

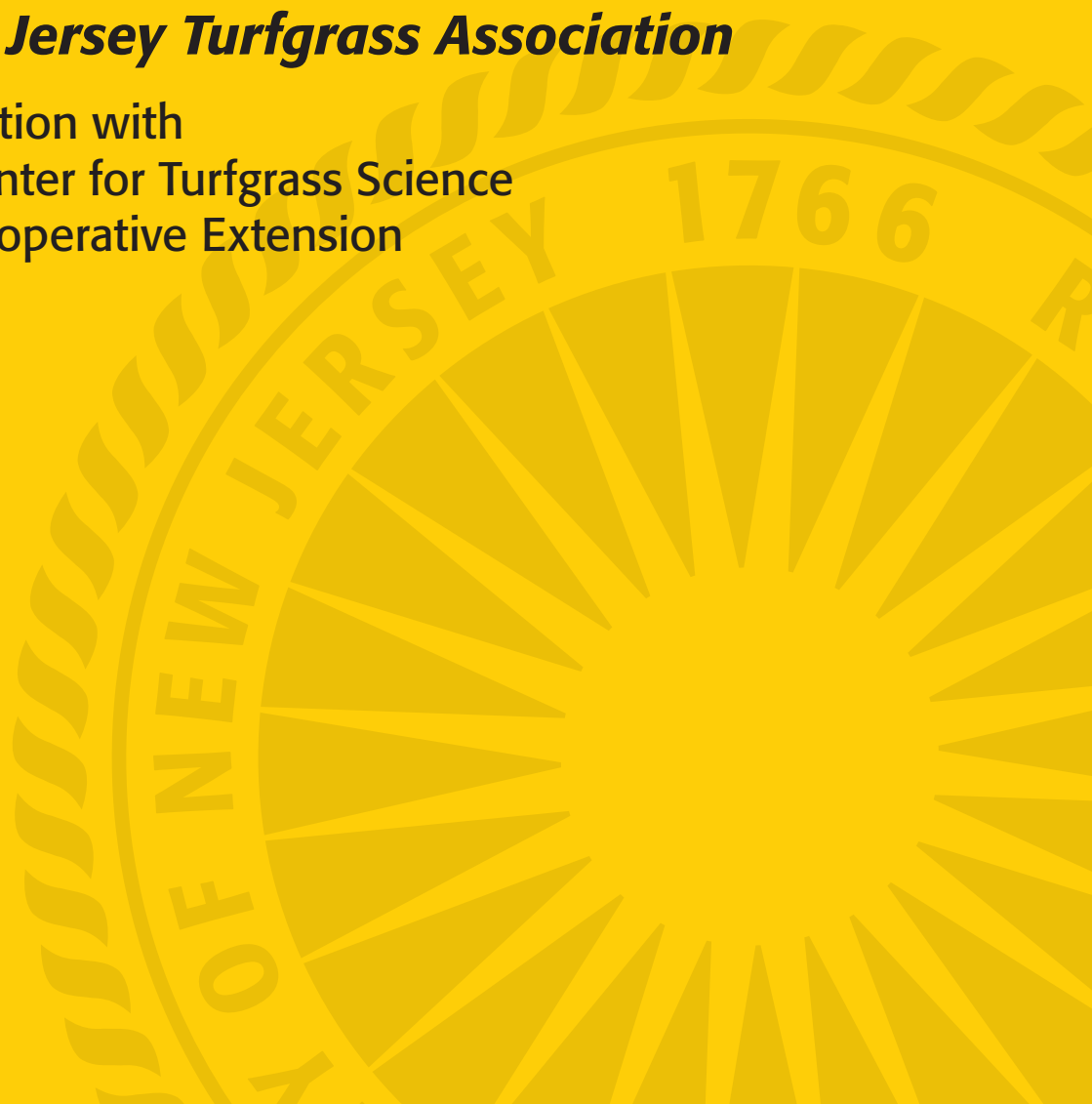
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The Rutgers Turfgrass Proceedings is published yearly by the Rutgers Center for Turfgrass Science, Rutgers Cooperative Extension, and the New Jersey Agricultural Experiment Station, School of Environmental and Biological Sciences, Rutgers, The State 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 2012 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 FUNGICIDES AND BIORATIONAL PRODUCTS ON ANNUAL BLUEGRASS PUTTING GREEN TURF – TEST 1, 2012

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Fungicides were evaluated in 2012 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 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 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 0.110 inches with clippings collected. The site was irrigated as needed to prevent drought stress.

Fertilizer was applied as 30-0-0 (0.4 lb nitrogen (N) per 1000 ft²) on 19 March; 46-0-0 (0.1 lb N per 1000 ft²) on 19 March, 11 and 24 April, 9 and 22 May, 5, 18, and 25 June, 2, 16, and 29 July, and 13 and 28 August; 13.7-0-46 (0.1 lb N per 1000 ft²) on 11 June; 0-30-0 (0.1 lb N per 1000 ft²) on 11 and 28 June, 24 July, 6 and 23 August, and 6 September; 0-0-62 (0.05 lb N per 1000 ft²) on 1, 15, and 24 July, 8 and 28 August, and 9 September; and Microgreen (micronutrient mixture; 0.4 fl oz N per 1000 ft²) on 25 June, 5 July, 2 August, and 1 September. 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 15 March and 6 and 19 April to suppress seed heads, and Primo MAXX 1ME (0.125 fl oz per 1000 ft²) was continued every 14 days from 5 May to 5 October.

Dollar spot (caused by *Sclerotinia homoeocarpa*) was suppressed with Emerald 70WG (0.18 oz per 1000 ft²) on 21 April, 23 May, 22 June, 22 July, and 15 August and Curalan 50EG (1.0 oz per 1000 ft²) on 12 May, 10 June, 9 July, 3 August, and 1 September. Brown ring patch (incited by *Rhizoctonia circinata*) was controlled with ProStar 70W (3.0 oz per 1000 ft²) on 21 and 29 March, 9 May, and 2 June and Heritage TL 0.8ME (2.0 fl oz per 1000 ft²) on 21 April and 19 May. Brown patch (caused by *Rhizoctonia solani*) was prevented with ProStar 70W (3.0 oz per 1000 ft²) on 29 June, 26 July, and 24 August, and summer patch (*Magnaporthe poae*) was suppressed with Heritage TL 0.8ME (2.0 fl oz per 1000 ft²) on 15 June, 15 July, and 11 August. Previous research by the authors has shown that Curalan 50EG, Heritage TL 0.8ME, ProStar 70W, 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 (0.184 fl oz per acre) on 18 March and Provant 30WDG (0.275 fl oz per 1000 ft²) on 23 June. 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 8003E nozzles. Treatments (trt) were initiated on 17 May, prior to the development of anthracnose. Fungicides were reapplied at the appropriate intervals until 23 August as indicated in Tables 1A to 1D. Turf was visually evaluated for percent turf area infested with anthracnose on 11, 18, and 30 June, 10, 20, and 30 July, 10, 20, and 30 August, and 9 September. Phytotoxicity was determined on 14 June and 14 July using a 1 to 5 scale, where 1 = no foliar discoloration, 2 = slight chlorosis or necrosis, 3 = moderate chlorosis or necrosis, 4 =

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severe chlorosis or necrosis, and 5 = all turf dead. Turf quality was evaluated on 14 June, 14 July, 11 August, and 9 September using a 1 to 9 scale, where 9 = best turf quality and 5 = acceptable quality. Color of foliage was visually estimated on 14 June, 14 July, and 11 August using a 1 to 5 scale, where 1 = very chlorotic turf, 2 = slight reduction in green color, 3 = normal color of untreated turf, 4 = slight increase in dark green color, and 5 = very dark green color. Percent soil surface covered with blue-green algae (cyanobacteria) was assessed on 20 July. Data were subjected to analysis of variance and means were separated by Waller-Duncan *k*-ratio *t*-test (*k* = 100).

Anthrachnose developed on 5 June as a natural infection and became uniformly distributed throughout the green by 11 June. Disease severity peaked on 10 August (76% turfgrass area infested on non-fungicide treated turf). Due to the severity of this natural epidemic, only 44% of the treatments provided season-long control of anthracnose (i.e., less than 15% turf area infested from 17 May through 9 September; Tables 1A and 1B). These treatments included products containing chlorothalonil, phosphonates, and/or DMI fungicides [i.e., Chipco Signature 80WG + Daconil Ultrex 82.5WDG (trt 1), Tourney 50WG (trt 7), Triton 1.67SC + Compass 50WG at 0.82 fl oz + 0.033 oz (trt 9) and 1.63 fl oz + 0.066 oz (trt 10), respectively, Banner MAXX 1.3ME + Daconil Ultrex 82.5WDG (trt 11), Velista 50WDG (trts 40, 41), Velista 50WDG + Daconil Ultrex 82.5WDG (trt 42), Velista 50WDG + Chipco Signature 80WG (trt 43), DuPont and Syngenta 2012 Anth Programs #1 (trt 44) and #2 (trt 50), QP Enclave 5.3F + Foursome 100SL (trts 67, 68), QP Enclave 5.3F + QP Fosetyl-AI 80WG + Foursome 100SL every 14 days (trt 69), Daconil Ultrex 82.5WDG (trt 73), and the experimental fungicides HM0812 1.66SC @ 2.4 fl oz (trt 6), RU192514-12ZI SC alternated with RU192514-12A SC (trt 13), RU192514-12M SC (trt 16), RU192514-12ZJ SC (trt 17), RU192514-12ZI SC + RU192514-12A SC (trts 18, 19), RU192514-12ZL SE (trt 20), RU192514-12A SC (trt 23), RU192514-12ZP SC + RU192514-12ZQ SC (trts 26, 27), RU192514-12ZF SC (trt 29), RU192514-12Q SC (trt 30), RU192514-12ZR WG (trt 32), RU192514-12Q SC + RU192514-12A SC (trt 33), RU192514-12Q SC + RU192514-12J SC (trt 34), RU192514-12S SC + RU192514-12A SC (trt 35), RU192514-12S SC + RU192514-12J SC (trt 36), RU192514-12ZR WG + RU192514-12A SC (trt 37), RU192514-12 ZR WG + RU192514-12J SC (trt 38), and HM 1106 4.08SC @ 5.0 fl oz (trt 58).]

Several other products and product combinations adequately suppressed anthracnose throughout the treatment period (17 May to 23 August; see 30 August evaluation date, Table 1B) [i.e., RU192514-12ZI SC alternated with RU192514-12A SC (trt 12), RU192514-12Q SC (trt 28), RU192514-12S SC (trt 31), RU192514-12J SC + RU192514-12ZK FS (trt 61), RU192514-12J SC + RU192514-12ZK FS + RU192514-12ZN WG (trt 62), and QP Enclave 5.3F + QP Fosetyl-AI 80WG + Foursome 100SL every 21 days (trt 70) with only a slight reduction in control on the last evaluation date (9 September; Table 1B)]. Fungicides in the Qol (e.g., trts 45, 46), phenylpyrrole (e.g., trt 74), and antibiotic [e.g., polyoxin-D (trt 75)] groups did not adequately control anthracnose during the severe epidemic in 2012 (Tables 1A and 1B).

