.5 oz	14 ⁸	8.3 q-x	8.8 s-z'e'	17.3 p-z'a'
42 Insignia 2.1SC	0.74 fl oz	–			
+ Trinity 1.69SC	1.0 fl oz	14	41.0 e-h	29.0 i-m	23.0 k-t
43 2017 Anth Program #6	Grigg Bros	14 ⁹	7.3 q-x	6.3 u-z'e'	6.3 z'a'-z'j'
44 2017 Anth Program #7	Grigg Bros	14 ¹⁰	4.8 s-x	2.8 y-z'e'	0.8 z'j'
45 Manni-Plex Eagle LC	16.0 fl oz	–			
+ Nutri-Gro Magnum LC	2.0 fl oz	14	34.5 f-k	37.3 e-j	21.0 m-w
46 Manni-Plex Eagle LC	16.0 fl oz	–			
+ Nutri-Gro Magnum	2.0 fl oz	–			
+ Daconil Ultrex 82.5WG	1.8 oz	14	12.0 p-w	8.3 s-z'e'	5.8 z'b'-z'j'
47 Daconil Ultrex 82.5WG	1.8 oz	14	41.8 e-g	37.8 e-j	41.3 c-i
48 Medallion 1.04SC	1.5 fl oz	14	14.5 o-u	14.8 n-v	18.0 o-z
49 2017 Anth Program #8	Harrells	14 ¹¹	5.8 f-x	3.0 y-z'e'	5.5 z'c'-z'j'
50 2017 Anth Program #9	Harrells	14 ¹²	1.8 wx	5.3 u-z'e'	2.3 z'h'-z'j'
51 2017 Anth Program #10	Harrells	14 ¹³	4.8 s-x	5.0 u-z'e'	5.0 z'c'-z'j'
52 2017 Anth Program #11	Harrells	14 ¹⁴	3.3 u-x	2.5 z-z'e'	3.5 z'g'-z'j'
53 2017 Anth Program #12	Harrells	14 ¹⁵	2.0 wx	3.0 y-z'e'	2.5 z'h'-z'j'
54 2017 Anth Program #13	–	VAR ¹⁶	37.5 f-j	43.0 c-g	46.3 b-f
55 2017 Anth Program #14	–	VAR ¹⁷	35.5 f-k	36.5 f-j	37.0 f-j
56 2017 Anth Program #15	–	VAR ¹⁸	30.3 h-l	39.8 d-i	31.3 i-n
57 RU-21196-17D SC	0.4 fl oz	14	11.0 q-x	10.5 r-z'e'	20.5 n-x
58 RU-21196-17D SC	0.8 fl oz	14	18.0 m-q	11.0 r-z'e'	16.0 q-z'c'
59 Torque 3.6SC	1.1 fl oz	14	14.8 o-t	7.3 t-z'e'	11.8 t-z'j'
60 RU-21196-17J SC	0.85 fl oz	14	24.5 k-o	22.0 l-q	21.8 l-v
61 Headway 1.38ME	3.0 fl oz	14	23.0 l-p	8.8 s-z'e'	19.5 o-y

(Continued)

Table 1B. Anthracnose control on annual bluegrass putting green turf – Test 1, 2017 (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested per Plot (%) ¹		
			10 Aug.	20 Aug.	30 Aug.
62 RU-21196-17K SC	0.275 fl oz	14	12.0 p-w	12.3 p-z'c'	19.3 o-y
63 RU-21196-17K SC	0.433 fl oz	14	13.5 o-v	11.3 q-z'd'	17.0 p-z'b'
64 RU-21196-17K SC	0.59 fl oz	14	12.5 p-w	6.0 u-z'e'	6.8 z-z'j'
65 Insignia 2SC	0.7 fl oz	14	60.8 cd	58.8 a	49.0 a-e
66 RU-21196-17D SC	0.8 fl oz	14	6.0 f-x	4.5 v-z'e'	11.5 u-z'j'
67 Tekken 1.8SC	3.0 fl oz	14	14.3 o-v	12.8 p-z'a'	23.0 k-t
68 2017 Anth Program #16	PBI Gordon	VAR ¹⁹	22.5 l-p	23.0 l-p	9.3 x-z'j'
69 Traction 4SC	1.3 fl oz	14	41.3 e-h	24.5 k-n	32.8 g-l
70 Traction 4SC	1.3 fl oz	-			
/Affirm 11.3WG	0.9 oz	-			
+ Spectro 90WG	3.5 oz	ALT ²⁰	30.5 g-l	23.8 k-o	26.3 j-q
KaPre Averta LC	5.9 fl oz	-	62.5 b-c	42.8 c-g	46.0 b-f
/KaPre Averta LC	2.2 fl oz	28 ²¹			
A14658H SL	6.0 fl oz	-	1.5 wx	1.5 z'c'-z'e'	2.3 z'h'-z'j'
+ Daconil Action 6.11SC	3.5 fl oz	14			
Signature Xtra 60WG	4.0 oz	-			
+ Daconil Action 6.11SC	3.5 fl oz	14	5.3 f-x	1.8 z'b'-z'e'	1.8 z'ij'
RU-192514-17A WG	0.3 oz	14	27.5 j-n	17.3 n-t	32.0 h-m
RU-1925-17B SC	0.72 fl oz	14	17.8 m-q	18.8 m-s	16.3 p-z'c'
RU-192514-17A WG	0.5 oz	14	14.5 o-u	12.5 p-z'b'	16.0 q-z'd'
RU-1925-17B SC	1.19 fl oz	14	11.8 p-w	13.3 o-z	13.3 s-z'h'
RU-192514-17C SC	6.0 fl oz	14	45.0 ef	28.8 j-m	15.8 q-z'e'
Chipco 26GT 2SC	4.0 fl oz	14	60.0 cd	46.3 b-f	43.8 c-g
Untreated Check	-	-	76.3 a	56.3 ab	55.5 ab
		INT ²²	DAT ²³	DAT	DAT
		14	13	9	5
		28	27	9	19

(Continued)

Table 1B. Anthracnose control on annual bluegrass putting green turf – Test 1, 2017 (continued).

