

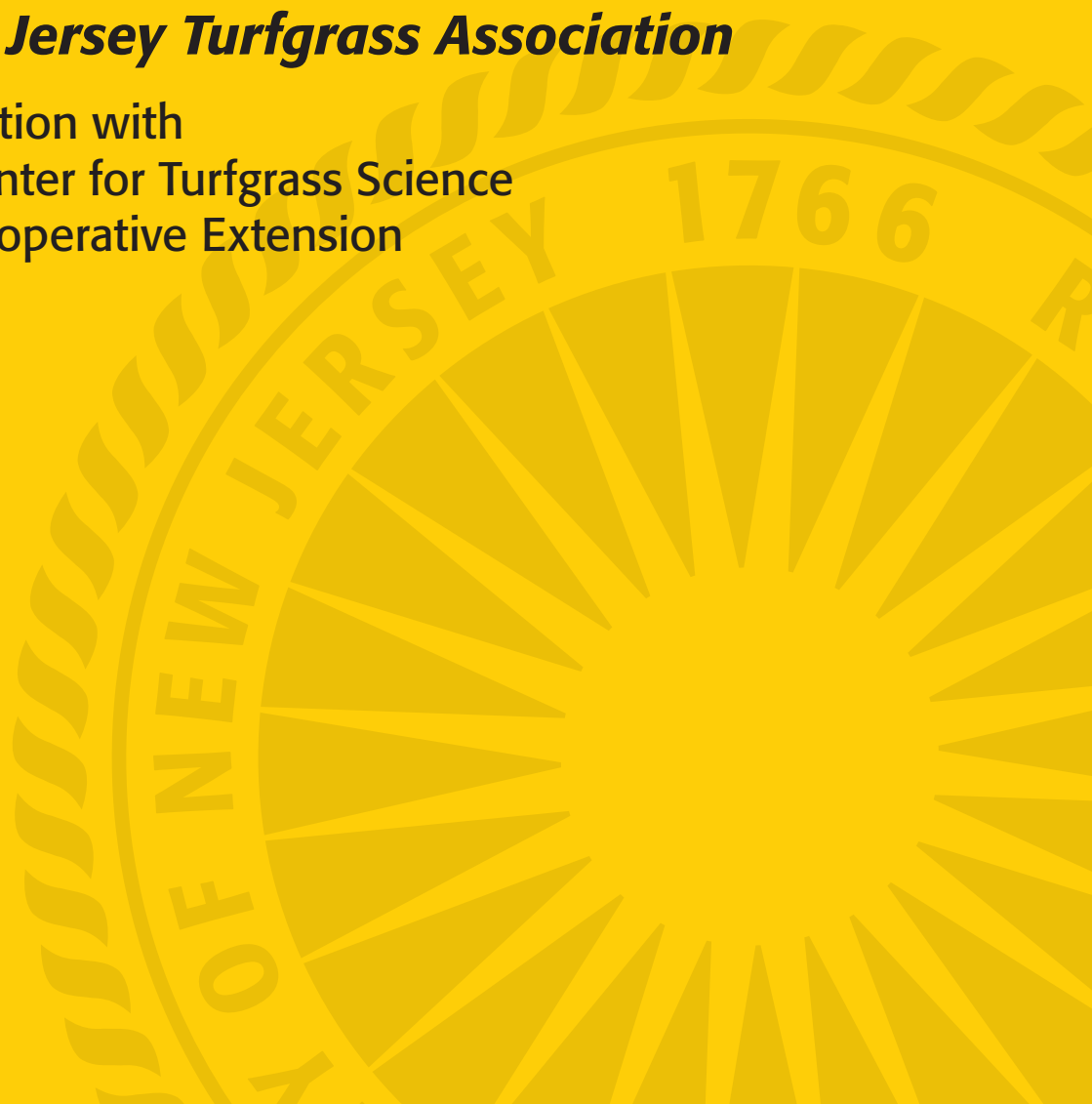
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The Rutgers Turfgrass Proceedings is published yearly by the Rutgers Center for Turfgrass Science, Rutgers Cooperative Extension, and the New Jersey Agricultural Experiment Station, School of Environmental and Biological Sciences, Rutgers, The State 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

INFLUENCE OF FUNGICIDES AND BIORATIONAL PRODUCTS ON DOLLAR SPOT DEVELOPMENT OF A CREEPING BENTGRASS GREEN TURF, 2012

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Fungicides were evaluated in 2012 for their ability to control dollar spot (caused by *Sclerotinia homoeocarpa*) at the Rutgers Turf Research Farm in North Brunswick, NJ on creeping bentgrass (*Agrostis stolonifera*) maintained under golf course greens conditions. Turf was established September 2007 on a Nixon loam with a pH of 6.3. Mowing was performed daily at a height of 0.125 inches with clippings collected. The site was irrigated as needed to prevent drought stress. Plots were 3 x 5 ft and were arranged in a randomized complete block with four replications.

Fertilizer was applied as 20-20-20 (0.25 lb nitrogen (N) per 1000 ft²) on 21 April and 5 June; 46-0-0 (0.2 lb N per 1000 ft²) on 9, 14, and 26 May; 46-0-0 (0.1 lb N per 1000 ft²) on 18 and 25 June, 4, 19, and 29 July, and 13 and 30 August; 0-30-0 (0.025 lb phosphorus (P) per 1000 ft²) sprayed on 10, 11, and 24 July, 8 and 21 August, and 8 September; 0-0-62 (0.05 lb potassium (K) per 1000 ft²) on 11 and 24 July, and 8 and 21 August; and Microgreen (micronutrient mixture; 0.4 fl oz product per 1000 ft²) on 25 June, 4 and 29 July, and 30 August.

ProStar 70W (3.0 oz per 1000 ft²) was applied on 26 July to control brown patch (caused by *Rhizoctonia solani*). Localized dry spots were suppressed with the wetting agent Tricure 100LC (6.0 fl oz per 1000 ft²) on 5 June and Tricure 100LC (1.0 fl oz per 1000 ft²) on 4, 11, 19, 24, and 29 July, 8, 13, 21, and 30 August, and 8 September. Post-emergence crabgrass (*D. sanguinalis*) control was achieved with Acclaim Extra 0.57SC (3.5 fl oz per acre) on 7 and 19 June and 1 and 17 July. Insect pests were controlled with Acelepryn 1.67SC (3.0 fl oz per acre) on 6 July. Turf was topdressed with sand (1 ft³ per 1,000 ft²) on 4 and

27 April, 23 June, 9 July, and 7 August to maintain surface uniformity and turf quality.

Fungicides were applied in water equivalent to 1.9 gal per 1000 ft² with a CO₂ powered sprayer at 30 psi using TeeJet 8003VS flat fan nozzles. Treatments (trt) were initiated on 10 May when environmental conditions were conducive to dollar spot development. Fungicides were reapplied at the appropriate intervals as indicated in Tables 1A to 1D. Turf was visually evaluated for number of dollar spot infection centers per plot on 23 May, 1, 11, and 21 June, 1, 11, 21, and 31 July, 10, 20, and 30 August, and 9 September. Turf quality was rated on 8 June, 6 July, 5 August, and 9 September using a 1 to 9 scale, where 9 = best turf quality and 5 = acceptable quality. Phytotoxicity was assessed on 6 July and 5 August 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. Color of foliage was visually estimated on 8 June, 6 July, and 5 August using a 1 to 5 scale, where 1 = very chlorotic turf, 2 = slight reduction in green color, 3 = normal green color of healthy turf, 4 = slight 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 using the Waller-Duncan *k*-ratio *t*-test (*k* = 100).

Dollar spot was first observed on 18 May and became uniform throughout the study by 23 May (Table 1A). The disease progressed rapidly during June, July, and August, peaking on 9 September at 249 lesion centers per plot on untreated turf (Table 1A). This was considered a very high level of dollar

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spot infestation and thus a stringent test of the ability of a product to control this disease under commercial golf course greens conditions. Less than 10 infection centers per plot represented an acceptable level of disease control for this study.

Season-long control of dollar spot (10 May to 9 September; 38 days after the last application, Tables 1A and 1B) was afforded turf treated with HM0812 1.66SC @ 2.4 fl oz (trt 15), Xzemplar 2.5SC @ 0.211 fl oz every 21 days (trt 29), Emerald 70WG @ 0.18 oz every 21 days (trt 30), Lexicon Intrinsic 4.17SC @ 0.34 fl oz 21 days (trt 32), Honor Intrinsic 28WG @ 0.84 oz every 21 days (trt 33), BASF 2012 \$-Spot Greens Program #3 (trt 37), Reserve 4.8SC @ 2.5 fl oz every 7 days (trt 41), and Concert II 4.3SE (trt 43). Excellent residual control (28 days after the last treatment) was also afforded by SA-0010222 SC (trt 4), Emerald 70WG @ 0.13 oz every 14 days (trt 10), Headway 1.39EC (trt 11), HM0812 1.66SC @ 1.5 fl oz (trt 13) and 2.0 fl oz (trt 14), Xzemplar 2.5SC @ 0.157 fl oz every 14 days (trt 28), BASF 2012 \$-Spot Greens Programs #2 (trt 36), #4 (trt 38), and #5 (trt 39), RU192514-12Q SC + RU192514-12J SC (trt 54), Daconil Action 6.1SC @ 3.5 fl oz + Appear 4.1SL @ 6.0 fl oz (trt 57), Concert II 4.3SE + Appear 4.1SL (trt 58), A13703G 2.7SC + Daconil Action 6.1SC (trt 62), Emerald 70WG @ 0.18 oz applied every 28 days on a curative basis (trt 81), Velistra 50WDG @ 0.5 oz (trt 83), Velistra 50WDG + Daconil Ultrex 82.5WDG (trt 84), Velistra 50WDG + Curalan 50EG (trt 85), QP Enclave 5.3F @ 4.0 fl oz + QP Fosetyl-AI 80WG @ 4.0 oz + Foursome 100SL @ 0.4 fl oz every 21 days (trt 90), and Echo 6F ETQ + SA-0010234 SC (trt 96).