Several treatments resulted in visually darker green foliage (statistically greater than the untreated controls; trts 77, 78) on at least two of the three evaluation dates [i.e., HM0812 1.66SC @ 2.4 fl oz (trt 6), Tourney 50WG (trt 7), Triton 1.67SC + Compass 50WG (trts 8 to 10), RU192514-12M SC (trt 16), RU192514-12ZJ SC (trt 17), Honor Intrinsic 28WG + PAR LF (trt 48), Syngenta 2012 Anth Program #2 (trt 50), QP Enclave 5.3F + Foursome 100SL (trts 67, 68), QP Enclave 5.3F + QP Fosetyl-AI 80WG + Foursome 100SL (trts 69, 70)], presumably because they contained either a pigment, a plant growth regulator, and/or a fertilizer (Table 1C, D). Slight phytotoxicity was observed in June and July (Table 1C) HM0812 1.66SC @ 2.4 fl oz (trt 6), Triton 1.67SC + Compass 50WG @ 1.63 fl oz + 0.066 oz, respectively (trt 10), RU192514-12ZJ SC (trt 17), RU192514-12ZL SE (trt 20), Tartan 2.4SC (trt 49), and HM 1106 4.08SC @ 4.0 (trt 57) and 5.0 fl oz (trt 58).

Turf quality evaluated on 14 June, 14 July, 11 August, and 9 Sept was closely associated with the degree of anthracnose control; treatments affording good protection from this disease had good turf quality (Tables 1C and 1D). The following treatments has less than acceptable turf quality (less than 5.0 on a scale of 1 to 9, where 9 = best quality) on at least 50% of the evaluation dates: Triton 1.67SC + Compass 50WG @ 0.41 fl oz + 0.0164 oz (trt 8), RU192514-12ZK FS @ 0.22 fl oz (trt 14), RU192514-12ZH ME (trt 24), Insignia Intrinsic 2.1SC (trt 45), Insignia Intrinsic 2.1SC + PAR LF (trt 46), Honor Intrinsic 28WG (trt 47), Honor Intrinsic 28WG + PAR LF (trt 48), Tartan 2.4SC (trt 49), HM 1106 4.08SC @ 1.0 (trt

54), RU192514-12J SC (trt 59), RU192514-12ZO SC (trt 65), K1 (trt 71), and Chipco Signature (trt 72).

Although no treatments reduced algae compared to the untreated control (trt 78), several increased the percentage of the soil surface covered with blue green algae apparently because these products had reduced stand density (i.e., trts 2 to 7, 10, 16, 17, 21, 26, 27, 30 to 32, 34, 36, 38, 39, 41, 45 to 49, 61, 75, and 76; Table 1D).

Table 1A. Anthracnose control with fungicides and biorational products on annual bluegrass putting green turf, Test 1: Rutgers University, 2012.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested (%) per Plot ¹					
			11 June	18 June	30 June	10 July	20 July	30 July
1 Chipco Signature 80WG	4.0 oz	–						
+Daconil Ultrex 82.5WDG.....	3.2 oz	14	5.5 e-l	6.0 e-k	8.8 i-r	13.3 h-q	8.8 i-s	9.8 j-v
2 Headway 1.39EC.....	1.5 fl oz	14	7.3 b-l	10.8 b-k	17.0 d-j	17.5 d-l	8.8 i-s	15.5 h-j
3 HM0812 1.66SC	1.2 fl oz	14	11.5 b-h	11.0 b-k	16.8 d-k	13.3 h-q	7.0 l-u	12.5 j-n
4 HM0812 1.66SC	1.5 fl oz	14	7.3 b-l	7.3 d-k	12.8 e-q	10.5 k-s	2.5 o-u	10.5 j-t
5 HM0812 1.66SC	2.0 fl oz	14	7.3 b-l	9.0 d-k	15.5 d-l	9.8 k-s	3.8 n-u	9.3 j-x
6 HM0812 1.66SC	2.4 fl oz	14	6.8 b-l	4.8 g-k	9.8 g-r	7.8 m-s	2.3 p-u	4.8 o-y
7 Tourney 50WG.....	0.28 oz	14	5.3 e-l	6.8 d-k	5.5 l-r	2.8 rs	1.3 s-u	2.5 v-y
8 Triton 1.67SC.....	0.41 fl oz	–						
+ Compass 50WG.....	0.0164 oz	14	7.0 b-l	13.5 b-i	17.0 d-j	22.5 c-h	7.5 k-u	40.5 e
9 Triton 1.67SC.....	0.82 fl oz	–						
+ Compass 50WG.....	0.033 oz	14	4.0 h-l	5.0 g-k	2.8 p-r	5.0 o-s	2.0 q-u	5.3 n-y
10 Triton 1.67SC.....	1.63 fl oz	–						
+ Compass 50WG.....	0.066 oz	14	2.3 kl	1.8 k	1.5 r	4.3 q-s	1.8 r-u	0.5 y
11 Banner MAXX 1.3ME.....	0.94 fl oz	–						
+ Daconil Ultrex 82.5WDG.....	3.77 oz	14	4.0 h-l	5.3 f-k	6.3 j-r	6.0 n-s	3.3 o-u	3.3 s-y
12 RU192514–12ZI SC.....	0.5 fl oz	–						
/ RU192514–12A SC.....	3.5 fl oz	14	6.0 d-l	10.3 b-k	12.0 f-r	14.0 g-p	8.5 j-t	7.0 l-y
13 RU192514–12ZI SC.....	0.62 fl oz	–						
/ RU192514–12A SC.....	3.5 fl oz	14	4.8 f-l	10.8 b-k	10.5 f-r	5.8 n-s	7.3 k-u	7.0 l-y
14 RU192514–12ZK FS.....	0.22 fl oz	14	10.5 b-j	13.3 b-i	11.0 f-r	17.8 d-l	5.5 n-u	10.3 j-u
15 RU192514–12ZK FS.....	0.44 fl oz	14	8.8 b-l	12.0 b-k	9.3 h-r	14.3 g-o	3.3 o-u	7.8 k-y
16 RU192514–12M SC.....	1.0 fl oz	14	5.8 e-l	7.8 d-k	5.8 l-r	9.3 k-s	0.8 u	2.5 v-y
17 RU192514–12ZJ SC.....	0.6 fl oz	14	2.0 kl	6.8 d-k	4.0 n-r	4.8 p-s	1.8 r-u	4.8 o-y
18 RU192514–12ZI SC.....	0.5 fl oz	–						
+ RU192514–12A SC	3.5 fl oz	14	6.5 c-l	8.8 d-k	12.5 f-q	12.0 j-r	10.0 i-o	11.5 j-q
19 RU192514–12ZI SC.....	0.62 fl oz	–						
+ RU192514–12A SC	3.5 fl oz	14	4.0 h-l	8.3 d-k	9.0 h-r	10.5 k-s	6.3 n-u	5.5 n-y
20 RU192514–12ZL SE.....	3.0 fl oz	14	6.3 d-l	12.3 b-j	11.8 f-r	15.0 f-n	7.5 k-u	5.3 n-y
21 RU192514–12ZM SC.....	0.27 fl oz	14	2.5 j-l	4.5 g-k	7.5 i-r	8.8 k-s	2.0 q-u	4.3 p-y

(Continued)

Table 1A (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested (%) per Plot ¹					
			11 June	18 June	30 June	10 July	20 July	30 July
22 RU192514-12J SC.....0.5 fl oz		—						
+ RU192514-12B SL.....6.0 fl oz		14	6.0 d-l	9.3 d-k	10.5 f-r	20.5 c-j	14.8 g-k	21.0 g-i
23 RU192514-12A SC.....3.5 fl oz		14	5.0 e-l	13.5 b-i	8.8 i-r	10.3 k-s	6.5 m-u	6.3 m-y
24 RU192514-12ZH ME.....1.0 fl oz		14	7.3 b-l	16.3 b-e	17.5 c-i	23.0 c-g	27.0 de	41.0 e
25 RU192514-12ZP SC0.31 fl oz		—						
+ RU192514-12ZQ SC.....1.28 fl oz		14 ³	7.8 b-l	15.5 b-f	11.3 f-r	13.8 g-p	3.3 o-u	4.0 q-y
26 RU192514-12ZP SC0.63 fl oz		—						
+ RU192514-12ZQ SC.....1.28 fl oz		14 ³	6.3 d-l	9.3 d-k	3.5 o-r	5.5 o-s	1.0 tu	3.0 t-y
27 RU192514-12ZP SC1.26 fl oz		—						
+ RU192514-12ZQ SC.....1.28 fl oz		14 ³	5.8 e-l	5.5 f-k	5.0 l-r	7.0 n-s	0.8 u	2.0 w-y
28 RU192514-12Q SC.....0.24 fl oz		14	5.0 e-l	8.5 d-k	4.3 m-r	6.0 n-s	1.3 s-u	1.5 y
29 RU192514-12ZF SC4.5 fl oz		14	1.8 l	4.0 h-k	1.3 r	2.0 s	2.0 q-u	5.3 n-y
30 RU192514-12Q SC.....0.24 fl oz		14	5.5 e-l	10.0 b-k	4.5 m-r	5.0 o-s	2.5 o-u	1.8 xy
31 RU192514-12S SC1.0 fl oz		14	3.3 i-l	5.0 g-k	5.3 l-r	7.5 n-s	2.0 q-u	3.8 r-y
32 RU192514-12ZR WG.....0.164 oz		14	9.0 b-l	10.3 b-k	9.8 g-r	6.8 n-s	2.3 p-u	2.3 v-y
33 RU192514-12Q SC.....0.24 fl oz		—						
+ RU192514-12A SC2.0 fl oz		14	5.3 e-l	10.0 b-k	10.5 f-r	10.8 k-s	5.5 n-u	4.8 o-y
34 RU192514-12Q SC.....0.24 fl oz		—						
+ RU192514-12J SC.....0.5 fl oz		14	9.5 b-l	17.0 b-d	15.0 d-m	12.8 i-q	6.5 m-u	7.3 l-y
35 RU192514-12S SC1.0 fl oz		—						
+ RU192514-12A SC2.0 fl oz		14	8.3 b-l	5.8 f-k	7.0 i-r	11.3 j-s	7.3 k-u	7.5 k-y
36 RU192514-12S SC1.0 fl oz		—						
+ RU192514-12J SC.....0.5 fl oz		14	5.5 e-l	7.8 d-k	9.3 h-r	11.0 k-s	5.8 n-u	3.3 s-y
37 RU192514-12ZR WG.....0.164 oz		—						
+ RU192514-12A SC2.0 fl oz		14	7.0 b-l	11.5 b-k	9.0 h-r	9.8 k-s	9.0 i-r	11.5 j-q
38 RU192514-12ZR WG.....0.164 oz		—						
+ RU192514-12J SC.....0.5 fl oz		14	9.8 b-l	11.0 b-k	13.8 e-o	10.5 k-s	4.8 n-u	5.3 n-y
39 RU192514-12ZI SC.....0.62 fl oz		14	9.8 b-l	14.0 b-h	11.8 f-r	12.8 i-q	4.3 n-u	14.3 i-l
40 Velista 50WDG.....0.3 oz		14	10.0 b-k	13.5 b-i	12.5 f-q	12.3 j-q	4.0 n-u	6.5 m-y
41 Velista 50WDG.....0.5 oz		14	7.3 b-l	8.8 d-k	9.3 h-r	11.3 j-s	2.5 o-u	4.8 o-y

