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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 2018 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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ANTHRACNOSE CONTROL WITH FUNGIDES AND BIORATIONAL PRODUCTS ON ANNUAL BLUEGRASS PUTTING GREEN TURF, 2018

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Fungicides were evaluated in 2018 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 6.3 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 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 20-20-20 (0.2 lb nitrogen (N) per 1000 ft²) on 26 April and 5 May; 46-0-0 (0.2 lb N per 1000 ft²) on 26 April; 46-0-0 (0.1 lb N per 1000 ft²) on 27 April, 11 May, 25 May, 2 June, 20 June, 25 June, 4 July, 20 July, 5 August, and 18 August; 46-0-0 (0.3 lb N per 1000 ft²) on 5 May; 21-0-0 (0.2 lb N per 1000 ft²) on 1 May and 25 May; 0-30-0 (0.2 lb phosphorus per 1000 ft²) on 11 May, 4 July, and 5 August; 0-0-62 (0.2 lb potassium per 1000 ft²) on 27 April, 25 May, 25 June, 20 July, and 18 August; magnesium (Mg) (3 fl oz per 1000 ft² of a fertilizer containing 4% Mg) on 9 May, 7 July, 5 August, and 10 August; and Harrell's Max Minors (micronutrient mixture; 4.0 fl oz per 1000 ft²) on 9 May, 7 July, 5

August, and 10 August. Proxy 2SL (5.0 fl oz per 1000 ft²) + Primo MAXX 1ME (0.125 fl oz per 1000 ft²) was sprayed over the trial on 12 and 26 April to suppress seed heads, and Primo MAXX 1ME (0.125 fl oz per 1000 ft²) was continued every 7 days from 9 May through 17 August.

Dollar spot (caused by *Clariireedia jacksonii*) was suppressed with Emerald 70WG (0.18 oz per 1000 ft²) on 24 May, 21 June, 16 July, and 17 August and Curalan 50EG (1.0 oz per 1000 ft²) on 9 May, 4 July, and 1 August. Brown ring patch (incited by *Rhizoctonia circinata*) was controlled with ProStar 70W (3.0 oz per 1000 ft²) on 27 April, 11 May, 4 July, and 1 August. Brown patch (caused by *Rhizoctonia solani*) and summer patch (incited by *Magnaporthiopsis poae*) were suppressed with Heritage TL 0.8ME (2.0 fl oz per 1000 ft²) on 24 May, 21 June, 16 July, and 17 August. Previous research conducted 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 trial. Insect pests were controlled with Talstar 0.67LC (0.25 fl oz per 1000 ft²) on 24 July and Provant 30WDG (0.275 fl oz per 1000 ft²) on 25 May. Silvery thread moss (*Bryum argenteum*) was suppressed with QuickSilver T&O 1.9LC (0.046 fl oz per 1000 ft²) on 31 May, 24 June, 7 July, 10 August, and 18 August. Localized dry spot was prevented with Tricure 100LC (wetting agent) at 4 fl oz per 1000 ft²) on 5 May and 2 fl oz per 1000 ft² on 3 June and 8 July. 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.

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Fungicides were applied in water equivalent to 1.9 gal per 1000 ft² with a CO₂ powered sprayer at 40 psi using Tee Jet Air Induction AI8002 nozzles. Treatments (trt) were initiated on 17 May, prior to the development of anthracnose. The majority of fungicides were reapplied at the appropriate intervals through 16 August (except for selected treatments that were also reapplied on 23 August and 6 September as indicated in Tables 1A to 1C). Turf was visually evaluated for percent turf area infested with anthracnose on 14 and 24 June, 4, 14, and 24 July, 3, 13, and 23 August, and 2 and 12 September. Phytotoxicity was determined on 14 June, 14 July, and 9 August (data not shown) using a 1 to 5 scale, where 1 = no foliar discoloration, 2 = slight chlorosis or necrosis, 3 = moderate chlorosis or necrosis, 4 = severe chlorosis or necrosis, and 5 = all turf dead. Turf quality was evaluated on 14 June, 14 July, and 9 August 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 9 August using a 1 to 10 scale, where 5 = color of healthy untreated turf, less than 5 = progressively more chlorotic or necrotic turf, and greater than 5 = progressively darker green turf. Data were subjected to analysis of variance and means were separated by Waller-Duncan *k*-ratio *t*-test (*k* =100).

Anthracnose developed on 9 June as a natural infection and became uniformly distributed throughout the green by 14 June. Disease severity intensified gradually throughout the summer and peaked on 22 September (63% turfgrass area infested on non-fungicide treated turf (trt 80)). As result, most treatments (96%) provided acceptable disease control (< 15 % turf area infested) throughout the treatment period (17 May to 16 August; see 13 August evaluation date, Table 1B) with the exception of RU-25123-18B LC @ 6.0 fl oz (trt 9), RU-2125-18A SC @ 0.1963 fl oz (trt 22), and CrossOver Turf 100SGN @ 15.0 lb + Banner MAXX 1.3ME @ 1.5 fl oz (trt 45). However, only 33% of the treatments provided season-long control of anthracnose (i.e., less than 15% turf area infested from 17 May through 22 September; Tables 1A and 1B). These treatments included Torque 3.6SC (trt 4), Headway 1.39EC (trt 6), RU-25123-18A LC + RU-25123-18D SC (trt 11), RU-25123-18B LC + RU-25123-18D SC (trt 12), RU-25123-18D SC (trt 15), 2018 Anthracnose Program #1 (trt 27), 2018 Anthracnose Program #2 (trt 28), Premion 4.265SC

@ 8.0 fl oz + Harrell's PAR 100LC @ 0.37 fl oz (trt 32), AMV4221 3SC @ 1.6 fl oz (trt 37), 2018 Anthracnose Program #5 (47), 2018 Anthracnose Program #6 (trt 48), 2018 Anthracnose Program #8 (50), 2018 Anthracnose Program #9 (trt 51), 2018 Anthracnose Program #10 (trt 52), 2018 Anthracnose Program #11 (trt 53), 2018 Anthracnose Program #12 (trt 54), 2018 Anthracnose Program #13 (trt 56), 2018 Anthracnose Program #16 (trt 61), RU-21196-18G SC @ 1.73 fl oz (trt 64), RU-21196-18G SC @ 2.36 fl oz (trt 65), RU-21196-18H SC (trt 67), Tekken 1.8SC (trt 68), Tartan StressGard 2.4SC (trt 69), 2018 Anthracnose Program #18 (trt 70), and Banner Maxx 1.3ME (trt 79).

Several treatments resulted in visually darker green foliage (statistically greater than the untreated controls; trt 80) on all three evaluation dates [i.e., 2018 Anthracnose Program #2 (trt 28), Premion 4.265SC @ 8.0 fl oz + Harrell's PAR 100LC @ 0.37 fl oz (trt 32), 2018 Anthracnose Program #4 (46), 2018 Anthracnose Program #5 (47), 2018 Anthracnose Program #8 (50), 2018 Anthracnose Program #9 (trt 51), 2018 Anthracnose Program #10 (trt 52), 2018 Anthracnose Program #11 (trt 53), 2018 Anthracnose Program #12 (trt 54), 2018 Anthracnose Program #13 (trt 56), 2018 Anthracnose Program #14 (trt 57), 2018 Anthracnose Program #16 (trt 61), 2018 Anthracnose Program #17 (trt 62), and 2018 Anthracnose Program #18 (trt 70)], presumably because they contained either a pigment, a plant growth regulator, and/or a fertilizer (Table 1C). Slight phytotoxicity was observed in June, July, and August (data not shown) on turf treated with Torque 3.6SC (trt 4), RU-25123-18ALC + RU-25123-18D SC (trt 11), RU-25123-18B LC + RU-25123-18D SC (trt 12), RU-25123-18D SC (trt 15), RU- 2125-18C SC (trt 24), RU-2125-18D SC (trt 25), AMV4221 3SC (trts 35 to 37), Tekken 1.8SC (trt 68), and Traction 4SC (trt 73).

Turf quality evaluated on 14 June, 14 July, and 9 August was closely associated with the degree of anthracnose control; treatments affording good protection from this disease had good turf quality (Table 1C). All treatments provided acceptable turfgrass quality (great or equal to 5.0 on a scale of 1 to 9, where 9 = best quality) throughout the study except for RU-25123-18B LC (trt 9) and RU-17183-18A WP on 9 August (trt 76).

Table 1A. Anthracnose control with fungicides and biorational products on annual bluegrass putting green turf: Rutgers University, 2018.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested per Plot (%) ¹				
			14 June	24 June	4 July	14 July	24 July
1 Maxtima 3.33SC 0.4 fl oz	14	8.8 a-d	6.5 e-o	1.3 fg	1.8 l-o	2.3 l-r	
2 Maxtima 3.33SC 0.6 fl oz	14	3.5 d-j	4.8 f-o	1.0 g	1.5 m-o	1.3 n-r	
3 Maxtima 3.33SC 0.8 fl oz	14	2.5 f-j	3.3 k-o	1.0 g	1.0 no	1.3 n-r	
4 Torque 3.6SC 1.1 fl oz	14	3.0 e-j	1.8 no	1.3 fg	8.8 d-h	0.8 p-r	
5 Navicon Intrinsic 3.34SC..... 0.85 fl oz	14	4.8 b-j	9.8 c-m	2.3 c-g	3.0 j-o	2.8 k-r	
6 Headway 1.39EC 3.0 fl oz	14	3.5 d-j	7.8 d-o	1.0 g	3.0 j-o	3.8 j-r	
7 RU-25123-18A LC..... 6.0 fl oz	14	9.8 ab	17.5 ab	5.8 b-d	13.3 a-d	11.0 b-e	
8 RU-25123-18A LC..... 10.0 fl oz	14	7.0 b-i	12.5b-e	1.5 e-g	10.3 c-f	7.5 d-k	
9 RU-25123-18B LC 6.0 fl oz	14	9.5 a-c	16.3 a-c	5.5 b-e	14.3 a-c	9.0 c-i	
10 RU-25123-18B LC 10.0 fl oz	14	5.3 b-j	11.0 b-j	4.0 c-g	9.0 d-g	4.3 i-r	
11 RU-25123-18A LC..... 6.0 fl oz	—						
+ RU-25123-18D SC..... 1.1 fl oz	14	3.8 d-j	9.0 c-n	2.3 c-g	9.0 d-g	2.8 k-r	
12 RU-25123-18B LC 6.0 fl oz	—						
+ RU-25123-18D SC..... 1.1 fl oz	14	2.8 f-j	2.8 l-o	1.5 e-g	2.8 j-o	2.0 l-r	
13 RU-25123-18B LC 6.0 fl oz	—						
+ RU-25123-18E LC 5.0 fl oz	14	1.3 j	7.3 d-o	3.5 c-g	4.8 g-o	6.3 e-n	
14 RU-25123-18B LC 6.0 fl oz	—						
+ RU-25123-18F LC 3.0 fl oz	14	3.0 c-j	6.8 e-o	2.8 c-g	6.5 e-m	4.3 i-r	
15 RU-25123-18D SC..... 1.1 fl oz	14	1.8 h-j	3.8 i-o	3.3 c-g	3.8h-o	1.8 l-r	
16 RU-2125-18A SC 0.06545 fl oz	14 ³	7.3 b-h	11.8 b-g	3.3 c-g	4.8 g-o	9.5 c-h	
17 RU-2125-18A SC 0.0982 fl oz	14 ³	5.3 b-j	6.5 e-o	2.5 c-g	2.8 j-o	2.3 l-r	
18 RU-2125-18A SC 0.1309 fl oz	14 ³	2.0 g-j	3.8 i-o	0.0 g	2.8 j-o	2.3 l-r	
19 RU-2125-18A SC 0.1963 fl oz	28 ⁴	2.0 g-j	3.8 i-o	0.5 g	2.5 j-o	3.0 k-r	
20 RU-2125-18A SC 0.1963 fl oz	—						
/ RU-2125-18A SC 0.1309 fl oz	14 ⁵	1.5 ij	1.0 o	0.3 g	2.0 k-o	3.8 j-r	
21 RU-2125-18A SC 0.1963 fl oz	14 ⁶	8.5 a-e	12.0 b-f	6.3 g	7.3 e-j	6.8 e-l	
22 RU-2125-18A SC 0.1963 fl oz	14 ⁷	7.5 b-g	14.5 a-d	9.3 ab	16.5 ab	13.3 a-c	
23 RU-2125-18B ME..... 2.0 fl oz	14 ³	3.5 d-j	5.8 e-o	1.5 e-g	4.3 g-o	2.8 k-r	
24 RU-2125-18C SC..... 1.0 fl oz	14 ³	5.0 b-j	5.8 e-o	2.0 d-g	4.3 g-o	3.3j-r	
25 RU-2125-18D SC..... 1.5 fl oz	14 ³	1.3 j	1.5 no	1.5 e-g	3.3 j-o	1.3 n-r	