Other fungicide entries that provided good to excellent control of dollar spot, but only through the application period (10 May to 16 August; see evaluation date 20 August, Table 1B) included HM0812 1.66SC @ 1.2 fl oz every 14 days (trt 12), BASF 2012 \$-Spot Greens Prog. #6 (trt 40), Tournay 50WG (trt 44), Interface 2.27SC @ 3.0 fl oz (trt 45) and 4.0 fl oz (trt 46), Daconil Action 6.1SC @ 3.5 fl oz + Appear 4.1SL @ 4.0 fl oz (trt 56), A13703G 2.7SC + Appear 4.1SL (trt 59), Daconil Ultrex 82.5WDG @ 3.2 oz +

Chipco Signature 80WG @ 4.0 fl oz (trt 61; one of the standard fungicide combinations used to control anthracnose), QP Enclave 5.3F @ 3.0 fl oz + QP Fosetyl-AI 80WG @ 4.0 oz + Foursome 100SL @ 0.4 fl oz every 14 days (trt 89), and Insignia Intrinsic 2.1SC (trt 93).

Turf quality was acceptable (greater or equal to 5.0) for most entries in this study. In general, turf treated with products that provided poor dollar spot control exhibited unacceptable turf quality on at least half of the evaluation dates [e.g., trts 3, 6 to 8, 16, 18, 19, 24, 27, 47, 50, 52, 63 to 66, 68, 75 to 79, 86 to 88, and 92)] (Table 1C). Slight phytotoxicity was observed in July and/or August (see Table 1C) for turf treated with Headway 1.39EC (trt 11), HM0812 1.66SC (trts 12 to 15), Concert II 4.3SE (trt 43), Daconil Ultrex 82.5WDG (trt 95), and Echo 6F ETQ + SA-0010234 SC (trt 96).

Several treatments resulted in visually darker green foliage compared to untreated turf (trt 97) on at least 50% of the evaluation dates [i.e., SA-0010233 SC (trt 2), HM0812 1.66SC @ 2.0 fl oz (trt 14) and 2.4 fl oz (trt 15), Reserve 4.8SC @ 2.5 fl oz every 7 days (trt 41), Interface 2.27SC @ 4.0 fl oz (trt 46), Concert II 4.3SE + Appear 4.1SL (trt 58), A12531R + Chipco Signature 80WG (trt 60), QP Enclave 5.3F + QP Fosetyl-AI 80WG + Foursome 100SL (trts 87, 88), and QP Enclave 5.3F + QP Fosetyl-AI 80WG + Foursome 100SL (trt 89, 90)], presumably because they either contain a pigment, a plant growth regulator, and/or a fertilizer (Table 1D).

Algae was observed in the study on 20 July. Treatments 2, 4, 6, 8, 54, 63 to 67, 76, 78 and 79, as well as several products containing chlorothalonil, fluazinam, iprodione, mancozeb, a phosphonate, and/or vinclozolin (i.e., trts 1, 7, 9, 16, 18, 22, 24, 27, 35 to 43, 47 to 49, 51, 53, 55 to 62 84, 85, 87 to 91, 95, 96) reduced algae compared to the untreated control; whereas a few products and product combinations increased the percentage of the soil surface covered with algae (i.e., trts 12 to 15, 31, 32, 68, 71, 73, 74, 83, 86, and 94); presumably because these products reduced stand density Table 1D).

Table 1A. Influence of fungicides and biorational products on dollar spot development in a creeping bentgrass green: Rutgers University, 2012.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Number of Lesion Centers per Plot ¹					
			23 May	1 June	11 June	21 June	1 July	11 July
1 Echo 6F ETQ	3.6 fl oz	14	0.5 g-i	0.3 i	0.5 m-o	0.0 m	0.0 m	0.0 j
2 SA-0010233 SC	5.0 fl oz	14	0.0 i	0.0 i	0.8 l-o	0.0 m	0.0 m	0.0 j
3 SA-0010221 SC	4.0 fl oz	14	0.8 g-i	0.5 i	0.8 l-o	1.8 h-m	0.8 lm	1.3 ij
4 SA-0010222 SC	2.6 fl oz	14	0.3 hi	0.5 i	0.8 l-o	2.0 h-m	0.3 lm	0.8 j
5 Clearscape ETQ	0.6 fl oz	14	0.3 hi	0.0 i	1.3 l-o	0.5 k-m	0.3 lm	0.5 j
6 SA-0010228 SC	5.0 fl oz	14	2.5 d-i	4.5 hi	4.8 g-m	3.8 f-k	10.8 f-h	1.5 ij
7 Echo Dyad ET	5.0 fl oz	14	0.0 i	0.0 i	0.3 no	2.3 h-m	2.0 k-m	0.5 j
8 SA-0010231 SC	5.25 fl oz	14	0.0 i	2.3 i	1.0 l-o	1.0 j-m	0.0 m	0.0 j
9 2012 \$-Spot Greens Prog. #1 Sipcarn Advan	VAR-14 ³		0.0 i	0.0 i	1.0 l-o	1.3 j-m	0.5 lm	0.0 j
10 Emerald 70WG	0.13 oz	14	0.5 g-i	0.3 i	1.3 l-o	0.0 m	0.0 m	0.0 j
11 Headway 1.39EC	1.5 fl oz	14	0.0 i	0.3 i	0.8 l-o	4.0 f-j	0.0 m	0.0 j
12 HM0812 1.66SC	1.2 fl oz	14	1.3 f-i	0.5 i	3.0 i-o	2.5 h-m	0.0 m	0.0 j
13 HM0812 1.66SC	1.5 fl oz	14	0.5 g-i	0.5 i	1.3 l-o	1.0 j-m	0.0 m	0.0 j
14 HM0812 1.66SC	2.0 fl oz	14	0.3 hi	0.0 i	1.3 l-o	0.0 m	0.0 m	0.0 j
15 HM0812 1.66SC	2.4 fl oz	14	0.0 i	0.0 i	0.3 no	0.0 m	8.5 f-j	0.0 j
16 Encartis 6.24SC	4.0 fl oz	CUR-14 ⁴	8.3 a	3.0 hi	1.5 l-o	0.0 m	0.0 m	1.3 ij
17 Emerald 70WG	0.18 oz	CUR-14 ⁴	6.8 ab	4.0 hi	1.8 k-o	0.3 lm	0.5 lm	3.5 h-j
18 Daconil Ultrex 82.5WDG	4.0 oz	CUR-14 ⁴	5.0 a-d	2.5 i	5.0 g-l	0.8 j-m	8.8 f-i	15.5 e
19 Daconil Ultrex 82.5WDG	4.0 oz	-						
/ Emerald 70WG	0.18 oz	CUR-14 ⁵	3.5 b-h	2.0 i	4.5 g-n	0.3 lm	1.0 lm	1.8 ij
20 Xzemplar 2.5SC	0.211 fl oz	CUR-21 ⁶	4.8 b-e	2.5 i	2.8 i-o	0.0 m	0.0 m	0.8 j
21 Emerald 70WG	0.18 oz	CUR-21 ⁶	2.8 d-i	2.5 i	1.0 l-o	0.0 m	0.0 m	0.8 j
22 Lexicon Intrinsic 4.17SC	0.34 fl oz	CUR-21 ⁶	3.8 b-g	1.5 i	1.3 l-o	0.0 m	1.0 lm	0.0 j
23 Honor Intrinsic 28WG	0.84 oz	CUR-21 ⁶	3.3 c-i	1.5 i	1.3 l-o	0.5 k-m	0.5 lm	1.3 ij
24 Encartis 6.24SC	3.0 fl oz	CUR-21 ⁶	2.8 d-i	3.0 hi	4.0 g-o	0.5 k-m	0.3 lm	1.8 ij
25 Xzemplar 2.5SC	0.262 fl oz	CUR-28 ⁷	2.5 d-i	0.0 i	0.0 o	0.0 m	2.8 i-m	0.0 j
26 Lexicon Intrinsic 4.17SC	0.472 fl oz	CUR-28 ⁷	2.8 d-i	0.0 i	1.3 l-o	0.5 k-m	0.0 m	0.0 j
27 Encartis 6.24SC	3.0 fl oz	CUR-28 ⁷	2.8 d-i	1.5 i	1.0 l-o	5.0 f-h	0.3 lm	1.3 ij
28 Xzemplar 2.5SC	0.157 fl oz	14	0.3 hi	0.0 i	1.0 l-o	0.0 m	0.0 m	0.0 j
29 Xzemplar 2.5SC	0.211 fl oz	21	0.0 i	2.5 i	2.8 i-o	0.5 k-m	0.0 m	0.0 j

(Continued)