(Continued)

Table 1A (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested (%) per Plot ¹					
			11 June	18 June	30 June	10 July	20 July	30 July
42 Velista 50WDG..... 0.3 oz	—	—						
+ Daconil Ultrex 82.5WDG..... 3.25 oz	14	—	2.0 kl	2.8 jk	2.0 qr	6.3 n-s	2.3 p-u	3.3 s-y
43 Velista 50WDG..... 0.3 oz	—	—						
+ Chipco Signature 80WG 4.0 oz	14	—	4.0 h-l	4.8 g-k	6.5 j-r	8.5 l-s	4.3 n-u	4.5 o-y
44 2012 Anth Program # 1 DuPont	VAR-14 ⁴	—	4.0 h-l	4.0 h-k	5.0 l-r	7.0 n-s	5.8 n-u	4.3 p-y
45 Insignia Intrinsic 2.1SC0.7 fl oz	14	—	12.3 b-g	16.8 b-d	29.5 b	38.0 b	31.0 d	58.3 b
46 Insignia Intrinsic 2.1SC0.7 fl oz	—	—						
+ PAR LF.....0.37 fl oz	14	—	6.5 c-l	9.5 c-k	10.3 f-r	21.8 c-i	29.8 d	55.8 bc
47 Honor Intrinsic 28WG..... 1.1 oz	14	—	12.8 b-f	14.8 b-g	20.3 b-g	52.5 a	49.0 c	71.8 a
48 Honor Intrinsic 28WG..... 1.1 oz	—	—						
+ PAR LF.....0.37 fl oz	14	—	8.5 b-l	10.8 b-k	17.3 c-j	27.8 c	23.8 d-f	50.0 cd
49 Tartan 2.4SC2.0 fl oz	14	—	7.8 b-l	5.3 f-k	10.0 g-r	15.0 f-n	11.3 h-n	44.5 de
50 2012 Anth Program # 2 Syngenta	VAR-14 ⁵	—	9.8 b-l	9.3 d-k	12.8 e-q	10.8 k-s	6.0 n-u	5.0 n-y
51 Daconil Action 6.1SC3.0 fl oz	—	—						
+ Briskway 2.7SC.....0.5 fl oz	14	—	11.0 b-i	20.0 b	13.0 e-p	11.3 j-s	9.5 i-q	9.5 j-w
52 Harsco's Ca ₂ SiO ₄ 25.0 lb ⁶	—	—	5.5 e-l	10.8 b-k	8.0 i-r	18.0 d-k	14.0 g-m	25.0 fg
53 Harsco's Ca ₂ SiO ₄ 25.0 lb ⁶	—	—						
/ Banner MAXX 1.3ME.....1.0 fl oz	CUR-14 ⁷	—	9.8 b-l	14.3 b-h	9.5 g-r	7.0 n-s	9.8 i-p	15.8 h-j
54 HM 1106 4.08SC.....1.0 fl oz	14	—	14.8 b	14.5 b-g	21.0 b-f	22.5 c-h	21.3 e-g	31.8 f
55 HM 1106 4.08SC.....2.0 fl oz	14	—	14.5 bc	13.8 b-h	23.5 b-e	25.3 c-e	16.3 f-i	15.0 h-k
56 HM 1106 4.08SC.....3.0 fl oz	14	—	9.8 b-l	7.0 d-k	25.8 b-d	23.8 c-f	15.8 g-j	13.8 i-m
57 HM 1106 4.08SC.....4.0 fl oz	14	—	4.5 g-l	4.8 g-k	14.8 e-n	15.0 f-n	6.5 m-u	7.8 k-y
58 HM 1106 4.08SC.....5.0 fl oz	14	—	4.8 f-l	5.0 g-k	10.3 f-r	12.0 j-r	4.8 n-u	6.8 l-y
59 RU 192514-12J SC0.5 fl oz	14	—	7.8 b-l	7.5 d-k	12.0 f-r	13.0 i-q	7.3 k-u	11.8 j-p
60 RU 192514-12J SC0.5 fl oz	—	—						
+ RU 192514-12ZN WG..... 0.0079 oz	14	—	6.3 d-l	7.8 d-k	7.3 i-r	11.8 j-r	1.8 r-u	7.8 k-y
61 RU 192514-12J SC0.5 fl oz	—	—						
+ RU 192514-12ZK FS0.218 fl oz	14	—	3.0 i-l	5.0 g-k	6.0 k-r	7.8 m-s	2.0 q-u	2.0 w-y
62 RU 192514-12J SC0.5 fl oz	—	—						
+ RU 192514-12ZK FS0.218 fl oz	—	—						
+ RU 192514-12ZN WG..... 0.0079 oz	14	—	6.0 d-l	7.3 d-k	9.5 g-r	12.5 i-q	8.3 j-u	3.8 r-y

(Continued)

Table 1A (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested (%) per Plot ¹					
			11 June	18 June	30 June	10 July	20 July	30 July
63 RU 192514–12J SC.....0.5 fl oz	–	–						
+ RU 192514–12Q SC.....0.236 fl oz	14	14	9.3 b-l	11.8 b-k	20.3 b-g	23.0 c-g	18.0 f-h	10.8 j-s
64 RU 192514–12J SC.....0.5 fl oz	–	–						
+ RU 192514–12Q SC.....0.236 fl oz	–	–						
+ RU 192514–12ZN WG..... 0.0079 oz	14	14	7.3 b-l	10.3 b-k	19.8 b-h	26.5 cd	14.0 g-m	9.8 j-v
65 RU 192514–12ZO SC.....0.5 fl oz	14	14	5.5 e-l	7.8 d-k	15.5 d-l	13.3 h-q	11.0 h-n	11.0 j-r
66 RU 192514–12ZO SC.....0.5 fl oz	–	–						
+ RU 192514–12ZN WG..... 0.0079 oz	14	14	5.0 e-l	5.0 g-k	11.5 f-r	13.3 h-q	4.8 n-u	12.0 j-o
67 QP Enclave 5.3F.....3.0 fl oz	–	–						
+ Foursome 100SL0.4 fl oz	14	14	6.0 d-l	8.0 d-k	4.5 m-r	11.5 j-r	2.8 o-u	2.8 u-y
68 QP Enclave 5.3F.....4.0 fl oz	–	–						
+ Foursome 100SL0.4 fl oz	21	21	2.0 kl	3.3 i-k	4.3 m-r	7.8 m-s	3.8 n-u	2.8 u-y
69 QP Enclave 5.3F.....3.0 fl oz	–	–						
+ QP Fosetyl-AI 80WG..... 4.0 oz	–	–						
+ Foursome 100SL0.4 fl oz	14	14	2.0 kl	3.3 i-k	3.8 o-r	10.3 k-s	1.5 r-u	1.5 y
70 QP Enclave 5.3F.....4.0 fl oz	–	–						
+ QP Fosetyl-AI 80WG..... 4.0 oz	–	–						
+ Foursome 100SL0.4 fl oz	21	21	3.0 i-l	2.3 jk	3.5 o-r	9.3 k-s	7.8 k-u	5.3 n-y
71 K1.....3.0 fl oz	14	14	6.3 d-l	8.3 d-k	28.0 bc	43.5 ab	55.8 bc	56.3 bc
72 Chipco Signature 80WG 4.0 oz	14	14	6.3 d-l	8.0 d-k	19.8 b-h	43.8 ab	60.5 ab	54.8 bc
73 Daconil Ultrex 82.5WDG..... 3.2 oz	14	14	9.0 b-l	13.5 b-i	12.5 f-q	7.8 m-s	6.0 n-u	5.3 n-y
74 Medallion 50WP 0.33 oz	14	14	14.0 b-d	19.8 bc	28.0 bc	17.8 d-l	9.5 i-q	9.8 j-v
75 Affirm 11.3WG..... 0.9 oz	14	14	11.0 b-i	9.8 b-k	9.5 g-r	11.0 k-s	5.8 n-u	9.5 j-w
76 Banner Maxx 1.3ME 1 fl oz	14	14	13.0 b-e	11.3 b-k	8.5 i-r	17.0 e-m	14.3 g-l	22.3 gh
77 Untreated check..... –	–	–	35.5 a	43.8 a	46.3 a	50.0 a	63.8 a	75.5 a
78 Untreated check..... –	–	–	35.0 a	40.8 a	49.8 a	50.0 a	65.8 a	74.5 a
		INT ⁸	DAT ⁹	DAT	DAT	DAT	DAT	DAT
		14	8	4	2	12	1	4
		21	1	11	2	12	22	11

(Continued)

Table 1A (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 17 May (all treatments; except treatment 53B), 31 May (14-day treatment), 7 June (21-day treatment), 14 June (14-day treatment; initiated treatment 53B), 28 June (14- and 21-day treatments), 12 July (14-day treatment), 19 July (21-day treatment), 26 July (14-day treatment), 9 August (14- and 21-day treatments), and 23 August (14-day treatment).
 - ³ Treatments 25, 26, and 27 were only applied from 17 May to 26 July.
 - ⁴ VAR = Variable spray schedule, where treatment 44 (DuPont Anth Program #1) consisted of Chipco Signature 80WG (4.0 oz) + Banner MAXX 1.3ME (1.0 fl oz) applied on 16 May; Velista 50WDG (0.5 oz) + Chipco Signature 80WG (4.0 oz) on 30 May; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 13 June; Velista 50WDG (0.5 oz) + Chipco Signature 80WG (4.0 oz) on 27 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 11 July; Velista 50WDG (0.5 oz) + Chipco Signature 80WG (4.0 oz) on 25 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 8 August; and Velista 50WDG (0.5 oz) + Chipco Signature 80WG (4.0 oz) on 22 August.
 - ⁵ VAR = Variable spray schedule, where treatment 50 (Syngenta Anth Program #2) consisted of Headway 1.39ME (2.25 fl oz) + Daconil Action 6.1SC (3.0 fl oz) + Appear 4.1SC (4.0 fl oz) applied on 16 May; Daconil Action 6.1SC (3.0 fl oz) + Medallion 50WP (0.25 oz) + Appear 4.1SC (4.0 fl oz) on 30 May; Headway 1.39ME (2.25 fl oz) + Secure 4.17SC (0.5 fl oz) + Daconil Action 6.1SC (3.0 fl oz) + Appear 4.1SC (4.0 fl oz) on 13 June; Daconil Action 6.1SC (3.0 fl oz) + Medallion 50WP (0.25 oz) + Appear 4.1SC (4.0 fl oz) on 27 June; Secure 4.17SC (0.5 fl oz) + Daconil Action 6.1SC (3.0 fl oz) + Briskway 2.7SC (0.5 fl oz) + Appear 4.1SC (4.0 fl oz) on 11 July; Daconil Action 6.1SC (3.0 fl oz) + Briskway 2.7SC (0.5 fl oz) + Appear 4.1SC (4.0 fl oz) on 25 July; Daconil Action 6.1SC (3.0 fl oz) + Secure 4.17SC (0.5 fl oz) + Briskway 2.7SC (0.5 fl oz) + Appear 4.1SC (4.0 fl oz) on 8 August; and Daconil Action 6.1SC (3.0 fl oz) + Medallion 50WP (0.25 oz) + Appear 4.1SC (4.0 fl oz) on 22 August.
 - ⁶ Treatments 52 and 53 were applied to dry foliage and then immediately irrigated with 1.0 gal of water per plot on 17 May. Treatment 52 was not reapplied.
 - ⁷ Treatment 53 consisted of Harsco's Ca₂SiO₄ (25.0 lb) on 17 May and then Banner MAXX 1.3ME (1.0 fl oz) every 14 days from 14 June through 30 August.
 - ⁸ Spray interval in days.
 - ⁹ Days after the last treatment.