(Continued)

Table 1A. Anthracnose control on annual bluegrass putting green turf: Rutgers University, 2018.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested per Plot (%) ¹				
			14 June	24 June	4 July	14 July	24 July
26 RU-2125-18E SC.....	1.9 fl oz	28 ⁴	2.3 f-j	4.8 f-o	2.0 d-g	3.8 h-o	3.3 j-r
27 2018 Anth Prog. #1.....	—	ALT ⁸	2.0 g-j	6.5 c-o	1.0 g	0.5 o	1.5 m-r
28 2018 Anth Prog. #2.....	—	ALT ⁹	6.3 b-j	10.0 b-l	6.3 bc	5.8 f-n	5.8 f-p
29 Fame +C 4.25SC.....	4.0 fl oz	14	6.0 b-j	11.5 b-h	5.5 b-e	6.5 e-m	6.5 e-m
30 Premion 4.265SC.....	4.0 fl oz	—					
+ Harrell's PAR 100LC.....	0.37 fl oz	14	2.3 f-j	7.0 d-o	2.0 d-g	2.3 j-o	1.3 n-r
31 Premion 4.265SC.....	6.0 fl oz	—					
+ Harrell's PAR 100LC.....	0.37 fl oz	14	2.0 g-j	4.8 f-o	0.8 g	1.8 l-o	0.0 r
32 Premion 4.265SC.....	8.0 fl oz	—					
+ Harrell's PAR 100LC.....	0.37 fl oz	14	2.0 g-j	3.5 j-o	0.0 g	0.5 o	0.0 r
33 Autilus 4SC.....	6.0 fl oz	—					
+ Harrell's PAR 100LC.....	0.37 fl oz	14	2.5 f-g	5.0 e-o	0.5 g	2.0 k-o	0.0 r
34 2018 Anth Prog. #3.....	—	VAR ¹⁰	7.3 b-h	14.5 a-d	3.5 c-g	6.8 e-l	6.0e-o
35 AMV4221 3SC.....	0.8 fl oz	14	3.0 e-j	6.5 e-o	3.8 c-g	3.0 j-o	1.0 o-r
36 AMV4221 3SC.....	1.0 fl oz	14	2.5 f-j	3.8 i-o	1.3 fg	2.0 k-o	0.3 qr
37 AMV4221 3SC.....	1.6 fl oz	14	1.0 j	2.8l-o	1.0 g	1.8 l-o	0.3 qr
38 Mirage 2SC.....	1.0 fl oz	14	2.0 g-j	8.3 d-o	1.0 g	1.3 no	1.3 n-r
39 AMV1033 WDG.....	0.138 oz	14	7.8 b-f	11.5 b-h	3.3 c-g	10.3 c-f	5.3 g-q
40 AMV1033 WDG.....	0.275 oz	14	3.0 e-j	6.8 e-o	3.0 c-g	3.3 j-o	4.8 h-r
41 AMV1033 WDG.....	0.55 oz	14	2.5 f-g	5.5 e-o	2.5 c-g	3.8 h-o	2.3 l-r
42 Maxtima 3.33SC.....	1.6 fl oz	14	1.3 j	3.8 l-o	0.3 g	1.3 no	0.3 qr
43 Lexicon 4.16SC.....	0.47 fl oz	14	3.3 d-j	7.3 d-o	2.0 d-g	6.0 f-n	5.5 g-p
44 CrossOver Turf 100SGN.....	15.0 lb	14 ¹¹	2.0 g-j	3.3 k-o	2.0 d-g	6.8 e-l	13.0 a-c
45 CrossOver Turf 100SGN.....	15.0 lb	—					
+ Banner MAXX 1.3ME.....	1.5 fl oz	14 ¹²	1.3 j	2.3 m-o	0.8 g	5.0 g-o	15.3 ab
46 2018 Anth Prog. #4.....	—	14 ¹³	3.5 d-j	11.5 b-h	2.8 c-g	3.5 i-o	2.3 l-r
47 2018 Anth Prog. #5.....	—	VAR ¹⁴	0.8 j	1.0 o	1.0 g	2.8 j-o	2.3 l-r
48 2018 Anth Prog. #6.....	—	VAR ¹⁵	1.5 ij	3.5 j-o	2.3 c-g	3.3 j-o	2.0 l-r
49 2018 Anth Prog. #7.....	—	14 ¹⁶	1.8 h-j	4.5 f-o	1.0 g	1.0 no	0.8 p-r
50 2018 Anth Prog. #8.....	—	14 ¹⁷	2.8 f-j	6.5 e-o	0.8 g	3.5 i-o	4.3 i-r

(Continued)

Table 1A. Anthracnose control on annual bluegrass putting green turf: Rutgers University, 2018.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested per Plot (%) ¹				
			14 June	24 June	4 July	14 July	24 July
51 2018 Anth Prog. #9	–	14 ¹⁸	4.8 b-j	6.3 e-o	1.5 e-g	2.5 j-o	3.0 k-r
52 2018 Anth Prog. #10	–	14 ¹⁹	1.8 h-j	4.0 h-o	0.3 g	1.0 no	3.0 k-r
53 2018 Anth Prog. #11	–	14 ²⁰	2.5 f-g	5.8 e-o	0.8 g	2.5 j-o	3.8 j-r
54 2018 Anth Prog. #12	–	14 ²¹	3.0 e-j	6.8 e-o	1.8 d-g	1.5 m-o	0.8 p-r
55 Daconil Action 6.1SC	2.0 fl oz	14	3.0 e-j	7.3 d-o	2.3 c-g	4.0 g-o	4.8 h-r
56 2018 Anth Prog. #13	–	14 ²²	2.0 g-j	2.3 m-o	0.3 g	1.8 l-o	4.0 i-r
57 2018 Anth Prog. #14	–	14 ²³	5.3 b-j	8.5 d-o	2.3 c-g	6.0 f-n	5.5 g-p
58 EX Elicitor/WF - 002 LC	3.0 fl oz	–					
+ PK Plus LC.....	6.0 fl oz	14	1.0 j	2.5 l-o	0.8 g	1.3 no	4.8 h-r
59 2018 Anth Prog. #15	–	14 ²⁴	1.8 h-j	2.8 l-o	1.3 fg	2.5j-o	5.0 h-r
60 Daconil Ultrex 82.5WG	1.8 oz	14	5.0 b-j	10.5 b-k	2.3 c-g	7.0 e-k	6.3 e-n
61 2018 Anth Prog. #16	–	ALT ²⁵	2.5 f-g	4.3 g-o	1.0 g	3.3 j-o	10.8 b-f
62 2018 Anth Prog. #17	–	ALT ²⁶	1.8 h-j	2.5 l-o	3.0 c-g	2.0 k-o	9.0c-i
63 RU-21196-18G SC.....	1.1 fl oz	14	8.5 a-e	10.0 b-l	3.5 c-g	6.5 e-m	4.3 i-r
64 RU-21196-18G SC.....	1.73 fl oz	14	5.3 b-j	7.8 d-o	2.8 c-g	3.3 j-o	4.8 h-r
65 RU-21196-18G SC.....	2.36 fl oz	14	3.3 d-j	3.3 k-o	0.3 g	3.3 j-o	0.3 qr
66 Insignia Intrinsic 2.1SC	0.7 fl oz	14	0.8 j	2.5 l-o	1.5 e-g	3.3 j-o	12.0 b-d
67 RU-21196-18H SC.....	2.62 fl oz	14	7.8 b-f	8.8 c-n	1.8 d-g	2.8 j-o	2.0 l-r
68 Tekken 1.8SC.....	3.0 fl oz	21	4.5 b-j	8.5 d-o	1.0 g	3.8 h-o	0.8 p-r
69 Tartan StressGard 2.4SC.....	2.0 fl oz	21	2.0 g-j	2.3 m-o	0.8 g	1.5 m-o	1.0 o-r
70 2018 Anth Prog. #18	–	VAR ²⁷	3.8 d-j	9.8 c-m	1.5 e-g	3.0 j-o	0.8 p-r
71 2018 Anth Prog. #19	–	VAR ²⁸	3.8 d-j	5.5 e-o	0.8 g	2.3 j-o	3.3 j-r
72 2018 Anth Prog. #20	–	VAR ²⁹	1.5 ij	5.3 e-o	0.8 g	1.0 no	1.8l-r
73 Traction 4SC.....	1.3 fl oz	14	4.3 b-j	5.5 e-o	1.0 g	8.5 d-i	6.8 e-l
74 Affirm 11.3WDG	0.9 oz	7	4.8 b-j	11.3 b-i	5.3 b-f	10.3 c-f	10.3 b-g
75 Affirm 11.3WDG	0.9 oz	–					
+ Alude 46LC	2.0 fl oz	7	4.8 b-j	4.8 f-o	2.3 c-g	4.8 g-o	5.5 g-p
76 RU-17183-18A WP	7.5 oz	14	4.3 b-j	8.3 d-o	4.0 c-g	7.0 e-k	6.8 e-l
77 RU-17183-18A WP	7.5 oz	–					
+ RU-17183-18D WG.....	0.8 oz	14	4.0 c-j	4.5 f-o	2.8 c-g	4.8 g-o	6.0 e-o

(Continued)

Table 1A. Anthracnose control on annual bluegrass putting green turf: Rutgers University, 2018.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested per Plot (%) ¹				
			14 June	24 June	4 July	14 July	24 July
78 RU-17183-18A WP	7.5 oz	–					
+ RU-17183-18D WG.....	1.6 oz	14	3.3 d-j	4.3 g-o	1.8 d-g	3.0 j-o	3.0 k-r
79 Banner Maxx 1.3ME	1.5 fl oz	14	4.3 b-j	8.5 d-o	1.3 fg	11.5 b-e	8.3 c-j
80 Untreated check.....	–	–	13.5 a	21.3 a	11.0 a	18.0a	18.0 a
		INT ³⁰	DAT ³¹	DAT	DAT	DAT	DAT
		7	7	3	6	2	5
		14	14	10	6	2	12
		21	7	17	6	16	5
		28	28	10	20	30	40

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 treatments 21 and 22), 24 May (7-day treatments), 31 May (7- and 14-day treatments), 7 June (7- and 21-day treatments), 14 June (7-, 14-, and 28-day treatments, initiated treatment 21), 21 June (7-day treatment), 28 June (7-, 14-, and 21-day treatments), 5 July (7-day treatment), 12 July (7- and 14-day treatments), 19 July (7- and 21-day treatments), 26 July (7- and 14-day treatments, initiated treatment 22), 2 August (7-day treatment), 9 August (7-, 14-, and 21-day treatments), 16 August (7-day treatment), 23 August (treatments 27, 28, 47, 48, and 70 to 72), and 6 September (treatments 27, 28, 47, and 48).

³ Treatments 16 to 18 and 23 to 25 were applied on a 14-day interval on 17 May, 31 May, and 14 June.

⁴ Treatments 19 and 26 were applied on a 28-day interval on 17 May and 14 June.

⁵ ALT = Alternation treatment where treatment 20 consisted of RU-2125-18A SC (0.1963 fl oz) applied on 17 May and 31 May, and RU-2125-18A SC (0.1309 fl oz) applied on 14 June.

⁶ Treatment 21 was applied as an early curative on 14 June when disease was greater than 5% in any rep and then reapplied once on 28 June.

⁷ Treatment 22 was applied as a late curative on 26 July when disease was greater than 20% on any rep and then reapplied once 14 days later on 9 August.

(Continued)

Table 1A. Anthracnose control on annual bluegrass putting green turf: Rutgers University, 2018.