- 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 42, 69, and 70), 23 May (treatments 42, 69, and 70), 2 June (14-day treatment), 16 June (14- and 28-day treatments), 30 June (14-day treatment), 14 July (14- and 28-day treatments), 28 July (14-day treatment), 11 August (14- and 28-day treatments), and 25 August (14-day treatment)
- ³ VAR = Variable spray schedule where treatment 22 (2017 Anth Prog #1) consisted of Oreon 4.27SC (8.0 fl oz) + Harrell's PAR 100LC (0.37 fl oz) applied on 19 May, Chipco Signature Xtra 60WG (4.0 oz) + Daconil Ultrex 82.5WG (3.2 oz) applied 2 June, Velista 50WG (0.3 oz) + Affirm 11.3WG (0.88 oz) applied 16 June, Oreon 4.27SC (4.0 fl oz) + Medallion 1.04SC (1.5 fl oz) + Harrell's PAR 100LC (0.37 fl oz) applied 30 June, Chipco Signature Xtra 60WG (4.0 oz) + Daconil Ultrex 82.5WG (3.2 oz) applied 14 July, Velista 50WG (0.3 oz) + Affirm 11.3WG (0.88 oz) applied 28 July, and Oreon 4.27SC (6.0 fl oz) + Harrell's PAR 100LC (0.37 fl oz) applied 11 August
- ⁴ VAR = Variable spray schedule where treatment 34 (2017 Anth Prog #2) consisted of Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied on 19 May, Velista 50WG (0.5 oz) + Appear II 4.1SC (6.0 fl oz) applied 2 June, Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 16 June, Velista 50WG (0.5 oz) + Appear II 4.1SC (6.0 fl oz) applied 30 June, Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 14 July, Velista 50WG (0.5 oz) + Appear II 4.1SC (6.0 fl oz) applied 28 July, and Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 11 August
- ⁵ VAR = Variable spray schedule where treatment 35 (2017 Anth Prog #3) consisted of Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied on 19 May, Medallion 1.04SC (1.0 fl oz) + Velista 50WG (0.3 oz) + Appear II 4.1SC (6.0 fl oz) applied 2 June, Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 16 June, Medallion 1.04SC (1.0 fl oz) + Velista 50WG (0.3 oz) + Appear II 4.1SC (6.0 fl oz) applied 30 June, Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 14 July, Medallion 1.04SC (1.0 fl oz) + Velista 50WG (0.3 oz) + Appear II 4.1SC (6.0 fl oz) applied 28 July, and Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 11 August
- ⁶ VAR = Variable spray schedule where treatment 36 (2017 Anth Prog #4) consisted of Daconil Action 6.1SC (3.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + Appear II 4.1SC (6.0 fl oz) applied on 19 May, Daconil Action 6.1SC (3.5 fl oz) + Banner MAXX 1.3ME (1.0 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 2 June, Daconil Action 6.1SC (3.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 30 June, Daconil Action 6.1SC (3.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 14 July, Daconil Action 6.1SC (3.5 fl oz) + Banner MAXX 1.3ME (1.0 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 28 July, and Daconil Action 6.1SC (3.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 11 August
- ⁷ VAR = Variable spray schedule where treatment 37 (2017 Anth Prog #5) consisted of Velista 50WG (0.5oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied on 19 May, Briskway 2.7SC (0.5 fl oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 2 June, Medallion 1.04SC (1.0 fl oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 16 June, Velista 50WG (0.5 oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 30 June, Briskway 2.7SC (0.5 fl oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 14 July, Medallion 1.04SC (1.0 fl oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 28 July, Velista 50WG (0.5 oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 11 August, and Briskway 2.7SC (0.5 fl oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 25 August
- ⁸ Treatment 41 was irrigated with 2.0 gal of water per plot

(Continued)

Table 1B. Anthracnose control on annual bluegrass putting green turf – Test 1, 2017 (continued).