Table 1B. Anthracnose control with fungicides and biorational products on annual bluegrass putting green turf, Test 1: Rutgers University, 2012.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested (%) per Plot ¹			
			10 Aug.	20 Aug.	30 Aug.	9 Sept.
1 Chipco Signature 80WG	4.0 oz	–				
+Daconil Ultrex 82.5WDG.....	3.2 oz	14	6.3 k-r	8.0 o-v	8.0 o-t	8.0 m-t
2 Headway 1.39EC.....	1.5 fl oz	14	8.8 k-o	18.3 j-m	14.0 k-p	8.8 l-t
3 HM0812 1.66SC	1.2 fl oz	14	12.3 i-k	18.8 j-m	18.0 k-m	19.0 i-l
4 HM0812 1.66SC	1.5 fl oz	14	7.3 k-r	16.8 k-o	8.3 n-t	13.0 l-r
5 HM0812 1.66SC	2.0 fl oz	14	5.0 l-r	13.0 l-r	7.0 o-t	10.5 l-t
6 HM0812 1.66SC	2.4 fl oz	14	2.3 n-r	8.5 o-v	4.3 q-t	5.0 n-t
7 Tourney 50WG.....	0.28 oz	14	1.5 p-r	5.8 q-v	4.5 q-t	4.0 o-t
8 Triton 1.67SC.....	0.41 fl oz	–				
+ Compass 50WG.....	0.0164 oz	14	37.5 h	42.8 d-f	39.0 fg	37.0 ef
9 Triton 1.67SC.....	0.82 fl oz	–				
+ Compass 50WG.....	0.033 oz	14	2.3 n-r	6.3 p-v	2.5 r-t	10.3 l-t
10 Triton 1.67SC.....	1.63 fl oz	–				
+ Compass 50WG.....	0.066 oz	14	1.3 p-r	2.8 v	0.0 t	2.8 r-t
11 Banner MAXX 1.3ME.....	0.94 fl oz	–				
+ Daconil Ultrex 82.5WDG.....	3.77 oz	14	2.5 n-r	2.5 v	2.3 st	1.8 t
12 RU192514-12ZI SC	0.5 fl oz	–				
/ RU192514-12A SC	3.5 fl oz	14	4.5 l-r	7.8 o-v	7.8 o-t	13.5 k-q
13 RU192514-12ZI SC	0.62 fl oz	–				
/ RU192514-12A SC	3.5 fl oz	14	1.8 o-r	5.0 q-v	6.0 p-t	9.8 l-t
14 RU192514-12ZK FS	0.22 fl oz	14	8.0 k-p	37.8 f-h	32.0 gh	38.5 ef
15 RU192514-12ZK FS	0.44 fl oz	14	5.0 l-r	5.8 q-v	11.5 m-r	7.0 n-t
16 RU192514-12M SC.....	1.0 fl oz	14	0.8 qr	7.3 p-v	3.3 r-t	8.8 l-t
17 RU192514-12ZJ SC.....	0.6 fl oz	14	2.3 n-r	6.5 p-v	2.3 st	8.8 l-t
18 RU192514-12ZI SC	0.5 fl oz	–				
+ RU192514-12A SC	3.5 fl oz	14	6.3 k-r	12.3 l-t	5.0 p-t	6.3 n-t
19 RU192514-12ZI SC	0.62 fl oz	–				
+ RU192514-12A SC	3.5 fl oz	14	4.8 l-r	6.3 p-v	4.3 q-t	4.3 n-t
20 RU192514-12ZL SE.....	3.0 fl oz	14	6.0 k-r	7.5 p-v	5.3 p-t	9.8 l-t
21 RU192514-12ZM SC	0.27 fl oz	14	10.5 j-m	20.3 j-l	22.5 i-k	29.8 f-h

(Continued)

Table 1B (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested (%) per Plot ¹			
			10 Aug.	20 Aug.	30 Aug.	9 Sept.
22 RU192514-12J SC.....0.5 fl oz		—				
+ RU192514-12B SL.....6.0 fl oz		14	10.8 j-l	12.3 l-t	8.8 n-t	18.0 j-m
23 RU192514-12A SC.....3.5 fl oz		14	6.0 k-r	10.5 m-v	6.0 p-t	3.8 p-t
24 RU192514-12ZH ME.....1.0 fl oz		14	35.3 h	51.3 d	48.5 de	54.5 cd
25 RU192514-12ZP SC0.31 fl oz		—				
+ RU192514-12ZQ SC.....1.28 fl oz		14 ³	5.8 k-r	7.8 o-v	6.3 p-t	12.5 l-s
26 RU192514-12ZP SC0.63 fl oz		—				
+ RU192514-12ZQ SC.....1.28 fl oz		14 ³	0.8 qr	6.0 q-v	4.5 q-t	6.8 n-t
27 RU192514-12ZP SC1.26 fl oz		—				
+ RU192514-12ZQ SC.....1.28 fl oz		14 ³	2.3 n-r	3.8 s-v	3.0 r-t	7.0 n-t
28 RU192514-12Q SC0.24 fl oz		14	4.3 l-r	4.8 q-v	10.0 m-s	13.8 k-q
29 RU192514-12ZF SC4.5 fl oz		14	2.8 n-r	3.3 t-v	3.5 r-t	3.5 q-t
30 RU192514-12Q SC0.24 fl oz		14	2.3 n-r	2.3 v	1.5 st	8.8 l-t
31 RU192514-12S SC1.0 fl oz		14	4.8 l-r	3.0 uv	7.8 o-t	13.0 l-r
32 RU192514-12ZR WG.....0.164 oz		14	1.0 p-r	4.8 q-v	8.3 n-t	10.3 l-t
33 RU192514-12Q SC0.24 fl oz		—				
+ RU192514-12A SC2.0 fl oz		14	4.5 l-r	7.8 o-v	3.5 r-t	9.5 l-t
34 RU192514-12Q SC0.24 fl oz		—				
+ RU192514-12J SC.....0.5 fl oz		14	2.0 n-r	6.0 q-v	2.0 st	7.3 n-t
35 RU192514-12S SC1.0 fl oz		—				
+ RU192514-12A SC2.0 fl oz		14	4.0 l-r	5.0 q-v	8.0 o-t	11.8 l-t
36 RU192514-12S SC1.0 fl oz		—				
+ RU192514-12J SC.....0.5 fl oz		14	2.5 n-r	10.0 m-v	5.3 p-t	5.3 n-t
37 RU192514-12ZR WG.....0.164 oz		—				
+ RU192514-12A SC2.0 fl oz		14	7.5 k-r	8.3 o-v	10.5 m-s	6.0 n-t
38 RU192514-12ZR WG.....0.164 oz		—				
+ RU192514-12J SC.....0.5 fl oz		14	1.8 o-r	4.3 r-v	2.8 r-t	9.0 l-t
39 RU192514-12ZI SC.....0.62 fl oz		14	6.5 k-r	26.5 ij	17.3 k-n	34.8 e-g
40 Velista 50WDG.....0.3 oz		14	1.5 p-r	7.3 p-v	8.5 n-t	8.5 l-t
41 Velista 50WDG.....0.5 oz		14	0.5 r	3.8 s-v	5.0 p-t	4.3 n-t

(Continued)

Table 1B (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested (%) per Plot ¹			
			10 Aug.	20 Aug.	30 Aug.	9 Sept.
42 Velista 50WDG..... 0.3 oz	—	—				
+ Daconil Ultrex 82.5WDG..... 3.25 oz	14	—	1.8 o-r	1.8 v	1.8 st	2.3 st
43 Velista 50WDG..... 0.3 oz	—	—				
+ Chipco Signature 80WG 4.0 oz	14	—	3.5 m-r	2.5 v	7.3 o-t	9.8 l-t
44 2012 Anth Program # 1 DuPont	VAR-14 ⁴	—	12.5 i-k	3.8 s-v	4.3 q-t	5.8 n-t
45 Insignia Intrinsic 2.1SC0.7 fl oz	14	—	66.5 bc	63.3 c	60.5 bc	60.5 b-d
46 Insignia Intrinsic 2.1SC0.7 fl oz	—	—				
+ PAR LF.....0.37 fl oz	14	—	66.5 bc	65.5 bc	68.8 ab	58.0 b-d
47 Honor Intrinsic 28WG..... 1.1 oz	14	—	71.5 ab	75.8 a	75.0 a	74.3 a
48 Honor Intrinsic 28WG..... 1.1 oz	—	—				
+ PAR LF.....0.37 fl oz	14	—	62.5 cd	66.8 a-c	55.0 cd	53.3 d
49 Tartan 2.4SC2.0 fl oz	14	—	58.8 de	39.5 fg	37.0 f-h	31.8 e-h
50 2012 Anth Program # 2 Syngenta	VAR-14 ⁵	—	3.3 n-r	12.5 l-s	1.5 st	2.8 r-t
51 Daconil Action 6.1SC3.0 fl oz	—	—				
+ Briskway 2.7SC.....0.5 fl oz	14	—	8.0 k-p	12.5 l-s	5.3 p-t	4.3 n-t
52 Harsco's Ca ₂ SiO ₄ 25.0 lb ⁶	—	—	41.5 gh	46.8 d-f	43.0 ef	33.5 e-h
53 Harsco's Ca ₂ SiO ₄ 25.0 lb ⁶	—	—				
/ Banner MAXX 1.3ME.....1.0 fl oz	CUR-14 ⁷	—	18.8 i	33.3 g-i	34.3 f-h	24.0 h-k
54 HM 1106 4.08SC.....1.0 fl oz	14	—	48.3 fg	41.8 e-g	29.3 h-j	29.0 f-i
55 HM 1106 4.08SC.....2.0 fl oz	14	—	12.8 i-k	29.5 hi	16.0 k-o	14.5 k-o
56 HM 1106 4.08SC.....3.0 fl oz	14	—	12.3 i-k	25.3 i-k	14.0 k-p	11.8 l-t
57 HM 1106 4.08SC.....4.0 fl oz	14	—	5.8 k-r	13.5 l-q	9.8 m-s	11.0 l-t
58 HM 1106 4.08SC.....5.0 fl oz	14	—	3.5 m-r	8.5 o-v	6.8 p-t	10.5 l-t
59 RU 192514-12J SC0.5 fl oz	14	—	16.0 ij	50.8 de	28.0 h-j	37.3 ef
60 RU 192514-12J SC0.5 fl oz	—	—				
+ RU 192514-12ZN WG..... 0.0079 oz	14	—	3.3 n-r	15.3 l-p	10.5 m-s	12.8 l-s
61 RU 192514-12J SC0.5 fl oz	—	—				
+ RU 192514-12ZK FS0.218 fl oz	14	—	1.8 o-r	9.0 n-v	7.0 o-t	14.8 k-n
62 RU 192514-12J SC0.5 fl oz	—	—				
+ RU 192514-12ZK FS0.218 fl oz	—	—				
+ RU 192514-12ZN WG..... 0.0079 oz	14	—	7.3 k-r	6.3 p-v	9.3 m-s	12.7 l-s