- ⁸ ALT = Alternation treatment where treatment 27 (2018 Anthracnose Program #1) consisted of Daconil Action 6.1SC (3.5 fl oz) + Velista 50WG (0.5 oz) + A14658H 4.1SC (6.0 fl oz) + Primo MAXX 1ME (0.125 fl oz) applied on 17 May, 28 June, and 9 August, and Daconil Action 6.1SC (3.5 fl oz) + Briskway 2.7SC (0.5 fl oz) + A14658H 4.1SC (6.0 fl oz) + Primo MAXX 1ME (0.125 fl oz) applied on 31 May, 12 July, and 23 August, and Daconil Action 6.1SC (3.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + A14658H 4.1SC (6.0 fl oz) + Primo MAXX (0.125 fl oz) applied on 14 June, 26 July, and 6 September.
- ⁹ ALT = Alternation treatment where treatment 28 (2018 Anthracnose Program #2) consisted of Daconil Action 6.1SC (3.5 fl oz) + Velista 50WG (0.5 oz) + A14658H 4.1SC (6.0 fl oz) + Primo MAXX 1ME (0.125 fl oz) applied on 17 May, 28 June, and 9 August, and Daconil Action 6.1SC (3.5 fl oz) + Briskway 2.7SC (0.5 fl oz) + A14656H 4.1SC (6.0 fl oz) + Primo MAXX (0.125 fl oz) applied on 31 May, 12 July, and 23 August, and Secure Action 4.2SC (0.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + A14658H 4.1SC (6.0 fl oz) + Primo MAXX (0.125 fl oz) applied on 14 June, 26 July, and 6 September.
- ¹⁰ VAR = Variable spray schedule where treatment 34 (2018 Anthracnose Program #3) consisted of Premion 4.265SC (8.0 fl oz) + Harrell's PAR 100LC (0.37 fl oz) applied 17 May, Chipco Signature XTRA 60WDG (4.0 oz) + Daconil Ultrex 82.5WDG (3.25oz) applied 31 May, Velista 50WDG (0.3 oz) + Affirm 11.3WDG (0.9 oz) applied 14 June, Premion 4.265SC (4.0 fl oz) + Medallion 1.04SC (1.5 fl oz) + Harrell's PAR 100LC (0.37 fl oz) applied 28 June, Chipco Signature XTRA 60WDG (4.0 oz) + Daconil Ultrex 82.5WDG (3.25 oz) applied 12 July, Velista 50WDG (0.3 oz) + Affirm 2.5WP (4.0 oz) applied 26 July, and Premion 4.265SC (6.0 fl oz) + Harrell's PAR 100LC (0.37 fl oz) applied 9 August.
- ¹¹ Treatment 44 was applied on a 14-day interval on 17 May, 31 May, and 14 June and irrigated with 1.0 gal of water per 3 x 5 plot.
- ¹² Treatment 45 consisted of CrossOver Turf 100SGN (15.0 lb) + Banner MAXX 1.3ME (1.5 fl oz) applied 17 May and 31 May (CrossOver Turf was applied first, then irrigated in with 1.0 gal per 3 x 5 plot, then Banner MAXX was applied); Banner MAXX 1.3ME (1.5 fl oz) was continued alone every 14 days from 28 June to 9 August.
- ¹³ Treatment 46 (2018 Anthracnose Program #4) consisted of KFD-271-02 3.65SC (1.1 fl oz) + KFD-391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied on a 14-day interval.
- ¹⁴ VAR = Variable spray schedule where treatment 47 (2018 Anthracnose Program #5) consisted of Kestrel 1.3EC (2.0 fl oz) + Pegasus DFX 82.5WDG (3.25 oz) + Goldwing 1.0SC (0.125 fl oz) applied 17 May, Dovetail 3.74SC (4.0 fl oz) + Manzate Max T&O 4SC (6.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 31 May, Pegasus DFX 82.5WDG (3.25 oz) + Goliath XP 1.389SC (2.24 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 14 June, Manzate Max T&O 4SC (6.4 fl oz) + Raven 2SC (4.0 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 28 June, Pegasus DFX 82.5WDG (3.25 oz) + Tebuzol 3.6F (0.6 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 12 July, Dovetail 3.74SC (4.0 fl oz) + Manzate Max T&O 4SC (6.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 26 July, Pegasus DFX 82.5WDG (3.25 oz) + Goliath XP 1.389SC (2.24 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 9 August, Manzate Max T&O 4SC (6.4 fl oz) + Raven 2SC (4.0 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 23 August, and Kestrel 1.3EC (2.0 fl oz) + Pegasus DFX 82.5WDG (3.25 oz) + Goldwing 1.0SC (0.125 fl oz) applied 6 September.

Table 1A. Anthracnose control on annual bluegrass putting green turf: Rutgers University, 2018.

- ¹⁵ VAR = Variable spray schedule where treatment 48 (2018 Anthracnose Program #6) consisted of Goliath XP 1.389SC (3.0 fl oz) + Manzate Max T&O 4SC (6.4 fl oz) + KFD-391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 17 May, Raven 2SC (4.0 fl oz) + Pegasus DFX 82.5WDG (3.25 oz) applied 31 May, Tebuzol 3.6F (0.6 fl oz) + KFD-391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 14 June, Raven 2SC (4.0 fl oz) + Pegasus DFX 82.5WDG (3.25 oz) applied 28 June, Goliath XP 1.389SC (3.0 fl oz) + Manzate Max T&O 4SC (6.4 fl oz) + Dovetail 3.74SC (4.0 fl oz) + KFD-391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 12 July, Raven 2SC (4.0 fl oz) + Pegasus DFX 82.5WDG (3.25 oz) applied 26 July, Tebuzol 3.6F (0.6 fl oz) + KFD-391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 9 August, Raven 2SC (4.0 fl oz) + Pegasus DFX 82.5WDG (3.25 oz) applied 23 August, and Goliath XP 1.389SC (3.0 fl oz) + Manzate Max T&O 4SC (6.4 fl oz) + KFD-391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 6 September.
- ¹⁶ Treatment 49 (2018 Anthracnose Program #7) consisted of KFD-09-06 3.6F (0.092 fl oz) + KFD-112-02 2.08SC (0.18 fl oz) + KFD-389-01 82.5WDG (3.25 oz) + KFD 391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied on a 14-day interval.
- ¹⁷ Treatment 50 (2018 Anthracnose Program #8) consisted of BioMAX 4-0-0LC (3.0 fl oz) + N30+LC (4.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 LC (3.0 fl oz) + PAR SG (0.37 fl oz) + Daconil Action 6.1SC (2.0 fl oz) applied on a 14-day interval.
- ¹⁸ Treatment 51 (2018 Anthracnose Program #9) consisted of BioMAX 4-0-0 LC (3.0 fl oz) + N30+LC (4.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 LC (3.0 fl oz) + PAR SG (0.37 fl oz) + Daconil Action 6.1SC (2.0 fl oz) + Protos 8.65LC (1.0 fl oz) applied on a 14-day interval.
- ¹⁹ Treatment 52 (2018 Anthracnose Program #10) consisted of BioMAX 4-0-0 LC (3.0 fl oz) + N30+LC (4.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 LC (3.0 fl oz) + PAR SG (0.37 fl oz) + Daconil Action 6.1SC (2.0 fl oz) + Protos 8.65LC (2.0 fl oz) applied on a 14-day interval.
- ²⁰ Treatment 53 (2018 Anthracnose Program #11) consisted of BioMAX 4-0-0 LC (3.0 fl oz) + N30+LC (4.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 LC (3.0 fl oz) + PAR SG (0.37 fl oz) + Daconil Action 6.1SC (2.0 fl oz) + SAX WP (0.0095 oz) applied on a 14-day interval.
- ²¹ Treatment 54 (2018 Anthracnose Program #12) consisted of BioMAX 4-0-0 LC (3.0 fl oz) + N30+LC (4.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 LC (3.0 fl oz) + PAR SG (0.37 fl oz) + Daconil Action 6.1SC (2.0 fl oz) + SAX WP (0.019 oz) applied on a 14-day interval.
- ²² Treatment 56 (2018 Anthracnose Program #13) consisted of Gary's Green Ultra LC (12.0 fl oz) + PK Plus LC (6.0 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied on a 14-day interval.
- ²³ Treatment 57 (2018 Anthracnose Program #14) consisted of Manni-Plex Grow LC (12.0 fl oz) + Nutri-Gro Magnum LC (2.0 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied on a 14-day interval.
- ²⁴ Treatment 59 (2018 Anthracnose Program #15) consisted of EX Elicitor/WF 002LC (3.0 fl oz) + PK Plus LC (6.0 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied on a 14-day interval.
- ²⁵ ALT = Alternation treatment where treatment 61 (2018 Anthracnose Program #16) consisted of 29-0-0 LC (4.0 fl oz) + DKP LC (6.0 fl oz) + Kelplant 1-0-1 LC (6.0 fl oz) + Phosphite 30LC (3.0 fl oz) + Hydration A+LC (0.7 fl oz) applied on 17 May, 31 May, 14 June, 28 June, 12 July, 26 July, and 9 August, and Cal Nitrate LC (6.0 fl oz) + Sugar Cal LC (3.0 fl oz) + Impulse LC (3.0 fl oz) + Omega LC (0.7 fl oz) + Kelp Iron 8-0 LC (3.0 fl oz) + Flo Thru A+LC (0.7 fl oz) applied on 24 May, 7 June, 21 June, 5 July, 19 July, 2 August, and 16 August.
- ²⁶ ALT = Alternation treatment where treatment 62 (2018 Anthracnose Program #17) consisted of 29-0-0 LC (4.0 fl oz) + Healthy Start LC (4.0 fl oz) + Phosphite 30 LC (2.0 fl oz) + RMM LC (1.5 fl oz) + Zinc 7% LC (1.5 fl oz) + Hydration A+ LC (0.7 fl oz) + Flo Thru A+ LC (0.7 fl oz) applied 17 May, 31 May, 14 June, 28 June, 12 July, 26 July, and 9 August, and 29-0-0 LC (4.0 fl oz) + Sugar Cal LC (4.0 fl oz) + Phosphite 30 LC (3.0 fl oz) + Impulse LC (3.0 fl oz) + Zinc 7% LC (1.5 fl oz) + Hydration A+ LC (0.7 fl oz) + Flo Thru A+ LC (0.7 fl oz) applied 24 May, 7 June, 21 June, 5 July, 19 July, 2 August, and 16 August.

Table 1A. Anthracnose control on annual bluegrass putting green turf: Rutgers University, 2018.

²⁷ VAR = Variable spray schedule where treatment 70 (2018 Anthracnose Program #18) consisted of Alude 5.128XL (5.5 fl oz) + Civitas PreMixed LC (8.5 fl oz) applied 17 May, Alude 5.178XL (5.5 fl oz) + Civitas PreMixed LC (8.5 fl oz) + Propiconazole EC (1.0 fl oz) applied 31 May, Medallion 1.04SC (1.0 fl oz) + Alude 5.178XL (5.5 fl oz) + Civitas PreMixed LC (8.5 fl oz) applied 14 June, Alude 5.178XL (5.5 fl oz) + Civitas PreMixed LC (8.5 fl oz) + Velista 50WG (0.3 oz) applied 28 June, Alude 5.178XL (5.5 fl oz) + Civitas PreMixed (8.5 fl oz) + Azoxystrobin 50WG (0.2 oz) applied 12 July, Civitas PreMixed LC (8.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + Alude 5.178XL (5.5 fl oz) applied 26 July, Alude 5.178XL (5.5 fl oz) + Civitas PreMixed LC (8.5 fl oz) + Azoxystrobin 50WG (0.2 oz) applied 9 August, and Alude 5.178XL (5.5 fl oz) + Civitas PreMixed LC (8.5 fl oz) + Velista 50WG (0.3 oz) applied 23 August.

²⁸ VAR = Variable spray schedule where treatment 71 (2018 Anthracnose Program #19) consisted of Alude 5.178XL (5.5 fl oz) applied 17 May, Alude 5.178XL (5.5 fl oz) + Propiconazole EC (1.0 fl oz) applied 31 May, Medallion 1.04SC (1.0 fl oz) + Alude 5.178XL (5.5 fl oz) applied 14 June, Alude 5.178XL (5.5 fl oz) + Velista 50WG (0.3 oz) applied 28 June, Alude 5.178XL (5.5 fl oz) + Azoxystrobin 50WG (0.2 oz) applied 12 July, Medallion 1.04SC (1.0 fl oz) + Alude 5.178XL (5.5 fl oz) applied 26 July, Alude 5.178XL (5.5 fl oz) + Azoxystrobin 50WG (0.2 oz) applied 9 August, and Alude 5.178XL (5.5 fl oz) + Velista 50WG (0.3 oz) applied 23 August.

²⁹ VAR = Variable spray schedule where treatment 72 (2018 Anthracnose Program #20) consisted of Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) applied 17 May, Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) + Propiconazole EC (1.0 oz) applied 31 May, Medallion 1.04SC (1.0 fl oz) + Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) applied 14 June, Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) + Velista 50WG (0.3 oz) applied 28 June, Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) + Azoxystrobin 50WG (0.2 oz) applied 12 July, Daconil Ultrex 82.5WDG (1.8 oz) + Medallion 1.04SC (1.0 fl oz) + Alude 5.178XL (5.5 fl oz) applied 26 July, Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) + Azoxystrobin 50WG (0.2 oz) applied 9 August, and Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) + Velista 50WG (0.3 oz) applied 23 August.

³⁰ INT = Spray interval in days.

³¹ DAT = Days after last treatment.