Table 1A (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Number of Lesion Centers per Plot ¹					
			23 May	1 June	11 June	21 June	1 July	11 July
30 Emerald 70WG	0.18 oz	21	0.3 hi	21.0 f	8.3 g	2.8 g-m	0.0 m	0.0 j
31 Xzemplar 2.5SC.....	0.262 fl oz	28	0.0 i	4.3 hi	2.0 k-o	0.0 m	0.3 lm	0.8 j
32 Lexicon Intrinsic 4.17SC	0.34 fl oz	21	0.5 g-i	5.0 hi	5.0 g-l	2.8 g-m	0.0 m	0.0 j
33 Honor Intrinsic 28WG.....	0.84 oz	21	0.0 i	3.3 hi	2.3 j-o	0.5 k-m	0.0 m	0.0 j
34 Lexicon Intrinsic 4.17SC	0.472 fl oz	28	0.3 hi	3.3 hi	3.8 h-o	0.8 j-m	2.0 k-m	0.0 j
35 Encartis 6.24SC.....	3.0 fl oz	28	0.0 i	1.3 i	2.0 k-o	1.5 i-m	3.8 i-m	0.5 j
36 2012 \$-Spot Greens Prog. #2	BASF	VAR-14 ⁸	0.3 hi	0.0 i	0.5 m-o	0.0 m	0.0 m	0.0 j
37 2012 \$-Spot Greens Prog. #3	BASF	VAR-14 ⁹	0.0 i	0.0 i	0.5 m-o	0.0 m	0.0 m	0.0 j
38 2012 \$-Spot Greens Prog. #4	BASF	VAR-14 ¹⁰	0.0 i	0.5 i	3.0 i-o	1.8 h-m	0.5 lm	2.5 ij
39 2012 \$-Spot Greens Prog. #5	BASF	VAR-14 ¹¹	0.5 g-i	0.5 i	1.8 k-o	0.5 k-m	0.0 m	0.0 j
40 2012 \$-Spot Greens Prog. #6	BASF	VAR-14 ¹²	0.0 i	1.0 i	1.8 k-o	1.0 j-m	0.8 lm	1.8 ij
41 Reserve 4.8SC.....	2.5 fl oz	7	0.0 i	0.0 i	0.5 m-o	0.0 m	0.0 m	0.0 j
42 Reserve 4.8SC.....	3.5 fl oz	14	0.0 i	0.0 i	0.5 m-o	1.3 j-m	0.0 m	0.0 j
43 Concert II 4.3SE.....	3.0 fl oz	7	0.0 i	0.0 i	0.3 no	0.0 m	0.0 m	0.0 j
44 Tourney 50WG	0.28 oz	14	0.3 hi	0.0 i	1.3 l-o	1.5 i-m	0.0 m	0.0 j
45 Interface 2.27SC	3.0 fl oz	14	0.0 i	0.0 i	0.8 l-o	0.0 m	0.0 m	1.3 ij
46 Interface 2.27SC	4.0 fl oz	14	0.0 i	0.0 i	1.0 l-o	0.0 m	0.0 m	0.0 j
47 Iprodione Pro 2SE.....	4.0 fl oz	14	0.0 i	0.0 i	0.8 l-o	2.0 h-m	4.3 i-m	2.3 ij
48 2012 \$-Spot Greens Prog. #7	Bayer	ALT-14 ¹³	0.5 g-i	2.5 i	0.5 m-o	3.3 f-m	0.0 m	0.8 j
49 2012 \$-Spot Greens Prog. #8	Bayer	ALT-14 ¹⁴	0.0 i	0.0 i	0.5 m-o	3.5 f-l	0.5 lm	1.0 j
50 Secure 4.17SC.....	0.5 fl oz	14	0.0 i	0.0 i	0.0 o	3.0 f-m	7.5 f-k	4.3 g-j
51 Daconil Action 6.1SC	3.5 fl oz	14	0.0 i	0.0 i	0.5 m-o	0.0 m	0.0 m	0.0 j
52 Heritage TL 0.8ME	1.0 fl oz	14	3.8 b-g	35.0 d	26.0 e	14.5 c	57.8 d	20.5 d
53 Secure 4.17SC.....	0.5 fl oz	-						
+ Heritage TL 0.8ME	1.0 fl oz	14	0.0 i	0.0 i	0.5 m-o	1.3 j-m	0.3 lm	0.5 j
54 RU192514-12Q SC.....	0.236 fl oz	-						
+ RU192514-12J SC.....	0.5 fl oz	14	0.0 i	0.0 i	0.5 m-o	0.0 m	0.0 m	0.0 j
55 Daconil Action 6.1SC	3.5 fl oz	-						
+ Appear 4.1SL	3.0 fl oz	14	0.3 hi	0.0 i	1.0 l-o	0.0 m	1.0 lm	0.0 j
56 Daconil Action 6.1SC	3.5 fl oz	-						
+ Appear 4.1SL	4.0 fl oz	14	0.5 g-i	0.0 i	0.3 no	0.0 m	0.0 m	0.0 j

(Continued)

Table 1A (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Number of Lesion Centers per Plot ¹					
			23 May	1 June	11 June	21 June	1 July	11 July
57 Daconil Action 6.1SC	3.5 fl oz	—						
+ Appear 4.1SL	6.0 fl oz	14	0.0 i	0.0 i	1.0 l-o	0.0 m	0.3 lm	0.0 j
58 Concert II 4.3SE.....	4.0 fl oz	—						
+Appear 4.1SL	6.0 fl oz	14	0.0 i	0.3 i	1.5 l-o	0.0 m	0.0 m	0.0 j
59 A13703G 2.7SC.....	0.62 fl oz	—						
+ Appear 4.1SL	6.0 fl oz	14	0.0 i	0.8 i	1.5 l-o	0.0 m	0.3 lm	0.8 j
60 A12531R.....	3.6 fl oz	—						
+ Chipco Signature 80WG	4.0 oz	14	0.8 g-i	0.0 i	1.3 l-o	0.0 m	0.0 m	0.8 j
61 Daconil Ultrex 82.5WDG.....	3.2 oz	—						
+ Chipco Signature 80WG	4.0 oz	14	0.5 g-i	0.0 i	0.3 no	0.0 m	0.0 m	0.0 j
62 A13703G 2.7SC.....	0.62 fl oz	—						
+ Daconil Action 6.1SC	3.5 fl oz	14	0.0 i	0.3 i	0.5 m-o	0.0 m	0.0 m	0.0 j
63 HM1106 4.1SC.....	1.0 fl oz	14	1.5 e-i	8.5 gh	7.0 g-i	10.8 d	36.8 e	12.5 ef
64 HM1106 4.1SC.....	2.0 fl oz	14	1.5 e-i	4.3 hi	6.5 g-j	6.3 ef	13.3 f	6.0 g-i
65 HM1106 4.1SC.....	3.0 fl oz	14	1.0 g-i	3.5 hi	5.0 g-l	4.8 f-i	11.3 fg	3.5 h-j
66 HM1106 4.1SC.....	4.0 fl oz	14	0.8 g-i	2.5 i	1.0 l-o	6.0 e-g	3.5 i-m	0.5 j
67 HM1106 4.1SC.....	5.0 fl oz	14	0.3 hi	1.3 i	0.5 m-o	2.8 g-m	0.5 lm	0.0 j
68 NB37904 1.8SC.....	0.50 fl oz	14	0.0 i	0.5 i	2.5 j-o	2.0 h-m	1.8 k-m	0.5 j
69 NB37904 1.8SC.....	0.66 fl oz	14	0.0 i	0.0 i	1.3 l-o	1.5 i-m	0.8 lm	0.5 j
70 NB37904 1.8SC.....	0.75 fl oz	14 ¹⁵	0.0 i	0.0 i	0.8 l-o	0.8 j-m	0.8 lm	0.0 j
71 NB37904 1.8SC.....	0.75 fl oz	21	0.0 i	5.0 hi	6.0 g-k	4.8 f-i	6.5 g-l	8.3 f-h
72 NB37904 1.8SC.....	1.0 fl oz	21	0.3 hi	3.5 hi	3.3 h-o	3.3 f-m	1.8 k-m	3.5 h-j
73 NB38205 3.3SC.....	0.40 fl oz	14	0.5 g-i	0.5 i	4.0 g-o	2.0 h-m	2.8 i-m	1.5 ij
74 NB38205 3.3SC.....	0.50 fl oz	14 ¹⁵	0.5 g-i	1.5 i	1.8 k-o	1.8 h-m	2.8 i-m	1.0 j
75 NB37908 28WP	1.1 oz	14	3.5 b-h	26.8 e	23.5 ef	14.8 c	53.5 d	17.3 de
76 Segway 3.3SC	0.45 fl oz	14	6.3 a-c	64.5 a	59.5 a	25.5 a	89.8 b	37.0 a
77 Affirm 11.3WG.....	0.87 oz	14	2.5 d-i	26.5 ef	21.0 f	16.0 c	75.5 c	21.8 d
78 NB38205 3.3SC.....	0.40 fl oz	—						
+ NB37908 28WP	1.1 oz	14	1.0 g-i	1.5 i	3.3 h-o	3.3 f-m	4.5 h-m	3.0 ij
79 NB38205 3.3SC.....	0.5 fl oz	—						
+ NB37908 28WP	1.1 oz	14 ¹⁵	0.0 i	0.5 i	0.3 no	3.0 f-m	2.3 j-m	1.3 ij

(Continued)