- ⁹ Treatment 43 (2017 Anth Prog #6) consisted of Gary's Green Ultra LC (12.0 fl oz) + PK Plus LC (6.0 fl oz) + Green Pig UV LC (2.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied at a 14-day interval
- ¹⁰ Treatment 44 (2017 Anth Prog #7) consisted of Gary's Green Ultra LC (12.0 fl oz) + PK Plus LC (6.0 fl oz) + Green Pig UV LC (2.5 fl oz) + Medallion 1.04SC (1.5 fl oz) applied at a 14-day interval
- ¹¹ Treatment 49 (2017 Anth Prog #8) consisted of Bio Max LC (3.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 Plus LC (3.0 fl oz) + N30 Plus LC (4.0 fl oz) + PAR 100LC (0.37 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied at a 14 day interval
- ¹² Treatment 50 (2017 Anth Prog #9) consisted of Bio Max LC (3.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 Plus LC (3.0 fl oz) + N30 Plus LC (4.0 fl oz) + PAR 100LC (0.37 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + PSX LC (2.0 fl oz) applied at a 14-day interval
- ¹³ Treatment 51 (2017 Anth Prog #10) consisted of Bio Max LC (3.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 Plus LC (3.0 fl oz) + N30 Plus LC (4.0 fl oz) + PAR 100LC (0.37 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + PSX LC (4.0 fl oz) applied at a 14-day interval
- ¹⁴ Treatment 52 (2017 Anth Prog #11) consisted of Bio Max LC (3.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 Plus LC (3.0 fl oz) + N30 Plus LC (4.0 fl oz) + PAR 100LC (0.37 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + AAX LC (1.0 fl oz) applied at a 14-day interval
- ¹⁵ Treatment 53 (2017 Anth Prog #12) consisted of Bio Max LC (3.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 Plus LC (3.0 fl oz) + N30 Plus LC (4.0 fl oz) + PAR 100LC (0.37 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + AAX LC (2.0 fl oz) applied at a 14 day interval
- ¹⁶ VAR = Variable spray schedule where treatment 54 (2017 Anth Prog #13) consisted of RU-91420-17A LC (8.5 fl oz) applied on 19 May, Alude 5.2XL (5.5 fl oz) + RU-91420-17A LC (8.5 fl oz) + Torque 3.6SC (1.1 fl oz) applied 2 June, Alude 5.2XL (5.5 fl oz) + RU-91420-17A LC (8.5 fl oz) applied 16 June, Alude 5.2XL (5.5 fl oz) + Velista 50WG (0.3 oz) applied 30 June, Alude 5.2XL (5.5 fl oz) + RU-91420-17A LC (8.5 fl oz) applied 14 July, Alude 5.2XL (5.5 fl oz) + Velista 50WG (0.3 oz) applied 30 June, Alude 5.2XL (5.5 fl oz) + RU-91420-17A LC (8.5 fl oz) applied 14 July, Alude 5.2XL (5.5 fl oz) + Compass 50WG (0.15 oz) applied 28 July, Alude 5.2XL (5.5 fl oz) + RU-91420-17A LC (8.5 fl oz) applied 11 August, and Alude 5.2XL (5.5 fl oz) + RU-91420-17A LC (8.5 fl oz) + Affirm 11.3WG (0.88 oz) applied 25 August
- ¹⁷ VAR = Variable spray schedule where treatment 55 (2017 Anth Prog #14) consisted of Alude 5.2XL (5.5 fl oz) + Torque 3.6SC (1.1 fl oz) applied on 2 June, Alude 5.2XL (5.5 fl oz) applied 16 June, Alude 5.2XL (5.5 fl oz) + Velista 50WG (0.3 oz) applied 30 June, Alude 5.2XL (5.5 fl oz) applied 14 July, Alude 5.2XL (5.5 fl oz) + Compass 50WG (0.15 oz) applied 28 July, Alude 5.2XL (5.5 fl oz) applied 11 August, and Alude 5.2XL (5.5 fl oz) + Affirm 11.3WG (0.88 oz) applied 25 August
- ¹⁸ VAR = Variable spray schedule where treatment 56 (2017 Anth Prog #15) consisted of Daconil Ultrex 82.5WG (1.8 oz) applied on 19 May, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + Torque 3.6SC (1.1 fl oz) applied 2 June, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied 16 June, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + Velista 50WG (0.3 oz) applied 30 June, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + Velista 50WG (0.3 oz) applied 30 June, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied 14 July, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + Compass 50WG (0.15 oz) applied 28 July, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied 11 August, and Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + Affirm 11.3WG (0.88 oz) applied 25 August
- ¹⁹ VAR = Variable spray schedule where treatment 68 (2017 Anth Prog #16) consisted of Daconil Ultrex 82.5WG (3.25 oz) applied on 19 May, Autilus 4SC (6.0 fl oz) + Harrell's PAR 100SL (0.18 fl oz) applied 2 June, Tekken 1.8SC (3.0 fl oz) applied 16 June, Medallion 1.04SC (0.9 fl oz) applied 30 June, Tekken 1.8SC (3.0 fl oz) applied 14 July, Affirm 11.3WG (0.9 oz) applied 28 July, Tekken 1.8SC (3.0 fl oz) applied 11 August, and Autilus 4SC (6.0 fl oz) + Harrell's PAR 100SL (0.18 fl oz) applied 25 August

(Continued)

Table 1B. Anthracnose control on annual bluegrass putting green turf – Test 1, 2017 (continued).

²⁰ ALT = Alteration treatment where treatment 70 consisted of Traction 4SC (1.3 fl oz) applied on 19 May, 16 June, 14 July, and 11 August, and Afirm 11.3WG (0.9 oz) + Spectro 90WG (3.5 oz) applied on 2 June, 30 June, and 28 July

²¹ Treatment 71 was initiated with KaPre Averta LC (5.9 fl oz) on 19 May and then applications of KaPre Averta LC (2.2 fl oz) at a 28-day interval starting 2 June