Table 1B. Anthracnose control with fungicides and biorational products on annual bluegrass putting green turf: Rutgers University, 2018.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested per Plot (%) ¹					
			3 Aug.	13 Aug.	23 Aug.	2 Sept.	12 Sept.	22 Sept.
1 Maxtima 3.33SC	0.4 fl oz	14	4.5 k-x	2.8 m-v	3.5 n-x	17.3 m-w	20.0 d-l	29.5 e-m
2 Maxtima 3.33SC	0.6 fl oz	14	4.0 m-y	1.0 s-v	3.3 o-x	10.3 w-z'g'	13.8 f-t	23.0 k-s
3 Maxtima 3.33SC	0.8 fl oz	14	3.0 o-y	0.5 uv	2.8 q-x	9.8 w-z'h'	14.8 f-r	19.5 m-y
4 Torque 3.6SC	1.1 fl oz	14	0.5 xy	0.5 uv	2.8 q-x	8.3 z'a'-i'	8.8 n-y	12.3 t-z'f'
5 Navicon Intrinsic 3.34SC.....	0.85 fl oz	14	3.3 n-y	1.3 r-v	2.5 q-x	14.8 p-z'b'	13.8 f-t	25.3 g-q
6 Headway 1.39EC.....	3.0 fl oz	14	4.0 m-y	5.0 i-u	2.5 q-x	9.5 x-z'h'	10.3 l-y	14.3 r-z'd'
7 RU-25123-18A LC.....	6.0 fl oz	14	12.5 d-f	10.5 b-g	20.8 bc	30.5 e-g	36.0 bc	34.8 c-i
8 RU-25123-18A LC.....	10.0 fl oz	14	7.3 g-n	5.3 i-t	13.8 d-f	25.0 g-l	27.0 cd	33.5 d-k
9 RU-25123-18B LC	6.0 fl oz	14	10.3 e-i	14.3 b	23.8 b	37.3 c-e	45.0 ab	42.3 b-d
10 RU-25123-18B LC	10.0 fl oz	14	7.0 g-p	11.5 b-e	16.3 d	20.0 j-r	22.8 d-h	24.5 i-r
11 RU-25123-18A LC.....	6.0 fl oz	—						
+ RU-25123-18D SC.....	1.1 fl oz	14	1.5 t-y	1.3 r-v	2.3 r-x	4.8 z'e'-i'	2.0 xy	7.5 z'a'-g'
12 RU-25123-18B LC	6.0 fl oz	—						
+ RU-25123-18D SC.....	1.1 fl oz	14	1.3 u-y	0.3 v	1.5 u-x	3.3 z'g'-i'	3.0 u-y	8.0 z-z'g'
13 RU-25123-18B LC	6.0 fl oz	—						
+ RU-25123-18E LC	5.0 fl oz	14	7.5 g-n	8.0 e-l	6.3 i-s	19.8 j-s	13.8 f-t	23.5 j-s
14 RU-25123-18B LC	6.0 fl oz	—						
+ RU-25123-18F LC	3.0 fl oz	14	5.8 j-t	6.5 g-o	6.5 h-r	26.0 g-k	21.0 d-k	23.5 j-s
15 RU-25123-18D SC.....	1.1 fl oz	14	0.8 w-y	1.0 s-v	3.0 p-x	4.0 z'f'-i'	2.8 v-y	4.3 z'd'-g'
16 RU-2125-18A SC	0.06545 fl oz	14 ³	9.0 f-j	8.5 e-k	9.8 f-k	22.8 h-o	28.5 cd	35.5 c-g
17 RU-2125-18A SC	0.0982 fl oz	14 ³	4.8 j-x	5.0 i-u	5.5 k-v	20.5 i-r	20.0 d-l	24.5 i-r
18 RU-2125-18A SC	0.1309 fl oz	14 ³	5.5 j-u	3.5 l-v	2.8 q-x	18.5 k-u	16.0 e-o	17.5 o-z'a'
19 RU-2125-18A SC	0.1963 fl oz	28 ⁴	3.8 m-y	2.5 n-v	6.8 h-q	28.3 f-h	19.8 d-m	30.3 e-l
20 RU-2125-18A SC	0.1963 fl oz	—						
/ RU-2125-18A SC	0.1309 fl oz	14 ⁵	5.3 j-u	4.3 k-v	8.0 h-m	23.8 g-n	23.5 d-g	29.3 e-m
21 RU-2125-18A SC	0.1963 fl oz	14 ⁶	8.8 f-k	7.3 e-m	5.0 l-x	21.3 i-q	12.5 h-w	22.8 l-t
22 RU-2125-18A SC	0.1963 fl oz	14 ⁷	7.3 g-n	8.5 e-k	8.0 h-m	26.0 g-k	26.3 c-e	34.0 d-j
23 RU-2125-18B ME.....	2.0 fl oz	14 ³	5.3 j-u	6.5 g-o	6.0 j-t	16.3 n-y	8.5 n-y	18.5 n-z
24 RU-2125-18C SC.....	1.0 fl oz	14 ³	4.3 l-y	2.5 n-v	3.0 p-x	16.3 n-y	10.0 l-y	15.3 q-z'c'
25 RU-2125-18D SC.....	1.5 fl oz	14 ³	0.8 w-y	1.8 p-v	2.0 s-x	7.0 z'c'-i'	9.5 m-y	21.5 l-u

(Continued)

Table 1B. Anthracnose control on annual bluegrass putting green turf: Rutgers University, 2018.

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Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested per Plot (%) ¹					
			3 Aug.	13 Aug.	23 Aug.	2 Sept.	12 Sept.	22 Sept.
26 RU-2125-18E SC	1.9 fl oz	28 ⁴	4.5 k-x	4.8 j-v	10.8 e-h	18.8 k-t	16.0 e-o	24.0 j-r
27 2018 Anth Prog. #1	—	ALT ⁸	1.8 s-y	5.8 h-r	1.3 v-x	2.3 z'h'i'	2.5 w-y	9.5 x-z'g'
28 2018 Anth Prog. #2	—	ALT ⁹	3.3 n-y	4.3 k-v	3.8 m-x	9.0 y-z'h'	5.5 p-y	5.3 z'c'-g'
29 Fame +C 4.25SC	4.0 fl oz	14	5.5 j-u	5.8 h-r	9.3 g-l	18.8 k-t	10.8 k-y	11.5 u-z'g'
30 Premion 4.265SC	4.0 fl oz	—						
+ Harrell's PAR 100LC	0.37 fl oz	14	2.0 s-y	2.5 n-v	2.5 q-x	9.0 y-z'h'	9.8 l-y	20.0 l-x
31 Premion 4.265SC	6.0 fl oz	—						
+ Harrell's PAR 100LC	0.37 fl oz	14	0.0 y	1.0 s-v	1.8 t-x	7.5 z'a'-i'	7.3 n-y	16.5 p-z'c'
32 Premion 4.265SC	8.0 fl oz	—						
+ Harrell's PAR 100LC	0.37 fl oz	14	0.0 y	0.8 t-v	1.3 v-x	2.3 z'h'i'	4.5 r-y	4.8 z'c'-g'
33 Autilus 4SC	6.0 fl oz	—						
+ Harrell's PAR 100LC	0.37 fl oz	14	0.8 w-y	3.5 l-v	3.3 o-x	25.8 g-k	15.3 f-q	14.8 q-z'd'
34 2018 Anth Prog. #3	—	VAR ¹⁰	7.3 g-n	6.5 g-o	4.3 m-x	11.5 t-z'f'	5.3 q-y	13.3 s-z'e'
35 AMV4221 3SC	0.8 fl oz	14	4.0 m-y	2.0 o-v	4.5 m-x	13.0 r-z'd'	13.3 g-u	20.5 l-w
36 AMV4221 3SC	1.0 fl oz	14	1.3 u-y	1.8 p-v	3.3 o-x	10.8 v-z'g'	9.0 n-y	19.8 l-x
37 AMV4221 3SC	1.6 fl oz	14	1.8 s-y	1.3 r-v	3.5 n-x	7.0 z'c'-i'	4.3 s-y	11.0 u-z'g'
38 Mirage 2SC	1.0 fl oz	14	1.0 v-y	0.8 t-v	1.3 v-x	6.0 z'd'-i'	13.5 g-u	21.0 l-v
39 AMV1033 WDG	0.138 oz	14	11.0 d-g	9.5 d-i	17.5 cd	36.0 c-e	35.8 bc	45.0 bc
40 AMV1033 WDG	0.275 oz	14	6.8 g-q	3.3 m-v	7.8 h-n	34.5 d-f	28.0 cd	39.5 b-e
41 AMV1033 WDG	0.55 oz	14	4.5 k-x	3.8 l-v	6.8 h-q	30.8 e-g	29.3 cd	37.5 b-f
42 Maxtima 3.33SC	1.6 fl oz	14	0.5 xy	1.8 p-v	2.3 r-x	6.3 z'c'-i'	12.0 j-x	26.3 g-p
43 Lexicon 4.16SC	0.47 fl oz	14	7.5 g-n	4.0 k-v	10.0 f-j	40.0 cd	49.8 a	63.8 a
44 CrossOver Turf 100SGN	15.0 lb	14 ¹¹	13.8 de	13.3 b-d	7.8 h-n	16.0 o-z	5.0 q-y	1.3 z'g'
45 CrossOver Turf 100SGN	15.0 lb	—						
+ Banner MAXX 1.3ME	1.5 fl oz	14 ¹²	24.8 a	14.8 b	5.0 l-x	11.0 u-z'f'	6.8 n-y	6.0 z'b'-g'
46 2018 Anth Prog. #4	—	14 ¹³	4.5 k-x	3.0 m-v	3.5 n-x	23.3 g-m	22.3 d-j	27.0 f-p
47 2018 Anth Prog. #5	—	VAR ¹⁴	4.3 l-y	4.8 j-v	5.3 l-w	8.5 z-z'i'	5.8 o-y	10.5 v-z'g'
48 2018 Anth Prog. #6	—	VAR ¹⁵	2.3 r-y	4.0 k-v	0.8 x	7.3 z'b'-i'	1.3 y	2.0 z'f'g'
49 2018 Anth Prog. #7	—	14 ¹⁶	1.0 v-y	0.5 uv	1.0 wx	5.0 z'e'-i'	16.3 e-n	11.3 u-z'g'
50 2018 Anth Prog. #8	—	14 ¹⁷	2.0 s-y	3.0 m-v	1.5 u-x	11.0 u-z'f'	3.5 t-y	7.5 z'a'-g'

(Continued)