Table 1A (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Number of Lesion Centers per Plot ¹					
			23 May	1 June	11 June	21 June	1 July	11 July
80 Emerald 70WG	0.18 oz	28	0.0 i	1.0 i	7.5 gh	0.5 k-m	1.3 k-m	0.0 j
81 Emerald 70WG	0.18 oz	CUR-28 ⁷	3.3 c-i	2.5 i	1.3 l-o	0.0 m	0.0 m	0.0 j
82 Velista 50WDG.....	0.3 oz	14	0.0 i	0.0 i	1.5 l-o	0.8 j-m	0.8 lm	0.0 j
83 Velista 50WDG.....	0.5 oz	14	0.0 i	0.0 i	0.5 m-o	0.5 k-m	0.5 lm	0.0 j
84 Velista 50WDG.....	0.3 oz	—						
+ Daconil Ultrex 82.5WDG.....	3.25 oz	14	0.0 i	0.0 i	0.5 m-o	0.0 m	0.0 m	0.0 j
85 Velista 50WDG.....	0.3 oz	—						
+ Curalan 50EG	1.0 oz	14	0.0 i	0.3 i	0.5 m-o	0.0 m	0.0 m	0.0 j
86 KO.....	1.5 fl oz	21	3.8 b-g	31.8 de	34.5 d	23.0 ab	72.8 c	31.8 bc
87 QP Enclave 5.3F.....	3.0 fl oz	—						
+ Foursome 100SL	0.4 fl oz	14	0.0 i	0.0 i	3.5 h-o	6.0 e-g	2.8 i-m	1.3 ij
88 QP Enclave 5.3F.....	4.0 fl oz	—						
+ Foursome 100SL	0.4 fl oz	21	0.5 g-i	11.5 g	1.0 l-o	8.5 de	1.0 lm	8.5 fg
89 QP Enclave 5.3F.....	3.0 fl oz	—						
+ QP Fosetyl-AI 80WG.....	4.0 oz	—						
+ Foursome 100SL	0.4 fl oz	14	0.0 i	0.0 i	1.5 l-o	0.0 m	0.0 m	0.0 j
90 QP Enclave 5.3F.....	4.0 fl oz	—						
+ QP Fosetyl-AI 80WG.....	4.0 oz	—						
+ Foursome 100SL	0.4 fl oz	21	0.0 i	4.5 hi	0.5 m-o	6.3 ef	0.0 m	1.8 ij
91 Chipco 26GT 2SC.....	4.0 fl oz	14	0.0 i	0.0 i	1.0 l-o	0.0 m	0.0 m	0.0 j
92 Curalan 50EG	1.0 oz	14	0.0 i	0.0 i	1.3 l-o	1.0 j-m	2.3 j-m	2.3 ij
93 Insignia Intransic 2.1SC.....	0.7 fl oz	14	0.0 i	0.0 i	0.0 o	0.0 m	0.0 m	0.0 j
94 Banner MAXX 1.3ME.....	1.0 fl oz	21	0.0 i	0.5 i	1.3 l-o	3.0 f-m	0.3 lm	3.3 ij
95 Daconil Ultrex 82.5WDG.....	3.25 oz	14	0.0 i	0.0 i	0.8 l-o	0.0 m	0.0 m	0.0 j
96 Echo 6F ETQ	3.6 fl oz	—						
+ SA-0010234 SC.....	10.0 fl oz	14	0.3 hi	0.5 i	0.3 no	0.0 m	0.3 lm	0.0 j
97 Untreated Check.....	—	—	4.5 b-f	56.3 bc	54.3 b	23.8 ab	89.5 b	28.8 c

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(Continued)

Table 1A (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Number of Lesion Centers per Plot ¹					
			23 May	1 June	11 June	21 June	1 July	11 July
		INT ¹⁶	DAT ¹⁷	DAT	DAT	DAT	DAT	DAT
		7	6	1	4	7	3	6
		14	13	8	4	14	10	6
		21	13	1	11	21	10	20
		28	13	22	4	14	24	6

¹ Values are means of four replicates. Means followed by the same letter are not significantly different according to Waller-Duncan *k*-ratio *t*-test (*k*=100).

² Fungicides were applied on 10 May (all treatments, except treatments 96B, 16 to 27, 81), 17 May (7-day treatment), 24 May (7- and 14-day treatments; initiated treatments 16 to 27, 81), 31 May (7- and 21-day treatments), 7 June (7-, 14-, and 28-day treatments; treatments 16 to 18 and 19B), 14 June (7-day treatment; treatments 20 to 24), 21 June (7-, 14-, and 21-day treatments; treatments 25 to 27, 81), 28 June (7-day treatment), 5 July (7-, 14-, and 28-day treatments), 12 July (7- and 21-day treatments), 19 July (7- and 14-day treatments), 26 July (7-day treatment), 2 August (7-, 14-, 21-, and 28-day treatments), and 16 August (treatments 9, 36 to 40, 48, 49).

³ VAR = Variable spray schedule, where treatment 9 (2012 Sipcam Advan \$-Spot Greens Prog. #1) consisted of Echo Dyad ETQ (5.0 fl oz) + Phyte-off LC (2.0 fl oz) applied on 10 May; SA-0010228 SC (5.0 fl oz) on 24 May, 7 June, and 21 June, 5 and 19 July, and 2 August; and SA-0010228 SC (4.0 fl oz) + Phyte-off LC (2.0 fl oz) on 16 August.

⁴ Treatments 16 to 18 were applied on a curative basis when the number of dollar spot lesion centers exceeded 5 for any replicate plot on 24 May and then were repeated on 7 June only.

⁵ ALT = Alternation treatment, where treatment 19 consisted of Daconil Ultrex 82.5WDG (4.0 oz) applied on a curative basis when the number of dollar spot lesion centers exceeded 5 for any replicate plot on 24 May and then was repeated on 7 June only and Emerald 70WG (0.18 oz) was applied on 7 June only.

⁶ Treatments 20 to 24 were applied on a curative basis when the number of dollar spot lesion centers exceeded 5 for any replicate plot on 24 May and then were repeated on 14 June only.

⁷ Treatments 25 to 27 and 81 were applied on a curative basis when the number of dollar spot lesion centers exceeded 5 for any replicate plot on 24 May and then were repeated on 21 June only.

⁸ VAR = Variable spray schedule, where treatment 36 (2012 BASF \$-Spot Greens Prog. #2) consisted of Honor 28WG (1.1 oz) applied on 10 May; Insignia 2.1SC (0.7 fl oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Insignia 2.1SC (0.7 fl oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Honor 28WG (1.1 oz) on 16 August.

(Continued)

Table 1A (continued).

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- ⁹ VAR = Variable spray schedule, where treatment 37 (2012 BASF \$-Spot Greens Prog. #3) consisted of Lexicon Intrinsic 4.17SC (0.47 fl oz) applied on 10 May; Insignia 2.1SC (0.7 fl oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Insignia 2.1SC (0.7 fl oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ulrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Lexicon Intrinsic 4.17SC (0.47 fl oz) on 16 August.
- ¹⁰ VAR = Variable spray schedule, where treatment 38 (2012 BASF \$-Spot Greens Prog. #4) consisted of Headway 1.39EC (3.0 fl oz) applied on 10 May; Heritage TL 0.8ME (2.0 fl oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Heritage TL 0.8ME (2.0 fl oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Headway 1.39EC (3.0 fl oz) on 16 August.
- ¹¹ VAR = Variable spray schedule, where treatment 39 (2012 BASF \$-Spot Greens Prog. #5) consisted of Disarm M 3.9SC (1.0 fl oz) applied on 10 May; Disarm 480SC (0.36 fl oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Disarm 480SC (0.36 fl oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Disarm M 3.9SC (1.0 fl oz) on 16 August.
- ¹² VAR = Variable spray schedule, where treatment 40 (2012 BASF \$-Spot Greens Prog. #6) consisted of Tartan 2.4SC (2.0 fl oz) applied on 10 May; Compass 50WG (0.25 oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Compass 50WG (0.25 oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Tartan 2.4SC (2.0 fl oz) on 16 August.
- ¹³ ALT = Alternation spray schedule, where treatment 48 (2012 Bayer \$-Spot Greens Prog. #7) consisted of Chipco Signature 80WG (4.0 oz) + Triton Flo 3SC (0.5 fl oz) applied on 10 May, 7 June, 5 July, and 2 August; and Chipco Signature 80WG (4.0 oz) + Daconil Action 6.1SC (3.6 fl oz) on 24 May, 21 June, 19 July, and 16 August.
- ¹⁴ ALT = Alternation spray schedule, where treatment 49 (2012 Bayer \$-Spot Greens Prog. #8) consisted of Chipco Signature 80WG (4.0 oz) + Triton Flo 3SC (0.5 fl oz) applied on 10 May, 7 June, 5 July, and 2 August; and Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 24 May, 21 June, 19 July, and 16 August.
- ¹⁵ Treatments 70, 74, and 79 were applied every 14 days from 10 May through 19 July.
- ¹⁶ Spray interval in days.
- ¹⁷ Days after the last treatment.