²² INT = Spray interval in days

²³ DAT = Days after the last treatment

Table 1C. Anthracnose control with fungicides and biorational products on annual bluegrass putting green turf – Test 1: Rutgers University, 2017.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Turf Quality ^{1,2}			Color ³					
			16 June	14 July	11 Aug.		16 June	14 July	11 Aug.		
1 Oreon 4.27SC	2.0 fl oz	–									
+ Harrell's PAR 100LC	0.37 fl oz	14	7.2 i-s	7.2 c-l	5.7 o-t	5.3 k-p	6.6 a-d	5.5 i-n			
2 Oreon 4.27SC	4.0 fl oz	–									
+ Harrell's PAR 100LC	0.37 fl oz	14	7.9 a-l	7.5 b-j	6.4 j-o	5.1 op	6.9 ab	5.5 i-n			
3 Oreon 4.27SC	6.0 fl oz	–									
+ Harrell's PAR 100LC	0.37 fl oz	14	8.4 a-d	7.7 b-i	6.3 j-o	6.3 e-g	6.8 a-c	5.9 g-m			
4 Oreon 4.27SC	8.0 fl oz	–									
+ Harrell's PAR 100LC	0.37 fl oz	14	8.2 a-i	7.6 b-j	6.5 i-o	6.3 e-g	7.0 a	6.0 k-l			
5 Autilus 4SC	6.0 fl oz	–									
+ Harrell's PAR 100LC	0.37 fl oz	14	7.5 c-p	7.6 b-j	4.2 v-z'c'	7.4 ab	6.7 a-d	5.5 i-n			
6 Velista 50WDG	0.3 oz	14	6.9 m-v	6.5 j-r	4.4 u-z'b'	5.0 p	5.8 e-q	5.1 mn			
7 Secure 4.17SC	0.5 fl oz	14	4.7 z'd'e'	4.8 v-z'a'	4.3 u-z'c'	5.0 p	5.6 g-q	5.7 h-n			
8 Velista 50WDG	0.3 oz	–									
+ Oreon 4.27SC	2.0 fl oz	–									
+ Harrell's PAR 100LC	0.37 fl oz	14	8.3 a-f	7.4 b-k	6.2 k-q	6.0 g-j	6.1 b-l	6.1 e-k			
9 Velista 50WDG	0.3 oz	–									
+ Oreon 4.27SC	4.0 fl oz	–									
+ Harrell's PAR 100LC	0.37 fl oz	14	8.6 ab	7.9 a-g	6.9 e-m	6.1 f-i	6.1 b-l	6.1 e-k			
10 Insignia 2.1SC	0.5 fl oz	14	4.8 z'c'-z'e'	4.1 z'a'b'	3.7 z-z'e'	5.0 p	5.4 k-q	5.3 l-n			
11 Insignia 2.1SC	0.5 fl oz	–									
+ Oreon 4.27SC	2.0 fl oz	–									
+ Harrell's PAR 100LC	0.37 fl oz	14	7.7 a-o	5.9 n-u	4.4 u-z'b'	5.1 op	6.2 a-j	6.2 e-j			
12 Insignia 2.1SC	0.5 fl oz	–									
+ Oreon 4.27SC	4.0 fl oz	–									
+ Harrell's PAR 100LC	0.37 fl oz	14	7.9 a-l	7.1 e-m	4.7 t-z	5.3 k-p	6.3 a-i	6.3 e-i			
13 Medallion 1.04SC	1.5 fl oz	14	7.8 a-m	5.9 n-u	4.6 u-z	5.0 p	5.0 q	5.0 n			
14 Medallion 1.04SC	1.5 fl oz	–									
+ Oreon 4.27SC	2.0 fl oz	–									
+ Harrell's PAR 100LC	0.37 fl oz	14	8.3 a-f	7.8 a-i	6.6 g-o	5.6 j-m	6.2 a-j	6.0 k-l			

(Continued)