Table 1B. Anthracnose control on annual bluegrass putting green turf: Rutgers University, 2018.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested per Plot (%) ¹					
			3 Aug.	13 Aug.	23 Aug.	2 Sept.	12 Sept.	22 Sept.
51 2018 Anth Prog. #9	–	14 ¹⁸	2.5 q-y	3.0 m-v	2.3 r-x	11.8 t-z'e'	5.8 o-y	4.5 z'd'-g'
52 2018 Anth Prog. #10	–	14 ¹⁹	4.0 m-y	1.8 p-v	2.3 r-x	9.5 x-z'h'	12.8 h-w	7.5 z'a'-g'
53 2018 Anth Prog. #11	–	14 ²⁰	1.8 s-y	3.0 m-v	2.3 r-x	14.8 p-z'b'	8.5 n-y	9.5 x-z'g'
54 2018 Anth Prog. #12	–	14 ²¹	2.0 s-y	3.8 l-v	2.8 q-x	13.0 r-z'd'	6.5 n-y	8.0 z-z'g'
55 Daconil Action 6.1SC	2.0 fl oz	14	6.8 g-q	4.8 j-v	14.8 de	42.5 bc	35.8 bc	37.3 b-f
56 2018 Anth Prog. #13	–	14 ²²	5.0 j-w	3.8 l-v	4.3 m-x	13.0 r-z'd'	7.8 n-y	9.5 x-z'g'
57 2018 Anth Prog. #14	–	14 ²³	10.8 e-h	11.3 b-f	8.0 h-m	28.0 f-i	13.0 h-v	18.5 n-z
58 EX Elicitor/WF - 002 LC	3.0 fl oz	–						
+ PK Plus LC.....	6.0 fl oz	14	5.8 j-t	2.8 m-v	5.8 j-u	24.3 g-m	19.8 d-m	18.0 o-z'a'
59 2018 Anth Prog. #15	–	14 ²⁴	4.5 k-x	5.5 h-s	5.3 l-w	16.8 m-x	15.8 f-p	24.5 i-r
60 Daconil Ultrex 82.5WG	1.8 oz	14	6.0 i-s	5.3 i-t	10.0 f-j	40.3 b-d	34.5 c	35.3 c-h
61 2018 Anth Prog. #16	–	ALT ²⁵	19.5 bc	11.5 b-e	6.3 i-s	10.0 w-z'g'	6.0 n-y	4.5 z'd'-g'
62 2018 Anth Prog. #17	–	ALT ²⁶	9.0 f-j	6.0 g-q	4.3 m-x	18.0 l-v	4.0 s-y	2.8 z'e'-g'
63 RU-21196-18G SC.....	1.1 fl oz	14	7.3 g-n	6.8 f-n	5.8 j-u	16.8 m-x	22.8 d-h	18.3 o-z
64 RU-21196-18G SC.....	1.73 fl oz	14	4.5 k-x	4.5 j-v	3.8 m-x	13.8 q-z'c'	10.0 l-y	8.3 z-z'g'
65 RU-21196-18G SC.....	2.36 fl oz	14	4.3 l-y	4.5 j-v	2.5 q-x	10.8 v-z'g'	14.0 f-s	9.0 y-z'g'
66 Insignia Intrinsic 2.1SC	0.7 fl oz	14	12.5 d-f	10.0 c-h	10.5 e-i	47.8 ab	51.3 a	47.3 b
67 RU-21196-18H SC.....	2.62 fl oz	14	2.8 p-y	1.5 q-v	1.8 t-x	5.3 z'e'-i'	6.5 n-y	9.0 y-z'g'
68 Tekken 1.8SC.....	3.0 fl oz	21	2.5 q-y	2.3 n-v	2.3 r-x	3.3 z'g'-i'	4.3 s-y	10.3 w-z'g'
69 Tartan StressGard 2.4SC.....	2.0 fl oz	21	1.5 t-y	0.5 uv	2.3 r-x	3.3 z'g'-i'	4.0 s-y	14.5 r-z'd'
70 2018 Anth Prog. #18	–	VAR ²⁷	1.8 s-y	1.8 p-v	2.0 s-x	1.3 z'i'	3.5 t-y	8.0 z-z'g'
71 2018 Anth Prog. #19	–	VAR ²⁸	3.3 n-y	5.0 i-u	2.8 q-x	15.0 p-z'a'	14.8 f-r	29.0 e-n
72 2018 Anth Prog. #20	–	VAR ²⁹	4.0 m-y	6.3 g-p	9.8 f-k	34.0 d-f	24.0 d-f	27.8 f-o
73 Traction 4SC.....	1.3 fl oz	14	1.5 t-y	2.0 o-v	3.3 o-x	13.0 r-z'd'	10.8 k-y	16.8 p-z'a'
74 Affirm 11.3WDG	0.9 oz	7	15.3 cd	9.0 d-j	7.5 h-o	12.3 s-z'e'	12.3 i-x	24.5 i-r
75 Affirm 11.3WDG	0.9 oz	–						
+ Alude 46LC	2.0 fl oz	7	8.0 g-m	7.3 e-m	7.5 h-o	7.8 z'a'-i'	7.3 n-y	21.0 l-v
76 RU-17183-18A WP	7.5 oz	14	12.5 d-f	11.8 b-e	13.3 d-g	27.3f-j	21.8 d-j	30.0 e-m
77 RU-17183-18A WP	7.5 oz	–						
+ RU-17183-18D WG.....	0.8 oz	14	6.5 h-r	6.8 f-n	7.3 h-p	25.5 g-l	27.0 cd	29.0 e-n

(Continued)

Table 1B. Anthracnose control on annual bluegrass putting green turf: Rutgers University, 2018.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Turf Area Infested per Plot (%) ¹					
			3 Aug.	13 Aug.	23 Aug.	2 Sept.	12 Sept.	22 Sept.
78 RU-17183-18A WP	7.5 oz	–						
+ RU-17183-18D WG.....	1.6 oz	14	4.8 j-x	6.8 f-n	6.8 h-q	21.5 h-p	22.5 d-i	24.8 h-r
79 Banner Maxx 1.3ME	1.5 fl oz	14	8.5 f-l	8.0 e-l	6.0 j-t	8.3 z'a'-i'	11.0 k-y	11.8 u-z'g'
80 Untreated check.....	–	–	22.8 ab	21.5 a	28.5 a	55.0 a	53.8 a	63.3 a
		INT ³⁰	DAT ³¹	DAT	DAT	DAT	DAT	DAT
		7	1	4	7	17	27	37
		14	8	4	14	24	34	30
		21	15	4	14	24	34	30
		28	50	60	70	80	90	100

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 treatments 21 and 22), 24 May (7-day treatments), 31 May (7- and 14-day treatments), 7 June (7- and 21-day treatments), 14 June (7-, 14-, and 28-day treatments, initiated treatment 21), 21 June (7-day treatment), 28 June (7-, 14-, and 21-day treatments), 5 July (7-day treatment), 12 July (7- and 14-day treatments), 19 July (7- and 21-day treatments), 26 July (7- and 14-day treatments, initiated treatment 22), 2 August (7-day treatment), 9 August (7-, 14-, and 21-day treatments), 16 August (7-day treatment), 23 August (treatments 27, 28, 47, 48, and 70 to 72), and 6 September (treatments 27, 28, 47, and 48).

³ Treatments 16 to 18 and 23 to 25 were applied on a 14-day interval on 17 May, 31 May, and 14 June.

⁴ Treatments 19 and 26 were applied on a 28-day interval on 17 May and 14 June.

⁵ ALT = Alternation treatment where treatment 20 consisted of RU-2125-18A SC (0.1963 fl oz) applied on 17 May and 31 May, and RU-2125-18A SC (0.1309 fl oz) applied on 14 June.

⁶ Treatment 21 was applied as an early curative on 14 June when disease was greater than 5% in any rep and then reapplied once on 28 June.

⁷ Treatment 22 was applied as a late curative on 26 July when disease was greater than 20% on any rep and then reapplied once 14 days later on 9 August.

(Continued)

Table 1B. Anthracnose control on annual bluegrass putting green turf: Rutgers University, 2018.

- ⁸ ALT = Alternation treatment where treatment 27 (2018 Anthracnose Program #1) consisted of Daconil Action 6.1SC (3.5 fl oz) + Velista 50WG (0.5 oz) + A14658H 4.1SC (6.0 fl oz) + Primo MAXX 1ME (0.125 fl oz) applied on 17 May, 28 June, and 9 August, and Daconil Action 6.1SC (3.5 fl oz) + Briskway 2.7SC (0.5 fl oz) + A14658H 4.1SC (6.0 fl oz) + Primo MAXX 1ME (0.125 fl oz) applied on 31 May, 12 July, and 23 August, and Daconil Action 6.1SC (3.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + A14658H 4.1SC (6.0 fl oz) + Primo MAXX (0.125 fl oz) applied on 14 June, 26 July, and 6 September.
- ⁹ ALT = Alternation treatment where treatment 28 (2018 Anthracnose Program #2) consisted of Daconil Action 6.1SC (3.5 fl oz) + Velista 50WG (0.5 oz) + A14658H 4.1SC (6.0 fl oz) + Primo MAXX 1ME (0.125 fl oz) applied on 17 May, 28 June, and 9 August, and Daconil Action 6.1SC (3.5 fl oz) + Briskway 2.7SC (0.5 fl oz) + A14656H 4.1SC (6.0 fl oz) + Primo MAXX (0.125 fl oz) applied on 31 May, 12 July, and 23 August, and Secure Action 4.2SC (0.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + A14658H 4.1SC (6.0 fl oz) + Primo MAXX (0.125 fl oz) applied on 14 June, 26 July, and 6 September.
- ¹⁰ VAR = Variable spray schedule where treatment 34 (2018 Anthracnose Program #3) consisted of Premion 4.265SC (8.0 fl oz) + Harrell's PAR 100LC (0.37 fl oz) applied 17 May, Chipco Signature XTRA 60WDG (4.0 oz) + Daconil Ultrex 82.5WDG (3.25oz) applied 31 May, Velista 50WDG (0.3 oz) + Affirm 11.3WDG (0.9 oz) applied 14 June, Premion 4.265SC (4.0 fl oz) + Medallion 1.04SC (1.5 fl oz) + Harrell's PAR 100LC (0.37 fl oz) applied 28 June, Chipco Signature XTRA 60WDG (4.0 oz) + Daconil Ultrex 82.5WDG (3.25 oz) applied 12 July, Velista 50WDG (0.3 oz) + Affirm 2.5WP (4.0 oz) applied 26 July, and Premion 4.265SC (6.0 fl oz) + Harrell's PAR 100LC (0.37 fl oz) applied 9 August.
- ¹¹ Treatment 44 was applied on a 14-day interval on 17 May, 31 May, and 14 June and irrigated with 1.0 gal of water per 3 x 5 plot.
- ¹² Treatment 45 consisted of CrossOver Turf 100SGN (15.0 lb) + Banner MAXX 1.3ME (1.5 fl oz) applied 17 May and 31 May (CrossOver Turf was applied first, then irrigated in with 1.0 gal per 3 x 5 plot, then Banner MAXX was applied); Banner MAXX 1.3ME (1.5 fl oz) was continued alone every 14 days from 28 June to 9 August.
- ¹³ Treatment 46 (2018 Anthracnose Program #4) consisted of KFD-271-02 3.65SC (1.1 fl oz) + KFD-391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied on a 14-day interval.
- ¹⁴ VAR = Variable spray schedule where treatment 47 (2018 Anthracnose Program #5) consisted of Kestrel 1.3EC (2.0 fl oz) + Pegasus DFX 82.5WDG (3.25 oz) + Goldwing 1.0SC (0.125 fl oz) applied 17 May, Dovetail 3.74SC (4.0 fl oz) + Manzate Max T&O 4SC (6.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 31 May, Pegasus DFX 82.5WDG (3.25 oz) + Goliath XP 1.389SC (2.24 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 14 June, Manzate Max T&O 4SC (6.4 fl oz) + Raven 2SC (4.0 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 28 June, Pegasus DFX 82.5WDG (3.25 oz) + Tebuzol 3.6F (0.6 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 12 July, Dovetail 3.74SC (4.0 fl oz) + Manzate Max T&O 4SC (6.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 26 July, Pegasus DFX 82.5WDG (3.25 oz) + Goliath XP 1.389SC (2.24 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 9 August, Manzate Max T&O 4SC (6.4 fl oz) + Raven 2SC (4.0 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 23 August, and Kestrel 1.3EC (2.0 fl oz) + Pegasus DFX 82.5WDG (3.25 oz) + Goldwing 1.0SC (0.125 fl oz) applied 6 September.

Table 1B. Anthracnose control on annual bluegrass putting green turf: Rutgers University, 2018.