(Continued)

Table 1B (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested (%) per Plot ¹			
			10 Aug.	20 Aug.	30 Aug.	9 Sept.
63 RU 192514–12J SC.....0.5 fl oz	–	–				
+ RU 192514–12Q SC.....0.236 fl oz	14	14	6.8 k-r	7.3 p-v	4.5 q-t	4.8 n-t
64 RU 192514–12J SC.....0.5 fl oz	–	–				
+ RU 192514–12Q SC.....0.236 fl oz	–	–				
+ RU 192514–12ZN WG..... 0.0079 oz	14	14	2.8 n-r	6.0 q-v	6.3 p-t	4.0 o-t
65 RU 192514–12ZO SC.....0.5 fl oz	14	14	10.5 j-m	40.5 fg	30.8 g-i	30.0 f-h
66 RU 192514–12ZO SC.....0.5 fl oz	–	–				
+ RU 192514–12ZN WG..... 0.0079 oz	14	14	7.0 k-r	18.0 j-n	28.0 h-j	18.8 i-l
67 QP Enclave 5.3F.....3.0 fl oz	–	–				
+ Foursome 100SL0.4 fl oz	14	14	1.8 o-r	4.3 r-v	5.0 p-t	5.3 n-t
68 QP Enclave 5.3F.....4.0 fl oz	–	–				
+ Foursome 100SL0.4 fl oz	21	21	1.5 p-r	8.3 o-v	6.5 p-t	9.0 l-t
69 QP Enclave 5.3F.....3.0 fl oz	–	–				
+ QP Fosetyl-AI 80WG..... 4.0 oz	–	–				
+ Foursome 100SL0.4 fl oz	14	14	2.8 n-r	2.8 v	2.0 st	2.5 r-t
70 QP Enclave 5.3F.....4.0 fl oz	–	–				
+ QP Fosetyl-AI 80WG..... 4.0 oz	–	–				
+ Foursome 100SL0.4 fl oz	21	21	7.8 k-q	5.5 q-v	4.5 q-t	14.3 k-p
71 K1.....3.0 fl oz	14	14	73.3 ab	64.0 c	58.3 c	72.0 a
72 Chipco Signature 80WG 4.0 oz	14	14	53.0 ef	63.3 c	54.3 cd	58.8 b-d
73 Daconil Ultrex 82.5WDG..... 3.2 oz	14	14	1.5 p-r	5.0 q-v	5.5 p-t	5.3 n-t
74 Medallion 50WP 0.33 oz	14	14	7.8 k-q	12.0 l-u	13.3 l-q	9.0 l-t
75 Affirm 11.3WG..... 0.9 oz	14	14	9.0 j-n	10.5 m-v	21.5 j-l	25.5 g-j
76 Banner Maxx 1.3ME 1 fl oz	14	14	18.3 i	38.5 f-h	51.5 c-e	41.0 e
77 Untreated check..... –	–	–	73.8 a	74.0 ab	71.0 a	66.3 ab
78 Untreated check..... –	–	–	76.0 a	70.8 a-c	70.0 a	64.8 a-c

INT ⁸	DAT ⁹	DAT	DAT	DAT
14	1	11	7	17
21	1	11	21	31

(Continued)

Table 1B (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 17 May (all treatments; except treatment 53B), 31 May (14-day treatment), 7 June (21-day treatment), 14 June (14-day treatment; initiated treatment 53B), 28 June (14- and 21-day treatments), 12 July (14-day treatment), 19 July (21-day treatment), 26 July (14-day treatment), 9 August (14- and 21-day treatments), and 23 August (14-day treatment).
 - ³ Treatments 25, 26, and 27 were only applied from 17 May to 26 July.
 - ⁴ VAR = Variable spray schedule, where treatment 44 (DuPont Anth Program #1) consisted of Chipco Signature 80WG (4.0 oz) + Banner MAXX 1.3ME (1.0 fl oz) applied on 16 May; Velista 50WDG (0.5 oz) + Chipco Signature 80WG (4.0 oz) on 30 May; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 13 June; Velista 50WDG (0.5 oz) + Chipco Signature 80WG (4.0 oz) on 27 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 11 July; Velista 50WDG (0.5 oz) + Chipco Signature 80WG (4.0 oz) on 25 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 8 August; and Velista 50WDG (0.5 oz) + Chipco Signature 80WG (4.0 oz) on 22 August.
 - ⁵ VAR = Variable spray schedule, where treatment 50 (Syngenta Anth Program #2) consisted of Headway 1.39ME (2.25 fl oz) + Daconil Action 6.1SC (3.0 fl oz) + Appear 4.1SC (4.0 fl oz) applied on 16 May; Daconil Action 6.1SC (3.0 fl oz) + Medallion 50WP (0.25 oz) + Appear 4.1SC (4.0 fl oz) on 30 May; Headway 1.39ME (2.25 fl oz) + Secure 4.17SC (0.5 fl oz) + Daconil Action 6.1SC (3.0 fl oz) + Appear 4.1SC (4.0 fl oz) on 13 June; Daconil Action 6.1SC (3.0 fl oz) + Medallion 50WP (0.25 oz) + Appear 4.1SC (4.0 fl oz) on 27 June; Secure 4.17SC (0.5 fl oz) + Daconil Action 6.1SC (3.0 fl oz) + Briskway 2.7SC (0.5 fl oz) + Appear 4.1SC (4.0 fl oz) on 11 July; Daconil Action 6.1SC (3.0 fl oz) + Briskway 2.7SC (0.5 fl oz) + Appear 4.1SC (4.0 fl oz) on 25 July; Daconil Action 6.1SC (3.0 fl oz) + Secure 4.17SC (0.5 fl oz) + Briskway 2.7SC (0.5 fl oz) + Appear 4.1SC (4.0 fl oz) on 8 August; and Daconil Action 6.1SC (3.0 fl oz) + Medallion 50WP (0.25 oz) + Appear 4.1SC (4.0 fl oz) on 22 August.
 - ⁶ Treatments 52 and 53 were applied to dry foliage and then immediately irrigated with 1.0 gal of water per plot on 17 May. Treatment 52 was not reapplied.
 - ⁷ Treatment 53 consisted of Harsco's Ca₂SiO₄ (25.0 lb) on 17 May and then Banner MAXX 1.3ME (1.0 fl oz) every 14 days from 14 June through 30 August.
 - ⁸ Spray interval in days.
 - ⁹ Days after the last treatment.

Table 1C. Anthracnose control with fungicides and biorational products on annual bluegrass putting green turf, Test 1: Rutgers University, 2012.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁵	Turf Quality ^{1,2}		Color ^{1,3}		Phytotoxicity ^{1,4}	
			14 June	14 July	14 June	14 July	14 June	14 July
1 Chipco Signature 80WG	4.0 oz	–						
+Daconil Ultrex 82.5WDG.....	3.2 oz	14	7.3 a-d	6.8 d-m	3.7 h	3.3 e-g	1.0 c	1.0 f
2 Headway 1.39EC.....	1.5 fl oz	14	6.6 b-g	6.4 g-n	3.0 l	3.4 d-f	1.0 c	1.0 f
3 HM0812 1.66SC	1.2 fl oz	14	6.8 a-f	6.0 j-n	3.3 j-l	3.3 e-g	1.0 c	1.0 f
4 HM0812 1.66SC	1.5 fl oz	14	6.8 a-f	5.8 l-p	3.4 i-k	3.6 c-e	1.0 c	1.0 f
5 HM0812 1.66SC	2.0 fl oz	14	6.4 b-g	6.0 j-n	3.6 hi	3.6 c-e	1.0 c	1.1 f
6 HM0812 1.66SC	2.4 fl oz	14	6.3 b-g	6.6 e-m	3.6 hi	3.9 c	1.3 b	1.5 ef
7 Tourney 50WG.....	0.28 oz	14	6.5 b-g	7.6 a-f	3.1 kl	3.9 c	1.0 c	1.0 f
8 Triton 1.67SC.....	0.41 fl oz	–						
+ Compass 50WG.....	0.0164 oz	14	6.8 a-f	4.4 r-t	3.5 h-j	3.6 c-e	1.0 c	1.0 f
9 Triton 1.67SC.....	0.82 fl oz	–						
+ Compass 50WG.....	0.033 oz	14	7.4 a-c	7.0 c-k	4.0 fg	4.0 bc	1.0 c	1.0 f
10 Triton 1.67SC.....	1.63 fl oz	–						
+ Compass 50WG.....	0.066 oz	14	7.4 a-c	8.5 a	4.5 cd	4.8 a	1.0 c	1.6 ab
11 Banner MAXX 1.3ME.....	0.94 fl oz	–						
+ Daconil Ultrex 82.5WDG.....	3.77 oz	14	6.6 b-g	8.0 a-c	3.1 kl	3.4 d-f	1.8 a	1.0 f
12 RU192514–12ZI SC.....	0.5 fl oz	–						
/ RU192514–12A SC.....	3.5 fl oz	14	7.0 a-e	6.6 e-m	3.0 l	2.9 gh	1.0 c	1.0 f
13 RU192514–12ZI SC.....	0.62 fl oz	–						
/ RU192514–12A SC.....	3.5 fl oz	14	7.1 a-d	6.9 c-l	3.0 l	3.0 f-h	1.0 c	1.0 f
14 RU192514–12ZK FS.....	0.22 fl oz	14	5.9 c-g	4.8 o-s	3.0 l	3.0 f-h	1.0 c	1.0 f
15 RU192514–12ZK FS.....	0.44 fl oz	14	6.0 c-g	6.9 c-l	3.0 l	3.1 f-h	1.0 c	1.0 f
16 RU192514–12M SC.....	1.0 fl oz	14	6.1 b-g	7.4 a-h	3.0 l	3.6 c-e	1.0 c	1.1 ef
17 RU192514–12ZJ SC.....	0.6 fl oz	14	7.0 a-e	6.8 d-m	3.0 l	3.9 c	1.0 c	1.8 a
18 RU192514–12ZI SC.....	0.5 fl oz	–						
+ RU192514–12A SC	3.5 fl oz	14	7.1 a-d	7.0 c-k	3.0 l	2.9 gh	1.0 c	1.0 f
19 RU192514–12ZI SC.....	0.62 fl oz	–						
+ RU192514–12A SC	3.5 fl oz	14	7.0 a-e	6.5 f-m	3.0 l	3.0 f-h	1.0 c	1.0 f
20 RU192514–12ZL SE.....	3.0 fl oz	14	6.5 b-g	6.6 e-m	3.4 i-k	3.0 f-h	1.3 b	1.0 f
21 RU192514–12ZM SC.....	0.27 fl oz	14	7.0 a-e	6.9 c-l	3.0 l	2.9 gh	1.0 c	1.0 f

(Continued)