Table 1B. Influence of fungicides and biorational products on dollar spot development in a creeping bentgrass green: Rutgers University, 2012.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Number of Lesion Centers per Plot ¹					
			21 July	31 July	10 Aug.	20 Aug.	30 Aug.	9 Sept.
1 Echo 6F ETQ	3.6 fl oz	14	1.3 s-w	18.0 o-x	6.8 p-x	24.0 o-t	36.3 p-v	116.0 m-t
2 SA-0010233 SC	5.0 fl oz	14	4.0 n-w	20.0 m-u	16.8 i-m	27.3 n-s	37.8 o-u	99.3 x-z
3 SA-0010221 SC	4.0 fl oz	14	9.5 i-o	19.0 n-v	14.5 j-p	27.3 n-s	46.3 l-r	128.5 i-r
4 SA-0010222 SC	2.6 fl oz	14	2.3 q-w	7.0 z'a'-j'	1.3 wx	4.0 z'b'-f'	10.0 z'd'-k'	68.0 z'a'-j'
5 Clearscape ETQ	0.6 fl oz	14	2.8 p-w	7.8 z-z'j'	4.0 u-x	11.0 v-z'f'	17.0 z-z'f'	82.3 u-z'd'
6 SA-0010228 SC	5.0 fl oz	14	22.0 fg	55.3 d	36.8 ef	77.8 d	105.3 de	163.8 e-h
7 Echo Dyad ET	5.0 fl oz	14	15.0 hi	46.0 de	22.5 g-j	55.5 f-h	78.3 gh	141.0 g-n
8 SA-0010231 SC	5.25 fl oz	14	4.8 l-w	26.3 j-p	19.3 h-k	35.3 k-o	43.3 n-s	111.8 n-u
9 2012 \$-Spot Greens Prog. #1 Sipcam Advan	VAR-14 ³		7.8 j-q	30.3 h-l	19.5 h-k	27.3 n-s	15.2 z'a'-i'	55.8 z'c'-l'
10 Emerald 70WG	0.13 oz	14	0.0 w	0.0 z'j'	0.0 x	0.0 z'f'	0.0 z'k'	17.5 z'o'-r'
11 Headway 1.39EC	1.5 fl oz	14	0.0 w	3.0 z'e'-j'	3.0 u-x	4.3 z'b'-f'	8.3 z'e'-k'	48.5 z'f'-n'
12 HM0812 1.66SC	1.2 fl oz	14	0.8 u-w	4.8 z'd'-j'	1.8 u-x	6.5 z-z'f'	11.5 z'c'-k'	45.5 z'g'-o'
13 HM0812 1.66SC	1.5 fl oz	14	0.0 w	0.5 z'ij'	0.0 x	0.0 z'f'	1.0 z'k'	25.0 z'm'-r'
14 HM0812 1.66SC	2.0 fl oz	14	0.0 w	0.0 z'j'	0.0 x	0.0 z'f'	0.3 z'k'	13.3 z'q'r'
15 HM0812 1.66SC	2.4 fl oz	14	0.0 w	0.0 z'j'	0.0 x	0.0 z'f'	0.0 z'k'	8.0 z'r'
16 Encartis 6.24SC	4.0 fl oz	CUR-14 ⁴	12.5 h-j	27.5 i-n	30.0 fg	66.0 ef	84.0 fg	168.8 d-g
17 Emerald 70WG	0.18 oz	CUR-14 ⁴	6.3 k-v	18.3 n-w	18.5 h-k	39.5 j-m	48.8 l-p	148.8 f-l
18 Daconil Ultrex 82.5WDG	4.0 oz	CUR-14 ⁴	33.8 e	47.8 de	45.0 de	76.0 de	115.5 d	199.8 bc
19 Daconil Ultrex 82.5WDG	4.0 oz	-						
/ Emerald 70WG	0.18 oz	CUR-14 ⁵	8.3 j-p	24.8 j-q	26.8 gh	63.0 f	70.3 hi	158.3 e-i
20 Xzemplar 2.5SC	0.211 fl oz	CUR-21 ⁶	1.3 s-w	10.0 v-z'h'	12.5 k-t	29.3 m-r	47.8 l-p	150.0 f-l
21 Emerald 70WG	0.18 oz	CUR-21 ⁶	0.8 u-w	12.3 t-z'e'	14.3 j-q	31.0 m-p	47.0 l-q	133.0 i-q
22 Lexicon Intrinsic 4.17SC	0.34 fl oz	CUR-21 ⁶	2.8 p-w	16.3 q-z'a'	12.8 k-t	35.3 k-o	42.8 n-s	145.0 g-m
23 Honor Intrinsic 28WG	0.84 oz	CUR-21 ⁶	6.8 k-t	20.3 m-u	17.0 i-m	48.0 g-j	58.5 i-l	154.8 f-k
24 Encartis 6.24SC	3.0 fl oz	CUR-21 ⁶	9.8 i-n	25.3 j-q	25.0 g-i	66.8 d-f	92.8 ef	195.0 b-d
25 Xzemplar 2.5SC	0.262 fl oz	CUR-28 ⁷	0.0 w	3.5 z'e'-j'	5.5 r-x	16.5 s-z'a'	25.0 u-z'b'	122.3 l-q
26 Lexicon Intrinsic 4.17SC	0.472 fl oz	CUR-28 ⁷	0.0 w	7.5 z'a'-j'	7.8 o-x	21.0 p-x	31.0 s-y	110.0 p-v
27 Encartis 6.24SC	3.0 fl oz	CUR-28 ⁷	6.8 k-t	25.0 j-q	26.8 gh	76.3 de	71.5 g-i	177.5 b-f
28 Xzemplar 2.5SC	0.157 fl oz	14	0.0 w	0.0 z'j'	0.0 x	0.0 z'f'	0.0 z'k'	17.8 z'o'-r'
29 Xzemplar 2.5SC	0.211 fl oz	21	0.0 w	1.3 z'g'-j'	1.0 wx	0.3 z'f'	0.3 z'k'	0.5 z'r'

(Continued)

Table 1B (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Number of Lesion Centers per Plot ¹					
			21 July	31 July	10 Aug.	20 Aug.	30 Aug.	9 Sept.
30 Emerald 70WG	0.18 oz	21	0.0 w	1.5 z'g'-j'	0.0 x	0.5 z'f'	0.5 z'k'	1.5 z'r'
31 Xzemplar 2.5SC.....	0.262 fl oz	28	0.0 w	3.3 z'e'-j'	6.0 q-x	21.8 p-x	31.5 s-y	106.5 p-x
32 Lexicon Intrinsic 4.17SC	0.34 fl oz	21	0.0 w	2.8 z'f'-j'	1.8 u-x	1.3 z'e'f'	0.5 z'k'	3.8 z'r'
33 Honor Intrinsic 28WG.....	0.84 oz	21	0.0 w	2.3 z'f'-j'	1.8 u-x	0.3 z'f'	0.0 z'k'	0.0 z'r'
34 Lexicon Intrinsic 4.17SC	0.472 fl oz	28	0.0 w	2.3 z'f'-j'	4.5 t-x	18.0 r-y	26.8 t-z'a'	84.3 u-z'c'
35 Encartis 6.24SC.....	3.0 fl oz	28	1.5 r-w	15.0 r-z'c'	16.3 j-n	42.5 i-l	50.0 l-o	111.8 n-u
36 2012 \$-Spot Greens Prog. #2	BASF	VAR-14 ⁸	1.0 t-w	6.0 z'c'-j'	3.3 u-x	1.0 z'e'f'	0.0 z'k'	14.0 z'p'-r'
37 2012 \$-Spot Greens Prog. #3	BASF	VAR-14 ⁹	0.0 w	2.5 z'f'-j'	1.5 v-x	1.5 z'e'f'	0.5 z'k'	7.5 z'r'
38 2012 \$-Spot Greens Prog. #4	BASF	VAR-14 ¹⁰	12.0 h-k	22.3 l-s	13.0 k-s	2.5 z'd'-f'	1.8 z'j'k'	69.5 z-z'j'
39 2012 \$-Spot Greens Prog. #5	BASF	VAR-14 ¹¹	2.3 q-w	10.3 v-z'g'	6.0 q-x	2.5 z'd'-f'	3.8 z'g'-k'	66.3 z'a'-j'
40 2012 \$-Spot Greens Prog. #6	BASF	VAR-14 ¹²	8.5 j-p	27.5 i-n	15.8 j-o	6.3 z'a'-f'	16.0 z-z'h'	69.5 z-z'j'
41 Reserve 4.8SC.....	2.5 fl oz	7	0.0 w	0.0 z'j'	0.0 x	0.0 z'f'	0.0 z'k'	7.0 z'r'
42 Reserve 4.8SC.....	3.5 fl oz	14	0.0 w	11.0 u-z'f'	1.8 u-x	12.3 u-z'e'	24.3 v-z'c'	90.8 t-z'b'
43 Concert II 4.3SE.....	3.0 fl oz	7	0.0 w	0.0 z'j'	0.0 x	0.5 z'f'	0.0 z'k'	4.3 z'r'
44 Tourney 50WG	0.28 oz	14	0.8 u-w	6.3 z'c'-j'	2.0 u-x	10.5 x-z'f'	16.8 z-z'g'	73.5 y-z'h'
45 Interface 2.27SC	3.0 fl oz	14	3.3 p-w	9.8 v-z'i'	5.3 r-x	10.5 x-z'f'	17.5 z-z'f'	107.3 p-w
46 Interface 2.27SC	4.0 fl oz	14	0.5 vw	3.8 z'e'-j'	0.8 wx	5.0 z'b'-f'	11.3 z'c'-k'	88.0 t-z'b'
47 Iprodione Pro 2SE.....	4.0 fl oz	14	10.5 h-l	33.3 g-j	18.8 h-k	45.8 h-k	66.5 h-k	151.8 f-l
48 2012 \$-Spot Greens Prog. #7	Bayer	ALT-14 ¹³	5.3 l-w	17.5 p-x	5.5 r-x	15.3 t-z'b'	3.3 z'h'-k'	51.8 z'd'-n'
49 2012 \$-Spot Greens Prog. #8	Bayer	ALT-14 ¹⁴	11.8 h-k	17.8 p-x	7.5 o-x	20.5 p-x	7.3 z'f'-k'	73.0 y-z'h'
50 Secure 4.17SC.....	0.5 fl oz	14	16.3 gh	31.8 g-k	19.0 h-k	51.0 g-i	53.5 k-n	134.8 h-p
51 Daconil Action 6.1SC	3.5 fl oz	14	1.5 r-w	16.0 q-z'b'	4.8 s-x	17.8 s-z	25.5 u-z'a'	76.0 z-z'g'
52 Heritage TL 0.8ME	1.0 fl oz	14	48.0 d	66.3 c	46.3 d	95.8 c	112.8 d	202.5 b
53 Secure 4.17SC.....	0.5 fl oz	-						
+ Heritage TL 0.8ME	1.0 fl oz	14	1.5 r-w	13.8 s-z'd'	4.5 t-x	19.8 p-x	34.5 q-w	96.3 s-z'a'
54 RU192514-12Q SC.....	0.236 fl oz	-						
+ RU192514-12J SC.....	0.5 fl oz	14	0.0 w	0.0 z'j'	0.0 x	0.0 z'f'	1.0 z'k'	56.5 z'c'-k'
55 Daconil Action 6.1SC	3.5 fl oz	-						
+ Appear 4.1SL	3.0 fl oz	14	1.0 t-w	7.5 z'a'-j'	2.0 u-x	12.3 u-z'e'	11.0 z'd'-k'	44.3 z'h'-o'
56 Daconil Action 6.1SC	3.5 fl oz	-						
+ Appear 4.1SL	4.0 fl oz	14	0.5 vw	8.8 x-z'j'	1.0 wx	7.3 y-z'f'	12.0 z'b'-k'	52.0 z'd'-n'