- ¹⁵ VAR = Variable spray schedule where treatment 48 (2018 Anthracnose Program #6) consisted of Goliath XP 1.389SC (3.0 fl oz) + Manzate Max T&O 4SC (6.4 fl oz) + KFD-391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 17 May, Raven 2SC (4.0 fl oz) + Pegasus DFX 82.5WDG (3.25 oz) applied 31 May, Tebuzol 3.6F (0.6 fl oz) + KFD-391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 14 June, Raven 2SC (4.0 fl oz) + Pegasus DFX 82.5WDG (3.25 oz) applied 28 June, Goliath XP 1.389SC (3.0 fl oz) + Manzate Max T&O 4SC (6.4 fl oz) + Dovetail 3.74SC (4.0 fl oz) + KFD-391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 12 July, Raven 2SC (4.0 fl oz) + Pegasus DFX 82.5WDG (3.25 oz) applied 26 July, Tebuzol 3.6F (0.6 fl oz) + KFD-391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 9 August, Raven 2SC (4.0 fl oz) + Pegasus DFX 82.5WDG (3.25 oz) applied 23 August, and Goliath XP 1.389SC (3.0 fl oz) + Manzate Max T&O 4SC (6.4 fl oz) + KFD-391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 6 September.
- ¹⁶ Treatment 49 (2018 Anthracnose Program #7) consisted of KFD-09-06 3.6F (0.092 fl oz) + KFD-112-02 2.08SC (0.18 fl oz) + KFD-389-01 82.5WDG (3.25 oz) + KFD 391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied on a 14-day interval.
- ¹⁷ Treatment 50 (2018 Anthracnose Program #8) consisted of BioMAX 4-0-0LC (3.0 fl oz) + N30+LC (4.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 LC (3.0 fl oz) + PAR SG (0.37 fl oz) + Daconil Action 6.1SC (2.0 fl oz) applied on a 14-day interval.
- ¹⁸ Treatment 51 (2018 Anthracnose Program #9) consisted of BioMAX 4-0-0 LC (3.0 fl oz) + N30+LC (4.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 LC (3.0 fl oz) + PAR SG (0.37 fl oz) + Daconil Action 6.1SC (2.0 fl oz) + Protos 8.65LC (1.0 fl oz) applied on a 14-day interval.
- ¹⁹ Treatment 52 (2018 Anthracnose Program #10) consisted of BioMAX 4-0-0 LC (3.0 fl oz) + N30+LC (4.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 LC (3.0 fl oz) + PAR SG (0.37 fl oz) + Daconil Action 6.1SC (2.0 fl oz) + Protos 8.65LC (2.0 fl oz) applied on a 14-day interval.
- ²⁰ Treatment 53 (2018 Anthracnose Program #11) consisted of BioMAX 4-0-0 LC (3.0 fl oz) + N30+LC (4.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 LC (3.0 fl oz) + PAR SG (0.37 fl oz) + Daconil Action 6.1SC (2.0 fl oz) + SAX WP (0.0095 oz) applied on a 14-day interval.
- ²¹ Treatment 54 (2018 Anthracnose Program #12) consisted of BioMAX 4-0-0 LC (3.0 fl oz) + N30+LC (4.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 LC (3.0 fl oz) + PAR SG (0.37 fl oz) + Daconil Action 6.1SC (2.0 fl oz) + SAX WP (0.019 oz) applied on a 14-day interval.
- ²² Treatment 56 (2018 Anthracnose Program #13) consisted of Gary's Green Ultra LC (12.0 fl oz) + PK Plus LC (6.0 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied on a 14-day interval.
- ²³ Treatment 57 (2018 Anthracnose Program #14) consisted of Manni-Plex Grow LC (12.0 fl oz) + Nutri-Gro Magnum LC (2.0 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied on a 14-day interval.
- ²⁴ Treatment 59 (2018 Anthracnose Program #15) consisted of EX Elicitor/WF 002LC (3.0 fl oz) + PK Plus LC (6.0 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied on a 14-day interval.
- ²⁵ ALT = Alternation treatment where treatment 61 (2018 Anthracnose Program #16) consisted of 29-0-0 LC (4.0 fl oz) + DKP LC (6.0 fl oz) + Kelplant 1-0-1 LC (6.0 fl oz) + Phosphite 30LC (3.0 fl oz) + Hydration A+LC (0.7 fl oz) applied on 17 May, 31 May, 14 June, 28 June, 12 July, 26 July, and 9 August, and Cal Nitrate LC (6.0 fl oz) + Sugar Cal LC (3.0 fl oz) + Impulse LC (3.0 fl oz) + Omega LC (0.7 fl oz) + Kelp Iron 8-0 LC (3.0 fl oz) + Flo Thru A+LC (0.7 fl oz) applied on 24 May, 7 June, 21 June, 5 July, 19 July, 2 August, and 16 August.
- ²⁶ ALT = Alternation treatment where treatment 62 (2018 Anthracnose Program #17) consisted of 29-0-0 LC (4.0 fl oz) + Healthy Start LC (4.0 fl oz) + Phosphite 30 LC (2.0 fl oz) + RMM LC (1.5 fl oz) + Zinc 7% LC (1.5 fl oz) + Hydration A+ LC (0.7 fl oz) + Flo Thru A+ LC (0.7 fl oz) applied 17 May, 31 May, 14 June, 28 June, 12 July, 26 July, and 9 August, and 29-0-0 LC (4.0 fl oz) + Sugar Cal LC (4.0 fl oz) + Phosphite 30 LC (3.0 fl oz) + Impulse LC (3.0 fl oz) + Zinc 7% LC (1.5 fl oz) + Hydration A+ LC (0.7 fl oz) + Flo Thru A+ LC (0.7 fl oz) applied 24 May, 7 June, 21 June, 5 July, 19 July, 2 August, and 16 August.

Table 1B. Anthracnose control on annual bluegrass putting green turf: Rutgers University, 2018.

²⁷ VAR = Variable spray schedule where treatment 70 (2018 Anthracnose Program #18) consisted of Alude 5.128XL (5.5 fl oz) + Civitas PreMixed LC (8.5 fl oz) applied 17 May, Alude 5.178XL (5.5 fl oz) + Civitas PreMixed LC (8.5 fl oz) + Propiconazole EC (1.0 fl oz) applied 31 May, Medallion 1.04SC (1.0 fl oz) + Alude 5.178XL (5.5 fl oz) + Civitas PreMixed LC (8.5 fl oz) applied 14 June, Alude 5.178XL (5.5 fl oz) + Civitas PreMixed LC (8.5 fl oz) + Velista 50WG (0.3 oz) applied 28 June, Alude 5.178XL (5.5 fl oz) + Civitas PreMixed (8.5 fl oz) + Azoxystrobin 50WG (0.2 oz) applied 12 July, Civitas PreMixed LC (8.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + Alude 5.178XL (5.5 fl oz) applied 26 July, Alude 5.178XL (5.5 fl oz) + Civitas PreMixed LC (8.5 fl oz) + Azoxystrobin 50WG (0.2 oz) applied 9 August, and Alude 5.178XL (5.5 fl oz) + Civitas PreMixed LC (8.5 fl oz) + Velista 50WG (0.3 oz) applied 23 August.

²⁸ VAR = Variable spray schedule where treatment 71 (2018 Anthracnose Program #19) consisted of Alude 5.178XL (5.5 fl oz) applied 17 May, Alude 5.178XL (5.5 fl oz) + Propiconazole EC (1.0 fl oz) applied 31 May, Medallion 1.04SC (1.0 fl oz) + Alude 5.178XL (5.5 fl oz) applied 14 June, Alude 5.178XL (5.5 fl oz) + Velista 50WG (0.3 oz) applied 28 June, Alude 5.178XL (5.5 fl oz) + Azoxystrobin 50WG (0.2 oz) applied 12 July, Medallion 1.04SC (1.0 fl oz) + Alude 5.178XL (5.5 fl oz) applied 26 July, Alude 5.178XL (5.5 fl oz) + Azoxystrobin 50WG (0.2 oz) applied 9 August, and Alude 5.178XL (5.5 fl oz) + Velista 50WG (0.3 oz) applied 23 August.

²⁹ VAR = Variable spray schedule where treatment 72 (2018 Anthracnose Program #20) consisted of Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) applied 17 May, Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) + Propiconazole EC (1.0 oz) applied 31 May, Medallion 1.04SC (1.0 fl oz) + Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) applied 14 June, Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) + Velista 50WG (0.3 oz) applied 28 June, Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) + Azoxystrobin 50WG (0.2 oz) applied 12 July, Daconil Ultrex 82.5WDG (1.8 oz) + Medallion 1.04SC (1.0 fl oz) + Alude 5.178XL (5.5 fl oz) applied 26 July, Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) + Azoxystrobin 50WG (0.2 oz) applied 9 August, and Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) + Velista 50WG (0.3 oz) applied 23 August.

³⁰ INT = Spray interval in days.

³¹ DAT = Days after last treatment.

Table 1C. Anthracnose control with fungicides and biorational products on annual bluegrass putting green turf: Rutgers University, 2018.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Turf Quality ^{1,2}			Color ³		
			14 June	14 July	9 Aug.	14 June	14 July	9 Aug.
1 Maxtima 3.33SC	0.4 fl oz	14	7.8 a-i	7.9 b-k	5.6 h-m	5.0 o	5.1 o-q	5.0 m
2 Maxtima 3.33SC	0.6 fl oz	14	7.0 e-k	8.1 a-k	5.9 f-k	5.0 o	5.1 o-q	5.1 lm
3 Maxtima 3.33SC	0.8 fl oz	14	8.0 a-h	8.2 a-j	6.0 e-j	5.0 o	5.3 m-q	5.0 m
4 Torque 3.6SC	1.1 fl oz	14	8.1 a-h	5.0 q	5.8 g-l	5.2 m-o	5.0 q	5.5 f-m
5 Navicon Intrinsic 3.34SC.....	0.85 fl oz	14	7.4 a-j	8.1 a-k	5.9 f-k	5.0 o	5.0 q	5.0 m
6 Headway 1.39EC.....	3.0 fl oz	14	8.0 a-h	7.5 g-n	5.6 h-m	5.0 o	5.0 q	5.3 g-m
7 RU-25123-18A LC.....	6.0 fl oz	14	6.5 i-l	7.9 b-k	5.0 m-p	5.0 o	5.2 m-q	5.2 i-m
8 RU-25123-18A LC.....	10.0 fl oz	14	7.2 b-k	8.0 a-k	5.5 i-n	5.0 o	5.1 o-q	5.0 m
9 RU-25123-18B LC	6.0 fl oz	14	5.9 kl	7.5 g-n	4.9 n-p	5.0 o	5.0 q	5.1 lm
10 RU-25123-18B LC	10.0 fl oz	14	7.3 a-j	7.6 f-n	5.4 j-o	5.0 o	5.1 o-q	5.0 m
11 RU-25123-18A LC.....	6.0 fl oz	—						
+ RU-25123-18D SC.....	1.1 fl oz	14	7.0 e-k	5.7 pq	6.0 e-j	5.2 m-o	5.0 q	5.7 d-i
12 RU-25123-18B LC	6.0 fl oz	—						
+ RU-25123-18D SC.....	1.1 fl oz	14	8.0 a-h	5.1 q	6.1 e-i	5.2 m-o	5.0 q	6.2 cd
13 RU-25123-18B LC	6.0 fl oz	—						
+ RU-25123-18E LC	5.0 fl oz	14	7.1 d-k	7.4 i-n	5.1 l-o	5.1 no	5.0 q	5.0 m
14 RU-25123-18B LC	6.0 fl oz	—						
+ RU-25123-18F LC	3.0 fl oz	14	7.5 a-j	8.3 a-i	5.3 k-o	5.0 o	5.1 o-q	5.0 m
15 RU-25123-18D SC.....	1.1 fl oz	14	7.5 a-j	4.8 q	5.9 f-k	5.1 no	5.0 q	5.4 g-m
16 RU-2125-18A SC	0.06545 fl oz	14 ⁵	7.4 a-j	8.0 a-k	5.5 i-n	5.0 o	5.1 o-q	5.4 g-m
17 RU-2125-18A SC	0.0982 fl oz	14 ⁵	7.4 a-j	7.5 g-n	5.5 i-n	5.0 o	5.0 q	5.0 m
18 RU-2125-18A SC	0.1309 fl oz	14 ⁵	7.8 a-i	8.0 a-k	5.8 g-l	5.1 no	5.4 l-q	5.1 lm
19 RU-2125-18A SC	0.1963 fl oz	28 ⁶	7.9 a-h	8.4 a-g	5.8 g-l	5.2 m-o	5.1 o-q	5.6 f-l
20 RU-2125-18A SC	0.1963 fl oz	—						
/ RU-2125-18A SC	0.1309 fl oz	14 ⁷	8.2 a-h	7.8 c-l	5.3 k-o	5.1 no	5.1 o-q	5.0 m
21 RU-2125-18A SC	0.1963 fl oz	14 ⁸	6.2 j-l	8.2 a-j	5.5 i-n	5.0 o	5.2 m-q	5.1 lm
22 RU-2125-18A SC	0.1963 fl oz	14 ⁹	7.0 e-k	6.8 no	5.5 i-n	5.0 o	5.6 i-o	5.0 m
23 RU-2125-18B ME.....	2.0 fl oz	14 ⁵	7.6 a-i	8.1 a-k	5.9 f-k	5.3 k-o	5.1 o-q	5.0 m
24 RU-2125-18C SC.....	1.0 fl oz	14 ⁵	7.4 a-j	7.6 f-n	6.0 e-j	5.0 o	5.0 q	5.0 m
25 RU-2125-18D SC.....	1.5 fl oz	14 ⁵	8.6 a	8.0 a-k	6.0 e-j	6.2 fg	5.7 g-m	5.4 g-m

(Continued)