Table 1C (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁵	Turf Quality ^{1,2}		Color ^{1,3}		Phytotoxicity ^{1,4}	
			14 June	14 July	14 June	14 July	14 June	14 July
22 RU192514–12J SC.....0.5 fl oz		–						
+ RU192514–12B SL.....6.0 fl oz		14	6.6 b-g	5.8 l-p	4.6 bc	3.0 f-h	1.0 c	1.0 f
23 RU192514–12A SC.....3.5 fl oz		14	6.1 b-g	6.9 c-l	3.3 j-l	3.0 f-h	1.0 c	1.0 f
24 RU192514–12ZH ME.....1.0 fl oz		14	6.9 a-f	4.5 q-t	3.0 l	2.9 gh	1.0 c	1.0 f
25 RU192514–12ZP SC0.31 fl oz		–						
+ RU192514–12ZQ SC.....1.28 fl oz		14 ⁶	6.1 b-g	7.1 c-j	3.0 l	3.1 f-h	1.0 c	1.0 f
26 RU192514–12ZP SC0.63 fl oz		–						
+ RU192514–12ZQ SC.....1.28 fl oz		14 ⁶	6.9 a-f	7.8 a-e	3.0 l	3.3 e-g	1.0 c	1.0 f
27 RU192514–12ZP SC1.26 fl oz		–						
+ RU192514-12ZQ SC1.28 fl oz		14 ⁶	6.5 b-g	7.3 b-i	3.0 l	3.0 f-h	1.0 c	1.0 f
28 RU192514–12Q SC.....0.24 fl oz		14	6.9 a-f	6.4 g-n	3.0 l	2.9 gh	1.0 c	1.0 f
29 RU192514–12ZF SC4.5 fl oz		14	7.0 a-e	8.0 a-c	3.6 hi	3.0 f-h	1.0 c	1.0 f
30 RU192514–12Q SC.....0.24 fl oz		14	7.0 a-e	6.6 e-m	3.0 l	3.0 f-h	1.0 c	1.0 f
31 RU192514–12S SC1.0 fl oz		14	7.1 a-d	6.6 e-m	3.0 l	3.0 f-h	1.0 c	1.0 f
32 RU192514–12ZR WG.....0.164 oz		14	6.3 b-g	5.6 m-q	3.0 l	3.0 f-h	1.0 c	1.0 f
33 RU192514–12Q SC.....0.24 fl oz		–						
+ RU192514–12A SC2.0 fl oz		14	6.8 a-f	6.8 d-m	3.0 l	3.3 e-g	1.0 c	1.0 f
34 RU192514–12Q SC.....0.24 fl oz		–						
+ RU192514–12J SC.....0.5 fl oz		14	6.6 b-g	6.9 c-l	3.0 l	3.4 d-f	1.0 c	1.0 f
35 RU192514–12S SC1.0 fl oz		–						
+ RU192514–12A SC2.0 fl oz		14	6.6 b-g	6.9 c-l	3.0 l	2.9 gh	1.0 c	1.0 f
36 RU192514–12S SC1.0 fl oz		–						
+ RU192514–12J SC.....0.5 fl oz		14	7.4 a-c	7.6 a-f	3.0 l	2.8 h	1.0 c	1.0 f
37 RU192514–12ZR WG.....0.164 oz		–						
+ RU192514–12A SC2.0 fl oz		14	6.6 b-g	7.0 c-k	3.5 h-j	3.0 f-h	1.0 c	1.0 f
38 RU192514–12ZR WG.....0.164 oz		–						
+ RU192514–12J SC.....0.5 fl oz		14	6.5 b-g	6.8 d-m	3.0 l	3.1 f-h	1.0 c	1.0 f
39 RU192514–12ZI SC.....0.62 fl oz		14	6.3 b-g	5.3 n-r	3.1 kl	3.0 f-h	1.0 c	1.0 f
40 Velista 50WDG.....0.3 oz		14	6.3 b-g	6.1 i-n	3.0 l	3.1 f-h	1.0 c	1.0 f
41 Velista 50WDG.....0.5 oz		14	6.8 a-f	7.0 c-k	3.0 l	3.3 e-g	1.0 c	1.0 f

(Continued)

Table 1C (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁵	Turf Quality ^{1,2}		Color ^{1,3}		Phytotoxicity ^{1,4}	
			14 June	14 July	14 June	14 July	14 June	14 July
42 Velista 50WDG..... 0.3 oz		—						
+ Daconil Ultrex 82.5WDG..... 3.25 oz		14	8.3 a	8.4 ab	3.4 i-k	3.4 d-f	1.0 c	1.0 f
43 Velista 50WDG..... 0.3 oz		—						
+ Chipco Signature 80WG 4.0 oz		14	7.6 ab	5.9 k-o	3.8 gh	2.9 gh	1.0 c	1.0 f
44 2012 Anth Program # 1 DuPont		VAR-14 ⁷	7.4 a-c	7.3 b-i	4.1 ef	3.0 f-h	1.0 c	1.0 f
45 Insignia Intrinsic 2.1SC0.7 fl oz		14	5.5 e-g	3.6 st	3.0 l	2.9 gh	1.0 c	1.0 f
46 Insignia Intrinsic 2.1SC0.7 fl oz		—						
+ PAR LF.....0.37 fl oz		14	5.1 g	3.6 st	5.0 a	3.3 e-g	1.0 c	1.0 f
47 Honor Intrinsic 28WG..... 1.1 oz		14	6.1 b-g	3.8 st	3.0 l	2.9 gh	1.0 c	1.0 f
48 Honor Intrinsic 28WG..... 1.1 oz		—						
+ PAR LF.....0.37 fl oz		14	5.5 e-g	3.8 st	5.0 a	3.8 cd	1.0 c	1.0 f
49 Tartan 2.4SC2.0 fl oz		14	6.6 b-g	4.6 p-t	4.4 c-e	3.3 e-g	1.0 c	1.3 c-e
50 2012 Anth Program # 2 Syngenta		VAR-14 ⁸	6.5 b-g	7.6 a-f	4.3 d-f	3.6 c-e	1.0 c	1.0 f
51 Daconil Action 6.1SC3.0 fl oz		—						
+ Briskway 2.7SC.....0.5 fl oz		14	6.5 b-g	7.0 c-k	3.3 j-l	3.4 d-f	1.0 c	1.0 f
52 Harsco's Ca ₂ SiO ₄ 25.0 lb ⁹		—	7.0 a-e	5.9 k-o	3.1 kl	3.1 f-h	1.0 c	1.0 f
53 Harsco's Ca ₂ SiO ₄ 25.0 lb ⁹		—						
/ Banner MAXX 1.3ME.....1.0 fl oz		CUR-14 ¹⁰	6.8 a-f	7.0 c-k	3.1 kl	3.1 f-h	1.0 c	1.0 f
54 HM 1106 4.08SC.....1.0 fl oz		14	6.6 b-g	5.9 k-o	3.0 l	2.8 h	1.0 c	1.0 f
55 HM 1106 4.08SC.....2.0 fl oz		14	6.4 b-g	5.9 k-o	3.0 l	3.0 f-h	1.0 c	1.0 f
56 HM 1106 4.08SC.....3.0 fl oz		14	6.6 b-g	6.3 h-n	3.0 l	2.8 h	1.0 c	1.0 f
57 HM 1106 4.08SC.....4.0 fl oz		14	6.9 a-f	6.1 i-n	3.0 l	2.9 gh	1.0 c	1.3 de
58 HM 1106 4.08SC.....5.0 fl oz		14	6.8 a-f	7.0 c-k	3.0 l	3.3 e-g	1.0 c	1.4 cd
59 RU 192514-12J SC0.5 fl oz		14	6.4 b-g	5.8 l-p	3.0 l	3.1 f-h	1.0 c	1.0 f
60 RU 192514-12J SC0.5 fl oz		—						
+ RU 192514-12ZN WG..... 0.0079 oz		14	7.3 a-d	6.8 d-m	3.0 l	3.0 f-h	1.0 c	1.0 f
61 RU 192514-12J SC0.5 fl oz		—						
+ RU 192514-12ZK FS0.218 fl oz		14	6.9 a-f	6.5 f-m	3.0 l	3.4 d-f	1.0 c	1.0 f
62 RU 192514-12J SC0.5 fl oz		—						
+ RU 192514-12ZK FS0.218 fl oz		—						
+ RU 192514-12ZN WG..... 0.0079 oz		14	6.5 b-g	6.4 g-n	3.0 l	3.0 f-h	1.0 c	1.0 f

(Continued)

Table 1C (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁵	Turf Quality ^{1,2}		Color ^{1,3}		Phytotoxicity ^{1,4}	
			14 June	14 July	14 June	14 July	14 June	14 July
63 RU 192514–12J SC.....0.5 fl oz		–						
+ RU 192514–12Q SC.....0.236 fl oz		14	6.1 b-g	7.1 c-j	3.0 l	3.0 f-h	1.0 c	1.0 f
64 RU 192514–12J SC.....0.5 fl oz		–						
+ RU 192514–12Q SC.....0.236 fl oz		–						
+ RU 192514–12ZN WG..... 0.0079 oz		14	6.5 b-g	6.8 d-m	3.0 l	3.0 f-h	1.0 c	1.0 f
65 RU 192514–12ZO SC.....0.5 fl oz		14	6.3 b-g	5.8 l-p	3.0 l	3.1 f-h	1.0 c	1.0 f
66 RU 192514–12ZO SC.....0.5 fl oz		–						
+ RU 192514–12ZN WG..... 0.0079 oz		14	6.5 b-g	6.4 g-n	3.0 l	3.3 e-g	1.0 c	1.0 f
67 QP Enclave 5.3F.....3.0 fl oz		–						
+ Foursome 100SL0.4 fl oz		14	5.5 e-g	7.9 a-d	4.9 ab	4.5 a	1.0 c	1.0 f
68 QP Enclave 5.3F.....4.0 fl oz		–						
+ Foursome 100SL0.4 fl oz		21	6.9 a-f	8.0 a-c	4.0 fg	4.0 bc	1.0 c	1.0 f
69 QP Enclave 5.3F.....3.0 fl oz		–						
+ QP Fosetyl-AI 80WG..... 4.0 oz		–						
+ Foursome 100SL0.4 fl oz		14	6.9 a-f	7.9 a-d	5.0 a	4.8 a	1.0 c	1.0 f
70 QP Enclave 5.3F.....4.0 fl oz		–						
+ QP Fosetyl-AI 80WG..... 4.0 oz		–						
+ Foursome 100SL0.4 fl oz		21	6.9 a-f	7.5 a-g	4.5 cd	4.4 ab	1.0 c	1.0 f
71 K1.....3.0 fl oz		14	6.8 a-f	3.5 t	3.5 h-j	3.3 e-g	1.0 c	1.0 f
72 Chipco Signature 80WG 4.0 oz		14	6.5 b-g	3.8 st	3.8 gh	2.9 gh	1.0 c	1.0 f
73 Daconil Ultrex 82.5WDG..... 3.2 oz		14	6.1 b-g	8.0 a-c	3.4 i-k	3.1 f-h	1.0 c	1.0 f
74 Medallion 50WP 0.33 oz		14	5.4 fg	5.9 k-o	3.0 l	3.0 f-h	1.0 c	1.0 f
75 Affirm 11.3WG..... 0.9 oz		14	6.0 c-g	6.1 i-n	3.0 l	3.1 f-h	1.0 c	1.0 f
76 Banner Maxx 1.3ME 1 fl oz		14	5.8 d-g	5.9 k-o	3.0 l	3.0 f-h	1.0 c	1.0 f
77 Untreated check..... –		–	5.5 e-g	3.9 st	3.0 l	2.8 h	1.0 c	1.0 f
78 Untreated check..... –		–	5.4 fg	3.6 st	3.0 l	2.8 h	1.0 c	1.0 f

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INT ¹¹	DAT ¹²	DAT	DAT	DAT	DAT	DAT	DAT
14	1	16	1	16	1	16	16
21	7	16	7	16	7	16	16

(Continued)

Table 1C (continued).