(Continued)

Table 1B (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Number of Lesion Centers per Plot ¹						
			21 July	31 July	10 Aug.	20 Aug.	30 Aug.	9 Sept.	
57 Daconil Action 6.1SC3.5 fl oz	—	—							
+ Appear 4.1SL6.0 fl oz	14	14	0.5 vw	6.5 z'c'-j'	1.0 wx	3.5 z'c'-f'	9.5 z'e'-k'	41.8 z'i'-q'	
58 Concert II 4.3SE.....4.0 fl oz	—	—							
+Appear 4.1SL6.0 fl oz	14	14	0.0 w	0.8 z'h'-j'	0.0 x	0.0 z'f'	1.8 z'j'k'	22.3 z'n'-r'	
59 A13703G 2.7SC.....0.62 fl oz	—	—							
+ Appear 4.1SL6.0 fl oz	14	14	1.0 t-w	5.0 z'd'-j'	1.3 wx	5.8 z'a'-f'	14.5 z'a'-j'	68.3 z'a'-j'	
60 A12531R.....3.6 fl oz	—	—							
+ Chipco Signature 80WG 4.0 oz	14	14	6.5 k-u	24.0 j-r	10.0 l-u	22.0 p-w	29.0 t-z	80.5 v-z'e'	
61 Daconil Ultrex 82.5WDG..... 3.2 oz	—	—							
+ Chipco Signature 80WG 4.0 oz	14	14	0.0 w	7.3 z'a'-j'	1.3 wx	4.8 z'b'-f'	11.3 z'c'-k'	50.5 z'e'-n'	
62 A13703G 2.7SC.....0.62 fl oz	—	—							
+ Daconil Action 6.1SC3.5 fl oz	14	14	0.0 w	0.8 z'h'-j'	0.0 x	0.8 z'f'	3.5 z'h'-k'	39.5 z'j'-q'	
63 HM1106 4.1SC.....1.0 fl oz	14	14	44.8 d	83.3 b	56.3 c	104.0 c	159.0 b	235.0 a	
64 HM1106 4.1SC.....2.0 fl oz	14	14	22.3 f	44.8 ef	29.3 fg	58.3 fg	77.0 gh	169.5 c-g	
65 HM1106 4.1SC.....3.0 fl oz	14	14	13.0 h-j	40.8 e-g	16.3 j-n	39.0 j-m	67.8 h-j	130.5 i-q	
66 HM1106 4.1SC.....4.0 fl oz	14	14	7.0 k-s	36.3 f-i	12.8 k-t	36.0 k-n	66.8 h-j	140.5 g-o	
67 HM1106 4.1SC.....5.0 fl oz	14	14	3.8 o-w	19.0 n-v	3.3 u-x	19.8 p-x	42.8 n-s	116.0 m-t	
68 NB37904 1.8SC.....0.50 fl oz	14	14	3.5 p-w	21.5 l-t	13.0 k-s	22.3 p-v	39.5 o-t	108.8 p-w	
69 NB37904 1.8SC.....0.66 fl oz	14	14	2.0 q-w	11.0 u-z'f'	7.0 p-x	14.5 t-z'c'	23.0 w-z'd'	84.3 u-z'c'	
70 NB37904 1.8SC.....0.75 fl oz	14 ¹⁵	14 ¹⁵	0.8 u-w	9.0 w-z'j'	13.8 k-r	27.3 n-s	38.8 o-t	152.5 f-l	
71 NB37904 1.8SC.....0.75 fl oz	21	21	2.8 p-w	28.8 i-m	22.5 g-j	29.5 m-q	25.0 u-z'b'	55.5 z'c'-m'	
72 NB37904 1.8SC.....1.0 fl oz	21	21	1.5 r-w	17.5 p-x	8.3 n-x	18.8 q-x	11.8 z'c'-k'	27.8 z'k'-r'	
73 NB38205 3.3SC.....0.40 fl oz	14	14	5.3 l-w	17.3 p-y	9.8 l-v	34.3 l-o	44.0 m-s	102.8 q-y	
74 NB38205 3.3SC.....0.50 fl oz	14 ¹⁵	14 ¹⁵	4.5 m-w	11.0 u-z'f'	17.3 i-l	36.0 k-n	56.5 j-m	143.8 g-m	
75 NB37908 28WP 1.1 oz	14	14	46.3 d	84.5 b	47.0 d	118.8 b	164.5 b	245.3 a	
76 Segway 3.3SC0.45 fl oz	14	14	62.8 a	99.5 a	86.3 a	96.8 c	135.3 c	187.5 b-e	
77 Affirm 11.3WG..... 0.87 oz	14	14	54.5 c	99.8 a	56.3 c	147.8 a	178.8 a	238.3 a	
78 NB38205 3.3SC.....0.40 fl oz	—	—							
+ NB37908 28WP 1.1 oz	14	14	9.5 i-o	24.8 j-q	16.8 i-m	35.8 k-n	47.3 l-q	125.0 k-q	
79 NB38205 3.3SC.....0.5 fl oz	—	—							
+ NB37908 28WP 1.1 oz	14 ¹⁵	14 ¹⁵	7.3 j-r	17.8 p-x	25.8 gh	47.8 g-j	66.5 h-k	168.0 d-g	

(Continued)

Table 1B (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Number of Lesion Centers per Plot ¹					
			21 July	31 July	10 Aug.	20 Aug.	30 Aug.	9 Sept.
80 Emerald 70WG	0.18 oz	28	0.0 w	3.0 z'e'-j'	6.8 p-x	22.5 p-u	28.5 t-z	111.0 n-v
81 Emerald 70WG	0.18 oz	CUR-28 ⁷	0.0 w	2.0 z'f'-j'	1.8 u-x	0.8 z'f'	2.5 z'i'-k'	25.5 z'l'-r'
82 Velista 50WDG.....	0.3 oz	14	2.0 q-w	9.8 v-z'i'	6.8 p-x	13.3 t-z'd'	21.3 x-z'e'	88.8 t-z'b'
83 Velista 50WDG.....	0.5 oz	14	0.5 vw	6.8 z'b'-j'	2.5 u-x	5.0 z'b'-f'	9.0 z'e'-k'	70.5 z-z'l'
84 Velista 50WDG.....	0.3 oz	-						
+ Daconil Ultrex 82.5WDG.....	3.25 oz	14	0.8 u-w	4.3 z'e'-j'	1.5 v-x	2.3 z'd'-f'	7.3 z'f'-k'	57.0 z'c'-k'
85 Velista 50WDG.....	0.3 oz	-						
+ Curalan 50EG	1.0 oz	14	0.0 w	2.0 z'f'-z'j'	1.5 v-x	1.5 z'e'f'	3.5 z'h'-k'	60.8 z'b'-j'
86 KO.....	1.5 fl oz	21	55.0 bc	98.8 a	73.8 b	127.5 b	102.5 de	177.5 b-f
87 QP Enclave 5.3F.....	3.0 fl oz	-						
+ Foursome 100SL	0.4 fl oz	14	10.5 h-l	29.3 i-m	14.0 k-q	34.5 k-o	52.8 l-n	156.3 f-j
88 QP Enclave 5.3F.....	4.0 fl oz	-						
+ Foursome 100SL	0.4 fl oz	21	3.5 p-w	38.8 e-h	12.5 k-t	37.0 j-n	34.3 q-x	78.8 w-z'f'
89 QP Enclave 5.3F.....	3.0 fl oz	-						
+ QP Fosetyl-AI 80WG.....	4.0 oz	-						
+ Foursome 100SL	0.4 fl oz	14	0.8 u-w	8.0 y-z'j'	3.5 u-x	4.8 z'b'-f'	14.8 z'a'-j'	72.5 y-z'h'
90 QP Enclave 5.3F.....	4.0 fl oz	-						
+ QP Fosetyl-AI 80WG.....	4.0 oz	-						
+ Foursome 100SL	0.4 fl oz	21	0.0 w	21.3 l-t	3.8 u-x	10.8 w-z'f'	6.0 z'f'-k'	72.3 y-z'i'
91 Chipco 26GT 2SC.....	4.0 fl oz	14	1.8 r-w	9.8 v-z'i'	4.5 t-x	14.5 t-z'c'	27.3 t-z'a'	109.0 p-w
92 Curalan 50EG	1.0 oz	14	10.0 i-m	27.3 i-o	15.5 j-o	35.5 k-n	46.8 l-q	126.8 j-s
93 Insignia Intransic 2.1SC.....	0.7 fl oz	14	0.8 u-w	4.5 z'd'-j'	0.8 wx	4.5 z'b'-f'	14.5 z'a'-j'	55.5 z'c'-m'
94 Banner MAXX 1.3ME.....	1.0 fl oz	21	2.3 q-w	23.3 k-r	15.0 j-p	21.5 p-x	20.8 y-z'e'	47.3 z'g'-o'
95 Daconil Ultrex 82.5WDG.....	3.25 oz	14	4.3 m-w	17.0 p-z	8.8 m-w	22.0 p-w	33.3 r-y	88.8 t-z'b'
96 Echo 6F ETQ	3.6 fl oz	-						
+ SA-0010234 SC.....	10.0 fl oz	14	0.0 w	5.0 z'd'-j'	0.8 wx	4.5 z'b'-f'	10.8 z'd'-k'	62.8 z'b'-j'
97 Untreated Check.....	-	-	60.5 ab	92.0 ab	87.5 a	97.0 c	152.5 b	248.8 a