Table 1C. Anthracnose control on annual bluegrass putting green turf: Rutgers University, 2018.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Turf Quality ^{1,2}			Color ³		
			14 June	14 July	9 Aug.	14 June	14 July	9 Aug.
26 RU-2125-18E SC.....	1.9 fl oz	28 ⁶	8.0 a-h	8.0 a-k	5.8 g-l	5.1 no	5.1 o-q	5.0 m
27 2018 Anth Prog. #1.....	—	ALT ¹⁰	8.2 a-h	7.8 c-l	6.3 e-h	5.9 g-i	5.8 g-l	5.1 lm
28 2018 Anth Prog. #2.....	—	ALT ¹¹	6.9 g-k	7.0 l-o	6.4 c-g	5.4 j-n	6.0 e-i	6.0 c-f
29 Fame +C 4.25SC.....	4.0 fl oz	14	7.4 a-j	8.0 a-k	5.9 f-k	5.2 m-o	5.9 f-k	5.3 g-m
30 Premion 4.265SC.....	4.0 fl oz	—						
+ Harrell's PAR 100LC.....	0.37 fl oz	14	8.3 a-f	7.9 b-k	6.4 c-g	6.8 de	6.1 e-h	5.0 m
31 Premion 4.265SC.....	6.0 fl oz	—						
+ Harrell's PAR 100LC.....	0.37 fl oz	14	8.0 a-h	7.7 e-m	6.6 b-e	7.1 cd	6.1 e-h	5.4 g-m
32 Premion 4.265SC.....	8.0 fl oz	—						
+ Harrell's PAR 100LC.....	0.37 fl oz	14	8.2 a-h	8.0 a-k	6.9 a-d	7.1 cd	6.5 e	6.1 c-e
33 Autilus 4SC.....	6.0 fl oz	—						
+ Harrell's PAR 100LC.....	0.37 fl oz	14	8.3 a-f	8.8 ab	6.5 b-f	6.8 de	7.3 d	5.2 i-m
34 2018 Anth Prog. #3.....	—	VAR ¹²	7.0 e-k	8.5 a-e	5.8 g-l	5.4 j-n	6.2 e-g	5.0 m
35 AMV4221 3SC.....	0.8 fl oz	14	8.1 a-h	8.1 a-k	5.9 f-k	5.3 k-o	5.1 o-q	5.0 m
36 AMV4221 3SC.....	1.0 fl oz	14	8.1 a-h	7.7 e-m	5.9 f-k	5.2 m-o	5.0 q	5.3 g-m
37 AMV4221 3SC.....	1.6 fl oz	14	7.7 a-i	7.6 f-n	6.1 e-i	5.2 m-o	5.0 q	5.3 g-m
38 Mirage 2SC.....	1.0 fl oz	14	7.8 a-i	8.0 a-k	6.3 e-h	5.3 k-o	5.0 q	5.3 g-m
39 AMV1033 WDG.....	0.138 oz	14	7.1 d-k	7.5 g-n	5.1 l-o	5.0 o	5.1 o-q	5.0 m
40 AMV1033 WDG.....	0.275 oz	14	7.7 a-i	8.2 a-j	5.4 j-o	5.0 o	5.0 q	5.0 m
41 AMV1033 WDG.....	0.55 oz	14	7.7 a-i	7.8 c-l	5.4 j-o	5.0 o	5.0 q	5.0 m
42 Maxtima 3.33SC.....	1.6 fl oz	14	8.3 a-f	8.7 a-c	6.4 c-g	5.0 o	5.5 j-p	5.4 g-m
43 Lexicon 4.16SC.....	0.47 fl oz	14	8.0 a-h	8.1 a-k	5.1 l-o	5.0 o	5.0 q	5.0 m
44 CrossOver Turf 100SGN.....	15.0 lb	14 ¹³	8.2 a-h	8.2 a-j	5.0 m-p	5.1 no	5.0 q	5.0 m
45 CrossOver Turf 100SGN.....	15.0 lb	—						
+ Banner MAXX 1.3ME.....	1.5 fl oz	14 ¹⁴	8.5 a-c	7.8 c-l	4.9 n-p	5.1 no	5.3 m-q	5.5 f-m
46 2018 Anth Prog. #4.....	—	14 ¹⁵	7.6 a-i	8.7 a-c	6.6 b-e	5.7 h-j	7.4 cd	5.8 d-g
47 2018 Anth Prog. #5.....	—	VAR ¹⁶	8.7 a	7.2 k-o	6.0 e-j	6.0 f-h	5.5 j-p	5.7 d-i
48 2018 Anth Prog. #6.....	—	VAR ¹⁷	8.1 a-h	8.9 a	6.4 c-g	6.3 f	7.5 b-d	5.4 g-m
49 2018 Anth Prog. #7.....	—	14 ¹⁸	8.3 a-f	8.3 a-i	6.1 e-i	5.2 m-o	6.0 e-i	6.0 c-f
50 2018 Anth Prog. #8.....	—	14 ¹⁹	7.4 a-j	8.5 a-e	7.5 a	7.6 a	7.9 ab	6.9 ab

(Continued)

Table 1C. Anthracnose control on annual bluegrass putting green turf: Rutgers University, 2018.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Turf Quality ^{1,2}			Color ³		
			14 June	14 July	9 Aug.	14 June	14 July	9 Aug.
51 2018 Anth Prog. #9	–	14 ²⁰	7.8 a-i	8.3 a-i	7.1 ab	7.6 a	7.8 a-c	7.0 ab
52 2018 Anth Prog. #10	–	14 ²¹	8.2 a-h	8.9 a	7.0 a-c	7.6 a	7.4 cd	6.9 ab
53 2018 Anth Prog. #11	–	14 ²²	8.2 a-h	8.1 a-k	7.1 ab	7.6 a	8.0 a	7.4 a
54 2018 Anth Prog. #12	–	14 ²³	7.8 a-i	8.3 a-i	7.1 ab	7.7 a	7.9 ab	7.1 a
55 Daconil Action 6.1SC	2.0 fl oz	14	7.6 a-i	7.4 i-n	5.1 l-o	5.0 o	5.0 q	5.0 m
56 2018 Anth Prog. #13	–	14 ²⁴	8.5 a-c	8.5 a-e	7.1 ab	5.6 i-l	6.5 e	6.5 bc
57 2018 Anth Prog. #14	–	14 ²⁵	7.2 c-k	8.5 a-e	5.3 k-o	5.7 h-j	6.4 ef	6.0 c-f
58 EX Elicitor/WF - 002 LC	3.0 fl oz	–						
+ PK Plus LC.....	6.0 fl oz	14	8.6 a	8.2 a-j	5.8 g-l	5.0 o	5.0 q	5.0 m
59 2018 Anth Prog. #15	–	14 ²⁶	8.4 a-e	8.2 a-j	5.8 g-l	5.3 k-o	5.3 m-q	5.4 g-m
60 Daconil Ultrex 82.5WG	1.8 oz	14	7.3 a-j	6.9 m-o	5.3 k-o	5.1 no	5.5 j-p	5.4 g-m
61 2018 Anth Prog. #16	–	ALT ²⁷	8.3 a-f	8.2 a-j	5.6 h-m	5.5 j-m	5.8 g-l	5.8 d-g
62 2018 Anth Prog. #17	–	ALT ²⁸	8.6 a	8.5 a-e	7.0 a-c	5.7 h-j	5.7 g-m	5.6 f-l
63 RU-21196-18G SC.....	1.1 fl oz	14	7.5 a-j	7.8 c-l	5.9 f-k	5.0 o	5.0 q	5.1 lm
64 RU-21196-18G SC.....	1.73 fl oz	14	7.5 a-j	8.4 a-g	6.3 e-h	5.0 o	5.5 j-p	5.2 i-m
65 RU-21196-18G SC.....	2.36 fl oz	14	7.9 a-h	8.6 a-e	6.4 c-g	5.0 o	5.0 q	5.4 g-m
66 Insignia Intrinsic 2.1SC	0.7 fl oz	14	8.5 a-c	7.5 g-n	5.3 k-o	5.0 o	5.0 q	5.0 m
67 RU-21196-18H SC.....	2.62 fl oz	14	6.9 h-k	8.0 a-k	6.3 e-h	5.0 o	5.0 q	5.2 i-m
68 Tekken 1.8SC.....	3.0 fl oz	21	7.4 a-j	6.4 op	5.9 f-k	5.0 o	5.0 q	5.3 g-m
69 Tartan StressGard 2.4SC.....	2.0 fl oz	21	8.2 a-h	7.2 k-o	6.3 e-h	5.0 o	5.0 q	5.3 g-m
70 2018 Anth Prog. #18	–	VAR ²⁹	8.0 a-h	8.3 a-i	6.1 e-i	7.3 bc	6.5 e	5.7 d-i
71 2018 Anth Prog. #19	–	VAR ³⁰	7.3 a-j	7.8 c-l	5.8 g-l	5.0 o	5.2 m-q	5.0 m
72 2018 Anth Prog. #20	–	VAR ³¹	8.3 a-f	8.3 a-i	5.9 f-k	5.9 g-i	5.5 j-p	5.3 h-m
73 Traction 4SC.....	1.3 fl oz	14	7.8 a-i	5.7 pq	6.0 e-j	5.0 o	5.0 q	5.1 lm
74 Affirm 11.3WDG	0.9 oz	7	7.5 a-j	7.8 c-l	5.9 f-k	5.1 no	5.0 q	5.0 m
75 Affirm 11.3WDG	0.9 oz	–						
+ Alude 46LC	2.0 fl oz	7	7.7 a-i	8.0 a-k	5.8 g-l	5.0 o	5.0 q	5.0 m
76 RU-17183-18A WP	7.5 oz	14	8.4 a-e	7.8 c-l	4.8 op	5.0 o	5.2 m-q	5.0 m
77 RU-17183-18A WP	7.5 oz	–						
+ RU-17183-18D WG.....	0.8 oz	14	8.2 a-h	8.0 a-k	5.4 j-o	5.0 o	5.0 q	5.0 m

(Continued)

Table 1C. Anthracnose control on annual bluegrass putting green turf: Rutgers University, 2018.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Turf Quality ^{1,2}			Color ³		
			14 June	14 July	9 Aug.	14 June	14 July	9 Aug.
78 RU-17183-18A WP	7.5 oz	–						
+ RU-17183-18D WG.....	1.6 oz	14	7.8 a-i	8.0 a-k	5.6 h-m	5.0 o	5.0 q	5.1 lm
79 Banner Maxx 1.3ME	1.5 fl oz	14	7.8 a-i	7.9 b-k	5.6 h-m	5.4 j-n	5.0 q	5.0 m
80 Untreated check.....	–	–	5.4 l	5.7 pq	4.4 p	5.0 o	5.0 q	5.0 m
		INT ³²	DAT ³³	DAT	DAT	DAT	DAT	DAT
		7	7	2	7	7	2	7
		14	14	2	14	14	2	14
		21	7	16	21	7	16	21
		28	28	30	56	28	30	56

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 17 May (all treatments except treatments 21 and 22), 24 May (7-day treatments), 31 May (7- and 14-day treatments), 7 June (7- and 21-day treatments), 14 June (7-, 14-, and 28-day treatments, initiated treatment 21), 21 June (7-day treatment), 28 June (7-, 14-, and 21-day treatments), 5 July (7-day treatment), 12 July (7- and 14-day treatments), 19 July (7- and 21-day treatments), 26 July (7- and 14-day treatments, initiated treatment 22), 2 August (7-day treatment), 9 August (7-, 14-, and 21-day treatments), 16 August (7-day treatment), 23 August (treatments 27, 28, 47, 48, and 70 to 72), and 6 September (treatments 27, 28, 47, and 48).

⁵ Treatments 16 to 18 and 23 to 25 were applied on a 14-day interval on 17 May, 31 May, and 14 June.

⁶ Treatments 19 and 26 were applied on a 28-day interval on 17 May and 14 June.

⁷ ALT = Alternation treatment where treatment 20 consisted of RU-2125-18A SC (0.1963 fl oz) applied on 17 May and 31 May, and RU-2125-18A SC (0.1309 fl oz) applied on 14 June.

⁸ Treatment 21 was applied as an early curative on 14 June when disease was greater than 5% in any rep and then reapplied once on 28 June.

⁹ Treatment 22 was applied as a late curative on 26 July when disease was greater than 20% on any rep and then reapplied once 14 days later on 9 August.

(Continued)

Table 1C. Anthracnose control on annual bluegrass putting green turf: Rutgers University, 2018.