Table 1C. Anthracnose control on annual bluegrass putting green turf – Test 1, 2017 (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Turf Quality ^{1,2}			Color ³		
			16 June	14 July	11 Aug.	16 June	14 July	11 Aug.
15 Medallion 1.04SC	1.5 fl oz	–						
+ Oreon 4.27SC	4.0 fl oz	–						
+ Harrell's PAR 100LC	0.37 fl oz	14	8.5 a-c	8.3 a-c	6.9 e-m	5.6 j-m	6.3 a-i	5.9 g-m
Signature Xtra 60WDG	4.0 oz	14	6.1 v-z'a'	4.3 z-z'b'	4.0 y-z'd'	6.2 e-g	5.0 q	5.0 n
Signature Xtra 60WDG	4.0 oz	–						
+ Oreon 4.27SC	2.0 fl oz	14	8.7 a	6.1 m-t	6.3 j-o	6.1 f-i	5.5 i-q	5.3 l-n
Signature Xtra 60WDG	4.0 oz	–						
+ Oreon 4.27SC	4.0 fl oz	14	8.3 a-f	6.3 k-s	6.7 f-n	6.2 e-g	5.8 e-q	5.4 i-n
Daconil Ultrex 82.5WG	3.2 oz	14	5.6 y-z'e'	4.4 z-z'b'	4.2 v-z'c'	5.1 op	5.0 q	5.0 n
Daconil Ultrex 82.5WG	3.2 oz	–						
+ Oreon 4.27SC	2.0 fl oz	–						
+ Harrell's PAR 100LC	0.37 fl oz	14	6.7 p-w	6.3 k-s	6.4 j-o	5.5 k-o	5.1 pq	5.0 n
Daconil Ultrex 82.5WG	3.2 oz	–						
+ Oreon 4.27SC	4.0 fl oz	–						
+ Harrell's PAR 100LC	0.37 fl oz	14	8.1 a-j	8.4 ab	7.6 a-f	5.6 j-m	5.8 e-q	5.5 i-n
2017 Anth Program #1	AMVAC	VAR ⁵	8.3 a-f	8.1 a-e	6.4 j-o	5.2 l-p	5.0 q	5.0 n
AMV4221 3SC	0.8 fl oz	14	6.8 n-v	5.3 s-z	4.2 v-z'c'	5.1 op	5.7 f-q	6.8 b-f
AMV4221 3SC	1.0 fl oz	14	7.1 j-s	5.6 r-x	4.7 t-z	5.1 op	6.0 d-o	6.6 c-g
AMV4221 3SC	1.6 fl oz	14	7.1 j-s	6.4 k-r	4.3 u-z'c'	5.2 l-p	6.0 d-o	7.6 a
Mirage 2SC	1.0 fl oz	14	8.1 a-j	7.9 a-g	6.5 i-o	6.2 e-g	6.5 a-e	7.1 a-d
RU-6133-17J SC	0.20 fl oz	14	5.0 z'c'-z'e'	4.8 v-z'a'	4.1 x-z'c'	5.0 p	5.5 i-q	5.9 g-m
RU-6133-17I SC	0.28 fl oz	14	5.3 z'b'-z'e'	4.3 z-z'b'	3.6 z'a'-z'e'	5.1 op	5.6 g-q	5.8 g-n
RU-6133-17I SC	0.33 fl oz	14	5.6 y-z'e'	4.5 z-z'b'	3.8 z-z'd'	5.0 p	5.4 k-q	5.5 i-n
RU-6133-17I SC	0.41 fl oz	14	7.4 e-q	4.6 x-z'b'	3.5 z'b'-z'e'	5.0 p	5.1 pq	5.6 h-n
Lexicon 4.16SC	0.34 fl oz	14	4.9 z'c'-z'e'	4.4 z-z'b'	3.7 z-z'e'	5.0 p	6.3 a-i	5.5 i-n
Exeris Stressgard 0.27SC	2.1 fl oz	14	6.4 r-z	5.0 u-z'a'	4.1 x-z'c'	5.1 op	6.1 b-l	5.4 i-n
Briskway 2.71SC	0.30 fl oz	14	4.7 z'd'e'	4.8 v-z'a'	3.7 z-z'e'	5.1 op	5.8 e-q	5.5 i-n
2017 Anth Program #2	Syngenta	VAR ⁶	8.0 a-l	8.1 a-e	8.5 ab	6.5 d-f	5.2 o-q	5.8 g-n
2017 Anth Program #3	Syngenta	VAR ⁷	7.8 a-m	7.8 a-i	6.5 i-o	6.1 f-i	5.2 o-q	5.4 i-n
2017 Anth Program #4	Syngenta	VAR ⁸	7.8 a-m	8.4 ab	8.5 ab	6.1 f-i	5.1 pq	5.9 g-m

(Continued)

Table 1C. Anthracnose control on annual bluegrass putting green turf – Test 1, 2017 (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Turf Quality ^{1,2}			Color ³		
			16 June	14 July	11 Aug.	16 June	14 July	11 Aug.
37 2017 Anth Program #5	Syngenta	VAR ⁹	8.5 a-c	8.9 a	8.8 a	6.5 d-f	5.0 q	6.1 e-k
38 Velista 50WG	0.5 oz	-						
+ Heritage Action 50WG	0.2 oz	14	7.3 g-s	6.9 g-n	4.3 u-z'c'	5.1 op	5.8 e-q	5.3 l-n
39 A20581 SC	0.34 fl oz	14	7.1 j-s	4.2 z'a'b'	3.5 z'b'-z'e'	5.1 op	5.5 i-q	5.0 n
40 Velista 50WG	0.5 oz	14	7.5 c-p	8.0 a-g	6.5 i-o	5.0 p	5.3 m-q	5.0 n
41 Velista 50WG	0.5 oz	14 ¹⁰	7.5 c-p	7.5 b-j	7.8 a-e	5.1 op	6.0 d-o	5.0 n
42 Insignia 2.1SC	0.74 fl oz	-						
+ Trinity 1.69SC	1.0 fl oz	14	6.4 r-z	4.3 z-z'b'	4.3 u-z'c'	5.0 p	6.3 a-i	5.9 g-m
43 2017 Anth Program #6	Grigg Bros	14 ¹¹	6.8 n-v	7.0 f-m	7.0 d-k	6.6 de	6.1 b-l	5.9 g-m
44 2017 Anth Program #7	Grigg Bros	14 ¹²	7.4 e-q	7.2 c-l	7.2 c-j	6.6 de	6.4 a-g	6.8 b-f
45 Manni-Plex Eagle LC	16.0 fl oz	-						
+ Nutri-Gro Magnum LC	2.0 fl oz	14	6.5 q-x	4.4 z-z'b'	4.6 u-z	5.3 k-p	5.0 q	5.0 n
46 Manni-Plex Eagle LC	16.0 fl oz	-						
+ Nutri-Gro Magnum	2.0 fl oz	-						
+ Daconil Ultrex 82.5WG	1.8 oz	14	6.2 t-z	4.7 w-z'a'	7.1 c-k	5.2 l-p	5.1 pq	5.5 i-n
47 Daconil Ultrex 82.5WG	1.8 oz	14	5.6 y-z'e'	4.5 z-z'b'	4.1 x-z'c'	5.0 p	5.0 q	5.0 n
48 Medallion 1.04SC	1.5 fl oz	14	7.1 j-s	6.9 g-n	5.2 r-v	5.0 p	5.3 m-q	5.5 i-n
49 2017 Anth Program #8	Harrells	14 ¹³	7.6 b-p	7.8 a-i	7.2 c-j	7.4 ab	6.4 a-g	7.5 ab
50 2017 Anth Program #9	Harrells	14 ¹⁴	8.3 a-f	8.5 ab	7.6 a-f	7.1 bc	6.4 a-g	6.2 e-j
51 2017 Anth Program #10	Harrells	14 ¹⁵	6.8 n-v	6.1 m-t	7.1 c-k	6.8 cd	6.6 a-d	6.4 d-h
52 2017 Anth Program #11	Harrells	14 ¹⁶	6.4 r-z	6.3 k-s	7.9 a-d	6.9 cd	6.4 a-g	7.3 a-c
53 2017 Anth Program #12	Harrells	14 ¹⁷	7.9 a-l	7.9 a-g	8.1 a-c	7.6 a	6.3 a-i	7.3 a-c
54 2017 Anth Program #13	-	VAR ¹⁸	5.4 z'a'-z'e'	4.8 v-z'a'	4.6 u-z	6.2 e-g	5.0 q	5.3 l-n
55 2017 Anth Program #14	-	VAR ¹⁹	5.8 w-z'c'	4.7 w-z'a'	4.4 u-z'b'	5.0 p	5.0 q	5.0 n
56 2017 Anth Program #15	-	VAR ²⁰	5.4 z'a'-z'e'	4.6 x-z'b'	4.5 u-z'b'	5.1 op	5.0 q	5.0 n
57 RU-21196-17D SC	0.4 fl oz	14	8.3 a-f	7.7 b-i	7.6 a-f	5.3 k-p	6.0 d-o	5.4 i-n
58 RU-21196-17D SC	0.8 fl oz	14	8.4 a-d	7.9 a-g	5.6 o-t	5.1 op	5.8 e-q	5.4 i-n
59 Torque 3.6SC	1.1 fl oz	14	7.6 b-p	6.8 h-o	5.8 o-s	5.7 h-k	6.1 b-l	6.4 d-h
60 RU-21196-17J SC	0.85 fl oz	14	8.0 a-l	7.9 a-g	5.2 r-v	5.4 k-p	5.9 d-p	6.1 e-k
61 Headway 1.38ME	3.0 fl oz	14	5.5 z-z'e'	4.9 u-z'a'	4.7 t-z	5.2 l-p	5.9 d-p	6.3 e-i