(Continued)

Table 1B (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Number of Lesion Centers per Plot ¹					
			21 July	31 July	10 Aug.	20 Aug.	30 Aug.	9 Sept.
		INT ¹⁶	DAT ¹⁷	DAT	DAT	DAT	DAT	DAT
		7	2	5	8	18	28	38
		14	2	12	8	18	28	38
		21	9	19	8	18	28	38
		28	16	26	8	18	28	38

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 10 May (all treatments, except treatments 96B, 16 to 27, 81), 17 May (7-day treatment), 24 May (7- and 14-day treatments; initiated treatments 16 to 27, 81), 31 May (7- and 21-day treatments), 7 June (7-, 14-, and 28-day treatments; treatments 16 to 18 and 19B), 14 June (7-day treatment; treatments 20 to 24), 21 June (7-, 14-, and 21-day treatments; treatments 25 to 27, 81), 28 June (7-day treatment), 5 July (7-, 14-, and 28-day treatments), 12 July (7- and 21-day treatments), 19 July (7- and 14-day treatments), 26 July (7-day treatment), 2 August (7-, 14-, 21-, and 28-day treatments), and 16 August (treatments 9, 36 to 40, 48, 49).

³ VAR = Variable spray schedule, where treatment 9 (2012 Sipcam Advan \$-Spot Greens Prog. #1) consisted of Echo Dyad ETQ (5.0 fl oz) + Phyte-off LC (2.0 fl oz) applied on 10 May; SA-0010228 SC (5.0 fl oz) on 24 May, 7 June, and 21 June, 5 and 19 July, and 2 August; and SA-0010228 SC (4.0 fl oz) + Phyte-off LC (2.0 fl oz) on 16 August.

⁴ Treatments 16 to 18 were applied on a curative basis when the number of dollar spot lesion centers exceeded 5 for any replicate plot on 24 May and then were repeated on 7 June only.

⁵ ALT = Alternation treatment, where treatment 19 consisted of Daconil Ultrex 82.5WDG (4.0 oz) applied on a curative basis when the number of dollar spot lesion centers exceeded 5 for any replicate plot on 24 May and then was repeated on 7 June only and Emerald 70WG (0.18 oz) was applied on 7 June only.

⁶ Treatments 20 to 24 were applied on a curative basis when the number of dollar spot lesion centers exceeded 5 for any replicate plot on 24 May and then were repeated on 14 June only.

⁷ Treatments 25 to 27 and 81 were applied on a curative basis when the number of dollar spot lesion centers exceeded 5 for any replicate plot on 24 May and then were repeated on 21 June only.

⁸ VAR = Variable spray schedule, where treatment 36 (2012 BASF \$-Spot Greens Prog. #2) consisted of Honor 28WG (1.1 oz) applied on 10 May; Insignia 2.1SC (0.7 fl oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Insignia 2.1SC (0.7 fl oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Honor 28WG (1.1 oz) on 16 August.

(Continued)

Table 1B (continued).

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- ⁹ VAR = Variable spray schedule, where treatment 37 (2012 BASF \$-Spot Greens Prog. #3) consisted of Lexicon Intrinsic 4.17SC (0.47 fl oz) applied on 10 May; Insignia 2.1SC (0.7 fl oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Insignia 2.1SC (0.7 fl oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ulrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Lexicon Intrinsic 4.17SC (0.47 fl oz) on 16 August.
- ¹⁰ VAR = Variable spray schedule, where treatment 38 (2012 BASF \$-Spot Greens Prog. #4) consisted of Headway 1.39EC (3.0 fl oz) applied on 10 May; Heritage TL 0.8ME (2.0 fl oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Heritage TL 0.8ME (2.0 fl oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Headway 1.39EC (3.0 fl oz) on 16 August.
- ¹¹ VAR = Variable spray schedule, where treatment 39 (2012 BASF \$-Spot Greens Prog. #5) consisted of Disarm M 3.9SC (1.0 fl oz) applied on 10 May; Disarm 480SC (0.36 fl oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Disarm 480SC (0.36 fl oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Disarm M 3.9SC (1.0 fl oz) on 16 August.
- ¹² VAR = Variable spray schedule, where treatment 40 (2012 BASF \$-Spot Greens Prog. #6) consisted of Tartan 2.4SC (2.0 fl oz) applied on 10 May; Compass 50WG (0.25 oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Compass 50WG (0.25 oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Tartan 2.4SC (2.0 fl oz) on 16 August.
- ¹³ ALT = Alternation spray schedule, where treatment 48 (2012 Bayer \$-Spot Greens Prog. #7) consisted of Chipco Signature 80WG (4.0 oz) + Triton Flo 3SC (0.5 fl oz) applied on 10 May, 7 June, 5 July, and 2 August; and Chipco Signature 80WG (4.0 oz) + Daconil Action 6.1SC (3.6 fl oz) on 24 May, 21 June, 19 July, and 16 August.
- ¹⁴ ALT = Alternation spray schedule, where treatment 49 (2012 Bayer \$-Spot Greens Prog. #8) consisted of Chipco Signature 80WG (4.0 oz) + Triton Flo 3SC (0.5 fl oz) applied on 10 May, 7 June, 5 July, and 2 August; and Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 24 May, 21 June, 19 July, and 16 August.
- ¹⁵ Treatments 70, 74, and 79 were applied every 14 days from 10 May through 19 July.
- ¹⁶ Spray interval in days.
- ¹⁷ Days after the last treatment.