- ¹⁰ ALT = Alternation treatment where treatment 27 (2018 Anthracnose Program #1) consisted of Daconil Action 6.1SC (3.5 fl oz) + Velista 50WG (0.5 oz) + A14658H 4.1SC (6.0 fl oz) + Primo MAXX 1ME (0.125 fl oz) applied on 17 May, 28 June, and 9 August, and Daconil Action 6.1SC (3.5 fl oz) + Briskway 2.7SC (0.5 fl oz) + A14658H 4.1SC (6.0 fl oz) + Primo MAXX 1ME (0.125 fl oz) applied on 31 May, 12 July, and 23 August, and Daconil Action 6.1SC (3.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + A14658H 4.1SC (6.0 fl oz) + Primo MAXX (0.125 fl oz) applied on 14 June, 26 July, and 6 September.
- ¹¹ ALT = Alternation treatment where treatment 28 (2018 Anthracnose Program #2) consisted of Daconil Action 6.1SC (3.5 fl oz) + Velista 50WG (0.5 oz) + A14658H 4.1SC (6.0 fl oz) + Primo MAXX 1ME (0.125 fl oz) applied on 17 May, 28 June, and 9 August, and Daconil Action 6.1SC (3.5 fl oz) + Briskway 2.7SC (0.5 fl oz) + A14656H 4.1SC (6.0 fl oz) + Primo MAXX (0.125 fl oz) applied on 31 May, 12 July, and 23 August, and Secure Action 4.2SC (0.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + A14658H 4.1SC (6.0 fl oz) + Primo MAXX (0.125 fl oz) applied on 14 June, 26 July, and 6 September.
- ¹² VAR = Variable spray schedule where treatment 34 (2018 Anthracnose Program #3) consisted of Premion 4.265SC (8.0 fl oz) + Harrell's PAR 100LC (0.37 fl oz) applied 17 May, Chipco Signature XTRA 60WDG (4.0 oz) + Daconil Ultrex 82.5WDG (3.25oz) applied 31 May, Velista 50WDG (0.3 oz) + Affirm 11.3WDG (0.9 oz) applied 14 June, Premion 4.265SC (4.0 fl oz) + Medallion 1.04SC (1.5 fl oz) + Harrell's PAR 100LC (0.37 fl oz) applied 28 June, Chipco Signature XTRA 60WDG (4.0 oz) + Daconil Ultrex 82.5WDG (3.25 oz) applied 12 July, Velista 50WDG (0.3 oz) + Affirm 2.5WP (4.0 oz) applied 26 July, and Premion 4.265SC (6.0 fl oz) + Harrell's PAR 100LC (0.37 fl oz) applied 9 August.
- ¹³ Treatment 44 was applied on a 14-day interval on 17 May, 31 May, and 14 June and irrigated with 1.0 gal of water per 3 x 5 plot.
- ¹⁴ Treatment 45 consisted of CrossOver Turf 100SGN (15.0 lb) + Banner MAXX 1.3ME (1.5 fl oz) applied 17 May and 31 May (CrossOver Turf was applied first, then irrigated in with 1.0 gal per 3 x 5 plot, then Banner MAXX was applied); Banner MAXX 1.3ME (1.5 fl oz) was continued alone every 14 days from 28 June to 9 August.
- ¹⁵ Treatment 46 (2018 Anthracnose Program #4) consisted of KFD-271-02 3.65SC (1.1 fl oz) + KFD-391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied on a 14-day interval.
- ¹⁶ VAR = Variable spray schedule where treatment 47 (2018 Anthracnose Program #5) consisted of Kestrel 1.3EC (2.0 fl oz) + Pegasus DFX 82.5WDG (3.25 oz) + Goldwing 1.0SC (0.125 fl oz) applied 17 May, Dovetail 3.74SC (4.0 fl oz) + Manzate Max T&O 4SC (6.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 31 May, Pegasus DFX 82.5WDG (3.25 oz) + Goliath XP 1.389SC (2.24 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 14 June, Manzate Max T&O 4SC (6.4 fl oz) + Raven 2SC (4.0 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 28 June, Pegasus DFX 82.5WDG (3.25 oz) + Tebuzol 3.6F (0.6 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 12 July, Dovetail 3.74SC (4.0 fl oz) + Manzate Max T&O 4SC (6.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 26 July, Pegasus DFX 82.5WDG (3.25 oz) + Goliath XP 1.389SC (2.24 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 9 August, Manzate Max T&O 4SC (6.4 fl oz) + Raven 2SC (4.0 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 23 August, and Kestrel 1.3EC (2.0 fl oz) + Pegasus DFX 82.5WDG (3.25 oz) + Goldwing 1.0SC (0.125 fl oz) applied 6 September.

Table 1C. Anthracnose control on annual bluegrass putting green turf: Rutgers University, 2018.

- ¹⁷ VAR = Variable spray schedule where treatment 48 (2018 Anthracnose Program #6) consisted of Goliath XP 1.389SC (3.0 fl oz) + Manzate Max T&O 4SC (6.4 fl oz) + KFD-391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 17 May, Raven 2SC (4.0 fl oz) + Pegasus DFX 82.5WDG (3.25 oz) applied 31 May, Tebuzol 3.6F (0.6 fl oz) + KFD-391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 14 June, Raven 2SC (4.0 fl oz) + Pegasus DFX 82.5WDG (3.25 oz) applied 28 June, Goliath XP 1.389SC (3.0 fl oz) + Manzate Max T&O 4SC (6.4 fl oz) + Dovetail 3.74SC (4.0 fl oz) + KFD-391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 12 July, Raven 2SC (4.0 fl oz) + Pegasus DFX 82.5WDG (3.25 oz) applied 26 July, Tebuzol 3.6F (0.6 fl oz) + KFD-391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 9 August, Raven 2SC (4.0 fl oz) + Pegasus DFX 82.5WDG (3.25 oz) applied 23 August, and Goliath XP 1.389SC (3.0 fl oz) + Manzate Max T&O 4SC (6.4 fl oz) + KFD-391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied 6 September.
- ¹⁸ Treatment 49 (2018 Anthracnose Program #7) consisted of KFD-09-06 3.6F (0.092 fl oz) + KFD-112-02 2.08SC (0.18 fl oz) + KFD-389-01 82.5WDG (3.25 oz) + KFD 391-01 100LC (0.4 fl oz) + Goldwing 1.0SC (0.125 fl oz) applied on a 14-day interval.
- ¹⁹ Treatment 50 (2018 Anthracnose Program #8) consisted of BioMAX 4-0-0LC (3.0 fl oz) + N30+LC (4.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 LC (3.0 fl oz) + PAR SG (0.37 fl oz) + Daconil Action 6.1SC (2.0 fl oz) applied on a 14-day interval.
- ²⁰ Treatment 51 (2018 Anthracnose Program #9) consisted of BioMAX 4-0-0 LC (3.0 fl oz) + N30+LC (4.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 LC (3.0 fl oz) + PAR SG (0.37 fl oz) + Daconil Action 6.1SC (2.0 fl oz) + Protos 8.65LC (1.0 fl oz) applied on a 14-day interval.
- ²¹ Treatment 52 (2018 Anthracnose Program #10) consisted of BioMAX 4-0-0 LC (3.0 fl oz) + N30+LC (4.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 LC (3.0 fl oz) + PAR SG (0.37 fl oz) + Daconil Action 6.1SC (2.0 fl oz) + Protos 8.65LC (2.0 fl oz) applied on a 14-day interval.
- ²² Treatment 53 (2018 Anthracnose Program #11) consisted of BioMAX 4-0-0 LC (3.0 fl oz) + N30+LC (4.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 LC (3.0 fl oz) + PAR SG (0.37 fl oz) + Daconil Action 6.1SC (2.0 fl oz) + SAX WP (0.0095 oz) applied on a 14-day interval.
- ²³ Treatment 54 (2018 Anthracnose Program #12) consisted of BioMAX 4-0-0 LC (3.0 fl oz) + N30+LC (4.0 fl oz) + Title Phyte LC (3.0 fl oz) + 12-0-0 LC (3.0 fl oz) + PAR SG (0.37 fl oz) + Daconil Action 6.1SC (2.0 fl oz) + SAX WP (0.019 oz) applied on a 14-day interval.
- ²⁴ Treatment 56 (2018 Anthracnose Program #13) consisted of Gary's Green Ultra LC (12.0 fl oz) + PK Plus LC (6.0 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied on a 14-day interval.
- ²⁵ Treatment 57 (2018 Anthracnose Program #14) consisted of Manni-Plex Grow LC (12.0 fl oz) + Nutri-Gro Magnum LC (2.0 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied on a 14-day interval.
- ²⁶ Treatment 59 (2018 Anthracnose Program #15) consisted of EX Elicitor/WF 002LC (3.0 fl oz) + PK Plus LC (6.0 fl oz) + Daconil Ultrex 82.5WG (1.8 oz) applied on a 14-day interval.
- ²⁷ ALT = Alternation treatment where treatment 61 (2018 Anthracnose Program #16) consisted of 29-0-0 LC (4.0 fl oz) + DKP LC (6.0 fl oz) + Kelplant 1-0-1 LC (6.0 fl oz) + Phosphite 30LC (3.0 fl oz) + Hydration A+LC (0.7 fl oz) applied on 17 May, 31 May, 14 June, 28 June, 12 July, 26 July, and 9 August, and Cal Nitrate LC (6.0 fl oz) + Sugar Cal LC (3.0 fl oz) + Impulse LC (3.0 fl oz) + Omega LC (0.7 fl oz) + Kelp Iron 8-0 LC (3.0 fl oz) + Flo Thru A+LC (0.7 fl oz) applied on 24 May, 7 June, 21 June, 5 July, 19 July, 2 August, and 16 August.
- ²⁸ ALT = Alternation treatment where treatment 62 (2018 Anthracnose Program #17) consisted of 29-0-0 LC (4.0 fl oz) + Healthy Start LC (4.0 fl oz) + Phosphite 30 LC (2.0 fl oz) + RMM LC (1.5 fl oz) + Zinc 7% LC (1.5 fl oz) + Hydration A+ LC (0.7 fl oz) + Flo Thru A+ LC (0.7 fl oz) applied 17 May, 31 May, 14 June, 28 June, 12 July, 26 July, and 9 August, and 29-0-0 LC (4.0 fl oz) + Sugar Cal LC (4.0 fl oz) + Phosphite 30 LC (3.0 fl oz) + Impulse LC (3.0 fl oz) + Zinc 7% LC (1.5 fl oz) + Hydration A+ LC (0.7 fl oz) + Flo Thru A+ LC (0.7 fl oz) applied 24 May, 7 June, 21 June, 5 July, 19 July, 2 August, and 16 August.

Table 1C. Anthracnose control on annual bluegrass putting green turf: Rutgers University, 2018.

²⁹ VAR = Variable spray schedule where treatment 70 (2018 Anthracnose Program #18) consisted of Alude 5.128XL (5.5 fl oz) + Civitas PreMixed LC (8.5 fl oz) applied 17 May, Alude 5.178XL (5.5 fl oz) + Civitas PreMixed LC (8.5 fl oz) + Propiconazole EC (1.0 fl oz) applied 31 May, Medallion 1.04SC (1.0 fl oz) + Alude 5.178XL (5.5 fl oz) + Civitas PreMixed LC (8.5 fl oz) applied 14 June, Alude 5.178XL (5.5 fl oz) + Civitas PreMixed LC (8.5 fl oz) + Velista 50WG (0.3 oz) applied 28 June, Alude 5.178XL (5.5 fl oz) + Civitas PreMixed (8.5 fl oz) + Azoxystrobin 50WG (0.2 oz) applied 12 July, Civitas PreMixed LC (8.5 fl oz) + Medallion 1.04SC (1.0 fl oz) + Alude 5.178XL (5.5 fl oz) applied 26 July, Alude 5.178XL (5.5 fl oz) + Civitas PreMixed LC (8.5 fl oz) + Azoxystrobin 50WG (0.2 oz) applied 9 August, and Alude 5.178XL (5.5 fl oz) + Civitas PreMixed LC (8.5 fl oz) + Velista 50WG (0.3 oz) applied 23 August.

³⁰ VAR = Variable spray schedule where treatment 71 (2018 Anthracnose Program #19) consisted of Alude 5.178XL (5.5 fl oz) applied 17 May, Alude 5.178XL (5.5 fl oz) + Propiconazole EC (1.0 fl oz) applied 31 May, Medallion 1.04SC (1.0 fl oz) + Alude 5.178XL (5.5 fl oz) applied 14 June, Alude 5.178XL (5.5 fl oz) + Velista 50WG (0.3 oz) applied 28 June, Alude 5.178XL (5.5 fl oz) + Azoxystrobin 50WG (0.2 oz) applied 12 July, Medallion 1.04SC (1.0 fl oz) + Alude 5.178XL (5.5 fl oz) applied 26 July, Alude 5.178XL (5.5 fl oz) + Azoxystrobin 50WG (0.2 oz) applied 9 August, and Alude 5.178XL (5.5 fl oz) + Velista 50WG (0.3 oz) applied 23 August.

³¹ VAR = Variable spray schedule where treatment 72 (2018 Anthracnose Program #20) consisted of Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) applied 17 May, Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) + Propiconazole EC (1.0 oz) applied 31 May, Medallion 1.04SC (1.0 fl oz) + Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) applied 14 June, Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) + Velista 50WG (0.3 oz) applied 28 June, Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) + Azoxystrobin 50WG (0.2 oz) applied 12 July, Daconil Ultrex 82.5WDG (1.8 oz) + Medallion 1.04SC (1.0 fl oz) + Alude 5.178XL (5.5 fl oz) applied 26 July, Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) + Azoxystrobin 50WG (0.2 oz) applied 9 August, and Alude 5.178XL (5.5 fl oz) + Daconil Ultrex 82.5WDG (1.8 oz) + Velista 50WG (0.3 oz) applied 23 August.

³² INT = Spray interval in days.

³³ DAT = Days after last treatment.