(Continued)

Table 1C. Anthracnose control on annual bluegrass putting green turf – Test 1, 2017 (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Turf Quality ^{1,2}			Color ³		
			16 June	14 July	11 Aug.	16 June	14 July	11 Aug.
62 RU-21196-17K SC	0.275 fl oz	14	5.6 y-ze'	7.1 e-m	5.9 m-s	5.2 l-p	5.6 g-q	5.4 i-n
63 RU-21196-17K SC	0.433 fl oz	14	5.4 z'a'-ze'	7.0 f-m	5.9 m-s	5.0 p	6.0 d-o	5.6 h-n
64 RU-21196-17K SC	0.59 fl oz	14	5.7 x-z'd'	7.0 f-m	6.1 l-q	5.1 op	6.6 a-d	5.4 i-n
65 Insignia 2SC	0.7 fl oz	14	4.8 z'c'-z'e'	4.3 z-z'b'	3.4 z'c'-z'e'	5.0 p	5.4 k-q	5.3 l-n
66 RU-21196-17D SC	0.8 fl oz	14	7.8 a-m	8.1 a-e	8.0 a-d	5.2 l-p	6.5 a-e	5.4 i-n
67 Tekken 1.8SC	3.0 fl oz	14	6.8 n-v	5.8 p-w	5.9 m-s	5.3 k-p	6.1 b-l	6.8 b-f
68 2017 Anth Program #16	PBI Gordon	VAR ²¹	6.1 v-za'	5.9 n-u	5.2 r-v	5.0 p	6.0 d-o	6.0 k-l
69 Traction 4SC	1.3 fl oz	14	6.2 t-z	5.7 q-w	4.0 y-z'd'	5.0 p	6.5 a-e	6.9 a-e
70 Traction 4SC	1.3 fl oz	-	-	-	-	-	-	-
/Affirm 11.3WG	0.9 oz	-	-	-	-	-	-	-
+ Spectro 90WG	3.5 oz	ALT ²²	8.3 a-f	6.5 j-r	5.1 r-x	5.1 op	5.3 m-q	5.3 l-n
71 KaPre Averta LC	5.9 fl oz	-	6.4 r-z	4.1 z'ab'	3.0 z'd'e'	5.0 p	5.5 i-q	5.1 mn
/ KaPre Averta LC	2.2 fl oz	28 ²³	-	-	-	-	-	-
72 A14658H SL	6.0 fl oz	-	7.3 g-s	8.5 ab	7.4 c-i	5.2 l-p	5.4 k-q	5.6 h-n
+ Daconil Action 6.11SC	3.5 fl oz	14	-	-	-	-	-	-
Signature Xtra 60WG	4.0 oz	-	-	-	-	-	-	-
+ Daconil Action 6.11SC	3.5 fl oz	14	7.2 i-s	6.7 i-q	8.0 a-d	5.3 k-p	5.0 q	5.5 i-n
74 RU-192514-17A WG	0.3 oz	14	6.5 q-x	7.7 b-i	4.6 u-z	5.2 l-p	5.5 i-q	5.8 g-n
75 RU-1925-17B SC	0.72 fl oz	14	7.1 j-s	7.3 c-l	5.0 s-y	5.3 k-p	5.6 g-q	5.4 i-n
76 RU-192514-17A WG	0.5 oz	14	7.7 a-o	7.8 a-i	5.3 q-u	5.0 p	6.1 b-l	5.6 h-n
77 RU-1925-17B SC	1.19 fl oz	14	8.4 a-d	8.2 a-d	6.6 g-o	5.5 k-o	6.4 a-g	6.0 k-l
78 RU-192514-17C SC	6.0 fl oz	14	6.8 n-v	4.3 z-z'b'	3.7 z-z'e'	5.7 h-k	6.4 a-g	6.0 k-l
79 Chipco 26GT 2SC	4.0 fl oz	14	6.7 p-w	5.0 t-z'a'	3.9 z-z'd'	5.0 p	5.5 i-q	5.1 mn
80 Untreated Check	-	-	4.7 z'd'e'	3.6 z'b'	2.7 z'e'	5.0 p	5.0 q	5.0 n