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- ¹ Values are means of four replicates. Means followed by the same letter are not significantly different according to Waller-Duncan *k*-ratio *t*-test (*k*=100).
- ² Turf quality on a scale of 1 to 9, where 9 = best turf quality and 5 = commercially acceptable quality.
- ³ Color of foliage, where 1 = very chlorotic turf, 2 = slightly chlorotic, 3 = normal green color, 4 = slight dark green color, and 5 = very dark green color.
- ⁴ Phytotoxicity on a 1 to 5 scale, where 1 = no discoloration; 2 = slight foliar chlorosis or necrosis, 3 = moderate chlorosis or necrosis, 4 = severe chlorosis or necrosis, and 5 = all turf dead. No phytotoxicity was observed on 11 August or 9 September.
- ⁵ Fungicides were applied on 17 May (all treatments; except treatment 53B), 31 May (14-day treatment), 7 June (21-day treatment), 14 June (14-day treatment; initiated treatment 53B), 28 June (14- and 21-day treatments), 12 July (14-day treatment), 19 July (21-day treatment), 26 July (14-day treatment), 9 August (14- and 21-day treatments), and 23 August (14-day treatment).
- ⁶ Treatments 25, 26, and 27 were only applied from 17 May to 26 July.
- ⁷ VAR = Variable spray schedule, where treatment 44 (DuPont Anth Program #1) consisted of Chipco Signature 80WG (4.0 oz) + Banner MAXX 1.3ME (1.0 fl oz) applied on 16 May; Velista 50WDG (0.5 oz) + Chipco Signature 80WG (4.0 oz) on 30 May; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 13 June; Velista 50WDG (0.5 oz) + Chipco Signature 80WG (4.0 oz) on 27 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 11 July; Velista 50WDG (0.5 oz) + Chipco Signature 80WG (4.0 oz) on 25 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 8 August; and Velista 50WDG (0.5 oz) + Chipco Signature 80WG (4.0 oz) on 22 August.
- ⁸ VAR = Variable spray schedule, where treatment 50 (Syngenta Anth Program #2) consisted of Headway 1.39ME (2.25 fl oz) + Daconil Action 6.1SC (3.0 fl oz) + Appear 4.1SC (4.0 fl oz) applied on 16 May; Daconil Action 6.1SC (3.0 fl oz) + Medallion 50WP (0.25 oz) + Appear 4.1SC (4.0 fl oz) on 30 May; Headway 1.39ME (2.25 fl oz) + Secure 4.17SC (0.5 fl oz) + Daconil Action 6.1SC (3.0 fl oz) + Appear 4.1SC (4.0 fl oz) on 13 June; Daconil Action 6.1SC (3.0 fl oz) + Medallion 50WP (0.25 oz) + Appear 4.1SC (4.0 fl oz) on 27 June; Secure 4.17SC (0.5 fl oz) + Daconil Action 6.1SC (3.0 fl oz) + Briskway 2.7SC (0.5 fl oz) + Appear 4.1SC (4.0 fl oz) on 11 July; Daconil Action 6.1SC (3.0 fl oz) + Briskway 2.7SC (0.5 fl oz) + Appear 4.1SC (4.0 fl oz) on 25 July; Daconil Action 6.1SC (3.0 fl oz) + Secure 4.17SC (0.5 fl oz) + Briskway 2.7SC (0.5 fl oz) + Appear 4.1SC (4.0 fl oz) on 8 August; and Daconil Action 6.1SC (3.0 fl oz) + Medallion 50WP (0.25 oz) + Appear 4.1SC (4.0 fl oz) on 22 August.
- ⁹ Treatments 52 and 53 were applied to dry foliage and then immediately irrigated with 1.0 gal of water per plot on 17 May. Treatment 52 was not reapplied.
- ¹⁰ Treatment 53 consisted of Harsco's Ca₂SiO₄ (25.0 lb) on 17 May and then Banner MAXX 1.3ME (1.0 fl oz) every 14 days from 14 June through 30 August.
- ¹¹ Spray interval in days.
- ¹² Days after the last treatment.

Table 1D. Anthracnose control with fungicides and biorational products on annual bluegrass putting green turf, Test 1: Rutgers University, 2012.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁵	Turf Quality ^{1,2}		Color ^{1,3}	Algae ^{1,4} (%)
			11 Aug.	9 Sept.	11 Aug.	20 July
1	Chipco Signature 80WG 4.0 oz	–				
	+Daconil Ultrex 82.5WDG..... 3.2 oz	14	6.5 c-j	6.1 e-k	3.0 gh	0.0 y
2	Headway 1.39EC..... 1.5 fl oz	14	5.6 i-m	7.1 a-f	3.6 b-d	42.5 a-k
3	HM0812 1.66SC 1.2 fl oz	14	5.9 g-m	5.5 i-n	3.3 e-g	38.8 c-m
4	HM0812 1.66SC 1.5 fl oz	14	5.8 h-m	5.6 h-m	3.4 d-f	50.0 a-g
5	HM0812 1.66SC 2.0 fl oz	14	6.0 g-l	6.1 e-k	3.4 d-f	48.8 a-h
6	HM0812 1.66SC 2.4 fl oz	14	7.1 a-f	7.0 a-g	3.4 d-g	55.0 a-c
7	Tourney 50WG..... 0.28 oz	14	7.4 a-d	7.4 a-d	3.8 bc	46.3 a-i
8	Triton 1.67SC..... 0.41 fl oz	–				
	+ Compass 50WG..... 0.0164 oz	14	4.9 m-q	4.8 l-q	3.4 d-f	30.0 i-r
9	Triton 1.67SC..... 0.82 fl oz	–				
	+ Compass 50WG..... 0.033 oz	14	6.5 c-j	7.4 a-d	3.5 c-e	33.8 g-q
10	Triton 1.67SC..... 1.63 fl oz	–				
	+ Compass 50WG..... 0.066 oz	14	8.0 a	7.8 ab	4.4 a	55.0 a-c
11	Banner MAXX 1.3ME..... 0.94 fl oz	–				
	+ Daconil Ultrex 82.5WDG..... 3.77 oz	14	7.4 a-d	7.6 a-c	3.3 e-g	0.0 y
12	RU192514–12ZI SC..... 0.5 fl oz	–				
	/ RU192514–12A SC..... 3.5 fl oz	14	6.8 c-h	5.5 i-n	3.1 fg	10.0 u-y
13	RU192514–12ZI SC..... 0.62 fl oz	–				
	/ RU192514–12A SC..... 3.5 fl oz	14	6.4 d-j	6.5 c-j	3.0 gh	23.0 m-u
14	RU192514–12ZK FS..... 0.22 fl oz	14	4.5 n-r	4.4 n-s	3.0 gh	31.3 i-r
15	RU192514–12ZK FS..... 0.44 fl oz	14	6.5 c-j	7.0 a-g	3.1 fg	16.3 r-y
16	RU192514–12M SC..... 1.0 fl oz	14	6.5 c-j	8.0 a	3.8 bc	43.8 a-j
17	RU192514–12ZJ SC..... 0.6 fl oz	14	6.9 b-g	6.8 b-h	3.8 bc	46.3 a-i
18	RU192514–12ZI SC..... 0.5 fl oz	–				
	+ RU192514–12A SC 3.5 fl oz	14	6.4 d-j	7.1 a-f	3.0 gh	0.0 y
19	RU192514–12ZI SC..... 0.62 fl oz	–				
	+ RU192514–12A SC 3.5 fl oz	14	6.5 c-j	7.1 a-f	3.0 gh	1.8 xy
20	RU192514–12ZL SE..... 3.0 fl oz	14	6.3 e-j	6.4 d-j	3.1 fg	2.5 w-y
21	RU192514–12ZM SC..... 0.27 fl oz	14	5.5 j-n	5.9 g-l	3.0 gh	46.3 a-i

(Continued)

Table 1D (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁵	Turf Quality ^{1,2}		Color ^{1,3}	Algae ^{1,4} (%)
			11 Aug.	9 Sept.	11 Aug.	20 July
22 RU192514-12J SC.....	0.5 fl oz	—				
+ RU192514-12B SL.....	6.0 fl oz	14	5.9 g-m	5.4 j-o	3.0 gh	2.5 w-y
23 RU192514-12A SC	3.5 fl oz	14	6.8 c-h	7.3 a-e	3.0 gh	0.0 y
24 RU192514-12ZH ME.....	1.0 fl oz	14	4.3 o-r	4.0 p-s	3.0 gh	21.3 n-v
25 RU192514-12ZP SC	0.31 fl oz	—				
+ RU192514-12ZQ SC.....	1.28 fl oz	14 ⁶	6.5 c-j	5.6 h-m	3.0 gh	35.0 f-p
26 RU192514-12ZP SC	0.63 fl oz	—				
+ RU192514-12ZQ SC.....	1.28 fl oz	14 ⁶	7.3 a-e	7.0 a-g	3.1 fg	57.5 a
27 RU192514-12ZP SC	1.26 fl oz	—				
+ RU192514-12ZQ SC.....	1.28 fl oz	14 ⁶	7.1 a-f	7.1 a-f	3.1 fg	46.3 a-i
28 RU192514-12Q SC.....	0.24 fl oz	14	6.9 b-g	6.1 e-k	3.0 gh	30.0 i-r
29 RU192514-12ZF SC	4.5 fl oz	14	6.8 c-h	6.9 a-g	3.1 fg	0.0 y
30 RU192514-12Q SC.....	0.24 fl oz	14	7.3 a-e	6.8 b-h	3.1 fg	50.0 a-g
31 RU192514-12S SC	1.0 fl oz	14	6.3 e-j	6.3 d-k	3.0 gh	40.0 b-l
32 RU192514-12ZR WG.....	0.164 oz	14	6.6 c-i	6.9 a-g	3.0 gh	51.3 a-f
33 RU192514-12Q SC.....	0.24 fl oz	—				
+ RU192514-12A SC	2.0 fl oz	14	7.1 a-f	6.9 a-g	3.1 fg	17.5 q-x
34 RU192514-12Q SC.....	0.24 fl oz	—				
+ RU192514-12J SC.....	0.5 fl oz	14	7.5 a-c	7.6 a-c	3.1 fg	37.5 d-n
35 RU192514-12S SC	1.0 fl oz	—				
+ RU192514-12A SC	2.0 fl oz	14	6.3 e-j	6.1 e-k	3.1 fg	18.0 q-x
36 RU192514-12S SC	1.0 fl oz	—				
+ RU192514-12J SC.....	0.5 fl oz	14	5.9 g-m	7.0 a-g	3.4 d-f	46.3 a-i
37 RU192514-12ZR WG.....	0.164 oz	—				
+ RU192514-12A SC	2.0 fl oz	14	6.4 d-j	7.0 a-g	3.3 e-g	15.0 r-y
38 RU192514-12ZR WG.....	0.164 oz	—				
+ RU192514-12J SC.....	0.5 fl oz	14	6.6 c-i	6.6 b-i	3.0 gh	52.5 a-e
39 RU192514-12ZI SC.....	0.62 fl oz	14	5.1 k-o	5.4 j-o	3.0 gh	51.3 a-f
40 Velista 50WDG.....	0.3 oz	14	6.8 c-h	6.6 b-i	3.0 gh	27.5 j-t
41 Velista 50WDG.....	0.5 oz	14	6.3 e-j	6.8 b-h	3.1 fg	57.5 a

(Continued)

Table 1D (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁵	Turf Quality ^{1,2}		Color ^{1,3}	Algae ^{1,4} (%)
			11 Aug.	9 Sept.	11 Aug.	20 July
42 Velista 50WDG..... 0.3 oz		—				
+ Daconil Ultrex 82.5WDG..... 3.25 oz		14	7.5 a-c	7.3 a-e	3.6 b-d	0.5 y
43 Velista 50WDG..... 0.3 oz		—				
+ Chipco Signature 80WG 4.0 oz		14	6.5 c-j	5.5 i-n	3.0 gh	20.0 o-v
44 2012 Anth Program # 1 DuPont		VAR-14 ⁷	7.4 a-d	6.3 d-k	3.1 fg	0.0 y
45 Insignia Intrinsic 2.1SC0.7 fl oz		14	3.5 rs	3.9 q-s	3.0 gh	36.3 e-o
46 Insignia Intrinsic 2.1SC0.7 fl oz		—				
+ PAR LF.....0.37 fl oz		14	3.6 rs	4.3 o-s	3.0 gh	53.8 a-d
47 Honor Intrinsic 28WG..... 1.1 oz		14	3.0 s	3.3 s	2.8 h	42.5 a-k
48 Honor Intrinsic 28WG..... 1.1 oz		—				
+ PAR LF.....0.37 fl oz		14	4.0 p-s	3.6 q-s	3.0 gh	56.3 ab
49 Tartan 2.4SC2.0 fl oz		14	4.5 n-r	4.6 m-q	3.3 e-g	33.0 h-q
50 2012 Anth Program # 2 Syngenta		VAR-14 ⁸	7.1 a-f	7.4 a-d	3.3 e-g	0.0 y
51 Daconil Action 6.1SC3.0 fl oz		—				
+ Briskway 2.7SC.....0.5 fl oz		14	6.9 b-g	7.0 a-g	3.4 d-f	0.5 y
52 Harsco's Ca ₂ SiO ₄ 25.0 lb ⁹		—	4.9 m-q	5.6 h-m	3.1 fg	19.8 o-v
53 Harsco's Ca ₂ SiO ₄ 25.0 lb ⁹		—				
/ Banner MAXX 1.3ME.....1.0 fl oz		CUR-14 ¹⁰	5.6 i-m	6.5 c-j	3.3 e-g	2.5 w-y
54 HM 1106 4.08SC.....1.0 fl oz		14	4.9 m-q	4.4 n-s	3.1 fg	5.5 v-y
55 HM 1106 4.08SC.....2.0 fl oz		14	5.6 i-m	5.1 l-p	3.1 fg	13.0 s-y
56 HM 1106 4.08SC.....3.0 fl oz		14	5.8 h-m	6.1 e-k	3.0 gh	5.0 v-y
57 HM 1106 4.08SC.....4.0 fl oz		14	5.9 g-m	6.6 b-i	3.3 e-g	26.3 k-u
58 HM 1106 4.08SC.....5.0 fl oz		14	6.6 c-i	6.8 b-h	3.1 fg	26.8 k-t
59 RU 192514-12J SC0.5 fl oz		14	4.4 o-r	4.5 m-r	3.0 gh	28.8 j-t
60 RU 192514-12J SC0.5 fl oz		—				
+ RU 192514-12ZN WG..... 0.0079 oz		14	6.0 g-l	6.9 a-g	3.4 d-f	26.0 k-u
61 RU 192514-12J SC0.5 fl oz		—				
+ RU 192514-12ZK FS0.218 fl oz		14	5.9 g-m	6.3 d-k	3.1 fg	42.5 a-k
62 RU 192514-12J SC0.5 fl oz		—				
+ RU 192514-12ZK FS0.218 fl oz		—				
+ RU 192514-12ZN WG..... 0.0079 oz		14	5.8 h-m	6.1 e-k	3.0 gh	26.3 k-u

(Continued)

Table 1D (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁵	Turf Quality ^{1,2}		Color ^{1,3}	Algae ^{1,4} (%)
			11 Aug.	9 Sept.	11 Aug.	20 July
63	RU 192514–12J SC.....0.5 fl oz	–				
	+ RU 192514–12Q SC.....0.236 fl oz	14	6.6 c-i	7.3 a-e	3.0 gh	23.8 l-u
64	RU 192514–12J SC.....0.5 fl oz	–				
	+ RU 192514–12Q SC.....0.236 fl oz	–				
	+ RU 192514–12ZN WG..... 0.0079 oz	14	6.1 f-k	7.4 a-d	3.1 fg	6.3 v-y
65	RU 192514–12ZO SC.....0.5 fl oz	14	4.4 o-r	4.5 m-r	3.0 gh	23.0 m-u
66	RU 192514–12ZO SC.....0.5 fl oz	–				
	+ RU 192514–12ZN WG..... 0.0079 oz	14	5.5 j-n	5.9 g-l	3.0 gh	29.3 j-s
67	QP Enclave 5.3F.....3.0 fl oz	–				
	+ Foursome 100SL0.4 fl oz	14	6.4 d-j	7.6 a-c	3.9 b	15.0 r-y
68	QP Enclave 5.3F.....4.0 fl oz	–				
	+ Foursome 100SL0.4 fl oz	21	6.1 f-k	7.0 a-g	3.4 d-f	21.3 n-v
69	QP Enclave 5.3F.....3.0 fl oz	–				
	+ QP Fosetyl-AI 80WG..... 4.0 oz	–				
	+ Foursome 100SL0.4 fl oz	14	7.9 ab	7.6 a-c	3.8 bc	2.5 w-y
70	QP Enclave 5.3F.....4.0 fl oz	–				
	+ QP Fosetyl-AI 80WG..... 4.0 oz	–				
	+ Foursome 100SL0.4 fl oz	21	6.6 c-i	6.0 f-k	3.8 bc	5.0 v-y
71	K1.....3.0 fl oz	14	3.5 rs	3.4 rs	3.0 gh	24.3 l-u
72	Chipco Signature 80WG 4.0 oz	14	3.9 q-s	3.9 q-s	3.0 gh	12.5 t-y
73	Daconil Ultrex 82.5WDG..... 3.2 oz	14	7.3 a-e	7.1 a-f	3.5 c-e	0.0 y
74	Medallion 50WP 0.33 oz	14	5.9 g-m	6.4 d-j	3.1 fg	10.0 u-y
75	Affirm 11.3WG..... 0.9 oz	14	6.7 c-i	6.1 e-k	3.1 fg	37.5 d-n
76	Banner Maxx 1.3ME 1 fl oz	14	5.0 l-p	5.4 j-o	3.1 fg	38.8 c-m
77	Untreated check..... –	–	4.3 o-r	4.0 p-s	3.0 gh	18.8 p-w
78	Untreated check..... –	–	4.1 o-r	4.1 p-s	3.0 gh	14.8 r-y
		INT ¹¹	DAT ¹²	DAT	DAT	DAT
		14	2	17	2	8
		21	2	31	2	1

(Continued)

Table 1D (continued).

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- ¹ Values are means of four replicates. Means followed by the same letter are not significantly different according to Waller-Duncan *k*-ratio *t*-test ($k=100$).
- ² 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 5, where 1 = very chlorotic turf, 2 = slightly chlorotic, 3 = normal green color, 4 = slight dark green color, and 5 = very dark green color.
- ⁴ Percent soil surface covered with blue-green algae (cyanobacteria).
- ⁵ Fungicides were applied on 17 May (all treatments; except treatment 53B), 31 May (14-day treatment), 7 June (21-day treatment), 14 June (14-day treatment; initiated treatment 53B), 28 June (14- and 21-day treatments), 12 July (14-day treatment), 19 July (21-day treatment), 26 July (14-day treatment), 9 August (14- and 21-day treatments), and 23 August (14-day treatment).
- ⁶ Treatments 25, 26, and 27 were only applied from 17 May to 26 July.
- ⁷ VAR = Variable spray schedule, where treatment 44 (DuPont Anth Program #1) consisted of Chipco Signature 80WG (4.0 oz) + Banner MAXX 1.3ME (1.0 fl oz) applied on 16 May; Velista 50WDG (0.5 oz) + Chipco Signature 80WG (4.0 oz) on 30 May; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 13 June; Velista 50WDG (0.5 oz) + Chipco Signature 80WG (4.0 oz) on 27 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 11 July; Velista 50WDG (0.5 oz) + Chipco Signature 80WG (4.0 oz) on 25 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 8 August; and Velista 50WDG (0.5 oz) + Chipco Signature 80WG (4.0 oz) on 22 August.
- ⁸ VAR = Variable spray schedule, where treatment 50 (Syngenta Anth Program #2) consisted of Headway 1.39ME (2.25 fl oz) + Daconil Action 6.1SC (3.0 fl oz) + Appear 4.1SC (4.0 fl oz) applied on 16 May; Daconil Action 6.1SC (3.0 fl oz) + Medallion 50WP (0.25 oz) + Appear 4.1SC (4.0 fl oz) on 30 May; Headway 1.39ME (2.25 fl oz) + Secure 4.17SC (0.5 fl oz) + Daconil Action 6.1SC (3.0 fl oz) + Appear 4.1SC (4.0 fl oz) on 13 June; Daconil Action 6.1SC (3.0 fl oz) + Medallion 50WP (0.25 oz) + Appear 4.1SC (4.0 fl oz) on 27 June; Secure 4.17SC (0.5 fl oz) + Daconil Action 6.1SC (3.0 fl oz) + Briskway 2.7SC (0.5 fl oz) + Appear 4.1SC (4.0 fl oz) on 11 July; Daconil Action 6.1SC (3.0 fl oz) + Briskway 2.7SC (0.5 fl oz) + Appear 4.1SC (4.0 fl oz) on 25 July; Daconil Action 6.1SC (3.0 fl oz) + Secure 4.17SC (0.5 fl oz) + Briskway 2.7SC (0.5 fl oz) + Appear 4.1SC (4.0 fl oz) on 8 August; and Daconil Action 6.1SC (3.0 fl oz) + Medallion 50WP (0.25 oz) + Appear 4.1SC (4.0 fl oz) on 22 August.
- ⁹ Treatments 52 and 53 were applied to dry foliage and then immediately irrigated with 1.0 gal of water per plot on 17 May. Treatment 52 was not reapplied.
- ¹⁰ Treatment 53 consisted of Harsco's Ca_2SiO_4 (25.0 lb) on 17 May and then Banner MAXX 1.3ME (1.0 fl oz) every 14 days from 14 June through 30 August.
- ¹¹ Spray interval in days.
- ¹² Days after the last treatment.