INT ²⁴	DAT ²⁵	DAT	DAT	DAT	DAT	DAT
14	14	14	32	14	14	14
28	28	28	28	28	28	28

(Continued)

Table 1C. Anthracnose control on annual bluegrass putting green turf – Test 1, 2017 (continued).

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	Color of foliage on a scale of 1 to 10, where 5 = color of healthy untreated turf, less than 5 = progressively more chlorotic/ necrotic turf, and greater than 5 = progressively darker green turf
4	Fungicides were applied on 19 May (all treatments, except treatments 42, 69, and 70), 23 May (treatments 42, 69, and 70), 2 June (14-day treatment), 16 June (14- and 28-day treatments), 30 June (14-day treatment), 14 July (14- and 28-day treatments), 28 July (14-day treatment), 11 August (14- and 28-day treatments), and 25 August (14-day treatment)
5	VAR = Variable spray schedule where treatment 22 (2017 Anth Prog #1) consisted of Oreon 4.27SC (8.0 fl oz) + Harrell's PAR 100LC (0.37 fl oz) applied on 19 May, Chipco Signature Xtra 60WG (4.0 oz) + Daconil Ultrex 82.5WG (3.2 oz) applied 2 June, Velista 50WG (0.3 oz) + Affirm 11.3WG (0.88 oz) applied 16 June, Oreon 4.27SC (4.0 fl oz) + Medallion 1.04SC (1.5 fl oz) + Harrell's PAR 100LC (0.37 fl oz) applied 30 June, Chipco Signature Xtra 60WG (4.0 oz) + Daconil Ultrex 82.5WG (3.2 oz) applied 14 July, Velista 50WG (0.3 oz) + Affirm 11.3WG (0.88 oz) applied 28 July, and Oreon 4.27SC (6.0 fl oz) + Harrell's PAR 100LC (0.37 fl oz) applied 11 August
6	VAR = Variable spray schedule where treatment 34 (2017 Anth Prog #2) consisted of Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied on 19 May, Velista 50WG (0.5 oz) + Appear II 4.1SC (6.0 fl oz) applied 2 June, Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 16 June, Velista 50WG (0.5 oz) + Appear II 4.1SC (6.0 fl oz) applied 30 June, Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 14 July, Velista 50WG (0.5 oz) + Appear II 4.1SC (6.0 fl oz) applied 28 July, and Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 11 August
7	VAR = Variable spray schedule where treatment 35 (2017 Anth Prog #3) consisted of Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied on 19 May, Medallion 1.04SC (1.0 fl oz) + Velista 50WG (0.3 oz) + Appear II 4.1SC (6.0 fl oz) applied 2 June, Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 16 June, Medallion 1.04SC (1.0 fl oz) + Velista 50WG (0.3 oz) + Appear II 4.1SC (6.0 fl oz) applied 30 June, Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 14 July, Medallion 1.04SC (1.0 fl oz) + Velista 50WG (0.3 oz) + Appear II 4.1SC (6.0 fl oz) applied 28 July, and Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 11 August
8	VAR = Variable spray schedule where treatment 36 (2017 Anth Prog #4) consisted of Daconil Action 6.1SC (3.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + Appear II 4.1SC (6.0 fl oz) applied on 19 May, Daconil Action 6.1SC (3.5 fl oz) + Banner MAXX 1.3ME (1.0 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 2 June, Daconil Action 6.1SC (3.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 30 June, Daconil Action 6.1SC (3.5 fl oz) + Banner MAXX 1.3ME (1.0 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 14 July, Daconil Action 6.1SC (3.5 fl oz) + Banner MAXX 1.3ME (1.0 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 28 July, and Daconil Action 6.1SC (3.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 11 August

Table 1C. Anthracnose control on annual bluegrass putting green turf – Test 1, 2017 (continued).

- ⁹ VAR = Variable spray schedule where treatment 37 (2017 Anth Prog #5) consisted of Velista 50WG (0.5oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied on 19 May, Briskway 2.7SC (0.5 fl oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 2 June, Medallion 1.04SC (1.0 fl oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 16 June, Velista 50WG (0.5 oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 30 June, Briskway 2.7SC (0.5 fl oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 14 July, Medallion 1.04SC (1.0 fl oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 28 July, Velista 50WG (0.5 oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 11 August, and Briskway 2.7SC (0.5 fl oz) + Daconil Action 6.1SC (3.5 fl oz) + Appear II 4.1SC (6.0 fl oz) applied 25 August
- ¹⁰ Treatment 41 was irrigated with 2.0 gal of water per plot
- ¹¹ Treatment 43 (2017 Anth Prog #6) consisted of Gary's Green Ultra LC (12.0 fl oz) + PK Plus LC (6.0 fl oz) + Green Pig UV LC (2.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied at a 14-day interval
- ¹² Treatment 44 (2017 Anth Prog #7) consisted of Gary's Green Ultra LC (12.0 fl oz) + PK Plus LC (6.0 fl oz) + Green Pig UV LC (2.5 fl oz) + Medallion 1.04SC (1.5 fl oz) applied at a 14-day interval
- ¹³ Treatment 49 (2017 Anth Prog #8) consisted of Bio Max LC (3.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 Plus LC (3.0 fl oz) + N30 Plus LC (4.0 fl oz) + PAR 100LC (0.37 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied at a 14 day interval
- ¹⁴ Treatment 50 (2017 Anth Prog #9) consisted of Bio Max LC (3.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 Plus LC (3.0 fl oz) + N30 Plus LC (4.0 fl oz) + PAR 100LC (0.37 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + PSX LC (2.0 fl oz) applied at a 14-day interval
- ¹⁵ Treatment 51 (2017 Anth Prog #10) consisted of Bio Max LC (3.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 Plus LC (3.0 fl oz) + N30 Plus LC (4.0 fl oz) + PAR 100LC (0.37 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + PSX LC (4.0 fl oz) applied at a 14-day interval
- ¹⁶ Treatment 52 (2017 Anth Prog #11) consisted of Bio Max LC (3.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 Plus LC (3.0 fl oz) + N30 Plus LC (4.0 fl oz) + PAR 100LC (0.37 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + AAX LC (1.0 fl oz) applied at a 14-day interval
- ¹⁷ Treatment 53 (2017 Anth Prog #12) consisted of Bio Max LC (3.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 Plus LC (3.0 fl oz) + N30 Plus LC (4.0 fl oz) + PAR 100LC (0.37 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + AAX LC (2.0 fl oz) applied at a 14 day interval
- ¹⁸ VAR = Variable spray schedule where treatment 54 (2017 Anth Prog #13) consisted of RU-91420-17A LC (8.5 fl oz) applied on 19 May, Alude 5.2XL (5.5 fl oz) + RU-91420-17A LC (8.5 fl oz) + Torque 3.6SC (1.1 fl oz) applied 2 June, Alude 5.2XL (5.5 fl oz) + RU-91420-17A LC (8.5 fl oz) applied 16 June, Alude 5.2XL (5.5 fl oz) + Velista 50WG (0.3 oz) applied 30 June, Alude 5.2XL (5.5 fl oz) + RU-91420-17A LC (8.5 fl oz) applied 14 July, Alude 5.2XL (5.5 fl oz) + RU-91420-17A LC (8.5 fl oz) + Compass 50WG (0.15 oz) applied 28 July, Alude 5.2XL (5.5 fl oz) + RU-91420-17A LC (8.5 fl oz) applied 11 August, and Alude 5.2XL (5.5 fl oz) + RU-91420-17A LC (8.5 fl oz) + Affirm 11.3WG (0.88 oz) applied 25 August
- ¹⁹ VAR = Variable spray schedule where treatment 55 (2017 Anth Prog #14) consisted of Alude 5.2XL (5.5 fl oz) + Torque 3.6SC (1.1 fl oz) applied on 2 June, Alude 5.2XL (5.5 fl oz) applied 16 June, Alude 5.2XL (5.5 fl oz) + Velista 50WG (0.3 oz) applied 30 June, Alude 5.2XL (5.5 fl oz) applied 14 July, Alude 5.2XL (5.5 fl oz) + Compass 50WG (0.15 oz) applied 28 July, Alude 5.2XL (5.5 fl oz) applied 11 August, and Alude 5.2XL (5.5 fl oz) + Affirm 11.3WG (0.88 oz) applied 25 August

Table 1C. Anthracnose control on annual bluegrass putting green turf – Test 1, 2017 (continued).

²⁰ VAR = Variable spray schedule where treatment 56 (2017 Anth Prog #15) consisted of Daconil Ultrex 82.5WG (1.8 oz) applied on 19 May, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + Torque 3.6SC (1.1 fl oz) applied 2 June, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied 16 June, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + Velista 50WG (0.3 oz) applied 30 June, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied 14 July, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + Compass 50WG (0.15 oz) applied 28 July, Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied 11 August, and Alude 5.2XL (5.5 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) + Affirm 11.3WG (0.88 oz) applied 25 August

²¹ VAR = Variable spray schedule where treatment 68 (2017 Anth Prog #16) consisted of Daconil Ultrex 82.5WG (3.25 oz) applied on 19 May, Autilus 4SC (6.0 fl oz) + Harrell's PAR 100SL (0.18 fl oz) applied 2 June, Tekken 1.8SC (3.0 fl oz) applied 16 June, Medallion 1.04SC (0.9 fl oz) applied 30 June, Tekken 1.8SC (3.0 fl oz) applied 14 July, Affirm 11.3WG (0.9 oz) applied 28 July, Tekken 1.8SC (3.0 fl oz) applied 11 August, and Autilus 4SC (6.0 fl oz) + Harrell's PAR 100SL (0.18 fl oz) applied 25 August

²² ALT = Alteration treatment where treatment 70 consisted of Traction 4SC (1.3 fl oz) applied on 19 May, 16 June, 14 July, and 11 August, and Affirm 11.3WG (0.9 oz) + Spectro 90WG (3.5 oz) applied on 2 June, 30 June, and 28 July

²³ Treatment 71 was initiated with KaPre Averta LC (5.9 fl oz) on 19 May and then applications of KaPre Averta LC (2.2 fl oz) at a 28-day interval starting 2 June

²⁴ INT = Spray interval in days

²⁵ DAT = Days after the last treatment