Table 1C. Influence of fungicides and biorational products on dollar spot development in a creeping bentgrass green: Rutgers University, 2012.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Turf Quality ^{1,2}				Phytotoxicity ^{1,3}	
			8 June	6 July	5 Aug.	9 Sept.	6 July	5 Aug.
1 Echo 6F ETQ	3.6 fl oz	14	7.4 b-g	8.4 a-d	5.6 o-u	4.3 q-w	1.0 e	1.0 d
2 SA-0010233 SC	5.0 fl oz	14	8.0 a-d	8.0 a-g	5.6 o-u	4.6 n-t	1.0 e	1.0 d
3 SA-0010221 SC	4.0 fl oz	14	7.5 a-f	8.3 a-e	4.8 u-z'b'	3.9 t-z	1.0 e	1.0 d
4 SA-0010222 SC	2.6 fl oz	14	7.4 b-g	8.4 a-d	6.5 i-o	5.0 k-q	1.0 e	1.0 d
5 Clearscape ETQ	0.6 fl oz	14	7.6 a-f	7.8 a-i	6.9 f-l	5.0 k-q	1.0 e	1.0 d
6 SA-0010228 SC	5.0 fl oz	14	8.0 a-d	7.5 c-j	4.1 z-z'g'	3.6 v-z'b'	1.0 e	1.0 d
7 Echo Dyad ET	5.0 fl oz	14	7.3 c-h	8.5 a-d	4.1 z-z'g'	3.8 u-z'a'	1.0 e	1.0 d
8 SA-0010231 SC	5.25 fl oz	14	7.4 b-g	7.5 c-j	4.6 v-z'c'	4.3 q-w	1.0 e	1.0 d
9 2012 \$-Spot Greens Prog. #1 Sipcam Advan	VAR-14 ⁵		7.6 a-f	8.5 a-d	5.3 r-x	5.5 i-m	1.0 e	1.0 d
10 Emerald 70WG	0.13 oz	14	7.6 a-f	7.6 b-i	8.5 a	8.0 b-d	1.0 e	1.0 d
11 Headway 1.39EC	1.5 fl oz	14	8.0 a-d	8.1 a-f	6.6 h-n	6.3 g-i	1.0 e	1.4 b
12 HM0812 1.66SC	1.2 fl oz	14	7.8 a-f	6.8 h-m	6.9 f-l	5.3 j-o	1.0 e	1.4 b
13 HM0812 1.66SC	1.5 fl oz	14	8.0 a-d	6.4 j-m	7.4 c-i	6.4 f-h	1.5 ab	1.4 b
14 HM0812 1.66SC	2.0 fl oz	14	8.0 a-d	6.4 j-m	7.3 d-j	7.8 c-e	1.1 de	1.4 b
15 HM0812 1.66SC	2.4 fl oz	14	7.5 a-f	7.6 b-i	7.3 d-j	8.4 a-c	1.0 e	1.8 a
16 Encartis 6.24SC	4.0 fl oz	CUR-14 ⁶	6.9 f-i	8.3 a-e	4.6 v-z'c'	2.9 z'b'-g'	1.0 e	1.0 d
17 Emerald 70WG	0.18 oz	CUR-14 ⁶	7.5 a-f	7.9 a-h	5.1 r-y	3.3 y-z'e'	1.0 e	1.0 d
18 Daconil Ultrex 82.5WDG	4.0 oz	CUR-14 ⁶	7.4 b-g	6.6 i-m	3.8 z'c'-h'	2.5 z'e'-g'	1.0 e	1.0 d
19 Daconil Ultrex 82.5WDG	4.0 oz	-						
/ Emerald 70WG	0.18 oz	CUR-14 ⁷	7.8 a-f	8.0 a-g	4.3 y-z'f'	3.1 z-z'f'	1.0 e	1.0 d
20 Xzemplar 2.5SC	0.211 fl oz	CUR-21 ⁸	8.3 ab	7.9 a-h	6.4 j-p	3.4 x-z'd'	1.0 e	1.0 d
21 Emerald 70WG	0.18 oz	CUR-21 ⁸	8.4 a	7.4 d-j	6.5 i-o	3.8 u-z'a'	1.0 e	1.0 d
22 Lexicon Intrinsic 4.17SC	0.34 fl oz	CUR-21 ⁸	7.9 a-e	8.6 a-c	5.6 o-u	3.5 w-z'c'	1.0 e	1.0 d
23 Honor Intrinsic 28WG	0.84 oz	CUR-21 ⁸	7.8 a-f	8.0 a-g	5.8 n-t	3.5 w-z'c'	1.0 e	1.0 d
24 Encartis 6.24SC	3.0 fl oz	CUR-21 ⁸	8.0 a-d	8.4 a-d	4.5 w-z'd'	3.4 x-z'd'	1.0 e	1.0 d
25 Xzemplar 2.5SC	0.262 fl oz	CUR-28 ⁹	8.0 a-d	7.9 a-h	7.8 a-f	4.3 q-w	1.0 e	1.0 d
26 Lexicon Intrinsic 4.17SC	0.472 fl oz	CUR-28 ⁹	8.3 ab	8.4 a-d	6.8 g-m	4.3 q-w	1.0 e	1.0 d
27 Encartis 6.24SC	3.0 fl oz	CUR-28 ⁹	7.9 a-e	7.9 a-h	4.0 z'a'-h'	2.8 z'c'-g'	1.0 e	1.0 d
28 Xzemplar 2.5SC	0.157 fl oz	14	8.0 a-d	7.9 a-h	8.5 a	7.5 de	1.0 e	1.0 d
29 Xzemplar 2.5SC	0.211 fl oz	21	8.0 a-d	7.5 c-j	8.4 ab	9.0 a	1.0 e	1.0 d

(Continued)

Table 1C (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Turf Quality ^{1,2}				Phytotoxicity ^{1,3}	
			8 June	6 July	5 Aug.	9 Sept.	6 July	5 Aug.
30 Emerald 70WG	0.18 oz	21	7.5 a-f	7.8 a-i	8.3 a-c	9.0 a	1.0 e	1.0 d
31 Xzemplar 2.5SC.....	0.262 fl oz	28	8.3 ab	8.4 a-d	8.0 a-d	4.1 r-x	1.0 e	1.0 d
32 Lexicon Intrinsic 4.17SC	0.34 fl oz	21	7.8 a-f	7.4 d-j	7.6 a-g	8.6 ab	1.0 e	1.0 d
33 Honor Intrinsic 28WG.....	0.84 oz	21	7.6 a-f	7.5 c-j	7.9 a-e	9.0 a	1.0 e	1.0 d
34 Lexicon Intrinsic 4.17SC	0.472 fl oz	28	8.3 ab	7.6 b-i	7.6 a-g	4.3 q-w	1.0 e	1.0 d
35 Encartis 6.24SC.....	3.0 fl oz	28	7.3 c-h	8.0 a-g	5.5 p-v	3.8 u-z'a'	1.0 e	1.0 d
36 2012 \$-Spot Greens Prog. #2	BASF	VAR-14 ¹⁰	7.4 b-g	8.6 a-c	7.0 e-k	7.9 b-e	1.0 e	1.0 d
37 2012 \$-Spot Greens Prog. #3	BASF	VAR-14 ¹¹	7.0 e-i	7.6 b-i	8.1 a-d	8.4 a-c	1.0 e	1.0 d
38 2012 \$-Spot Greens Prog. #4	BASF	VAR-14 ¹²	7.9 a-e	8.6 a-c	4.9 t-z'a'	5.3 j-o	1.0 e	1.0 d
39 2012 \$-Spot Greens Prog. #5	BASF	VAR-14 ¹³	7.0 e-i	8.5 a-d	5.8 n-t	5.4 j-n	1.0 e	1.0 d
40 2012 \$-Spot Greens Prog. #6	BASF	VAR-14 ¹⁴	7.5 a-f	8.0 a-g	4.8 u-z'b'	5.5 i-m	1.0 e	1.0 d
41 Reserve 4.8SC.....	2.5 fl oz	7	7.9 a-e	8.9 a	8.5 a	8.5 a-c	1.0 e	1.0 d
42 Reserve 4.8SC.....	3.5 fl oz	14	7.6 a-f	8.1 a-f	5.9 m-s	4.8 m-s	1.0 e	1.0 d
43 Concert II 4.3SE.....	3.0 fl oz	7	7.6 a-f	6.0 k-n	7.5 b-h	8.6 ab	1.6 a	1.3 bc
44 Tournay 50WG	0.28 oz	14	7.5 a-f	8.1 a-f	6.8 g-m	4.6 n-t	1.0 e	1.0 d
45 Interface 2.27SC	3.0 fl oz	14	7.8 a-f	8.5 a-d	6.4 j-p	4.4 p-v	1.0 e	1.0 d
46 Interface 2.27SC	4.0 fl oz	14	7.9 a-e	8.6 a-c	7.8 a-f	4.9 l-r	1.0 e	1.0 d
47 Iprodione Pro 2SE.....	4.0 fl oz	14	7.9 a-e	8.1 a-f	4.9 t-z'a'	3.5 w-z'c'	1.0 e	1.0 d
48 2012 \$-Spot Greens Prog. #7	Bayer	ALT-14 ¹⁵	7.5 a-f	7.5 c-j	5.5 p-v	5.1 j-p	1.0 e	1.0 d
49 2012 \$-Spot Greens Prog. #8	Bayer	ALT-14 ¹⁶	7.4 b-g	8.1 a-f	4.8 u-z'b'	5.1 j-p	1.0 e	1.0 d
50 Secure 4.17SC.....	0.5 fl oz	14	8.0 a-d	7.9 a-h	4.4 x-z'e'	3.5 w-z'c'	1.0 e	1.0 d
51 Daconil Action 6.1SC	3.5 fl oz	14	7.5 a-f	7.0 f-l	5.4 q-w	4.4 p-v	1.0 e	1.0 d
52 Heritage TL 0.8ME	1.0 fl oz	14	6.5 g-j	4.9 n-p	3.8 z'c'-h'	2.5 z'e'-g'	1.0 e	1.0 d
53 Secure 4.17SC.....	0.5 fl oz	-						
+ Heritage TL 0.8ME	1.0 fl oz	14	8.0 a-d	8.6 a-c	5.9 m-s	4.3 q-w	1.0 e	1.0 d
54 RU192514-12Q SC.....	0.236 fl oz	-						
+ RU192514-12J SC.....	0.5 fl oz	14	7.9 a-e	8.8 ab	8.5 a	5.6 h-l	1.0 e	1.0 d
55 Daconil Action 6.1SC	3.5 fl oz	-						
+ Appear 4.1SL	3.0 fl oz	14	7.5 a-f	8.9 a	7.3 d-j	5.5 i-m	1.0 e	1.0 d
56 Daconil Action 6.1SC	3.5 fl oz	-						
+ Appear 4.1SL	4.0 fl oz	14	7.5 a-f	8.6 a-c	6.4 j-p	5.3 j-o	1.0 e	1.0 d

(Continued)

Table 1C (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Turf Quality ^{1,2}				Phytotoxicity ^{1,3}	
			8 June	6 July	5 Aug.	9 Sept.	6 July	5 Aug.
57 Daconil Action 6.1SC3.5 fl oz	—	—						
+ Appear 4.1SL6.0 fl oz	14	14	7.4 b-g	8.8 ab	7.3 d-j	5.4 j-n	1.0 e	1.0 d
58 Concert II 4.3SE.....4.0 fl oz	—	—						
+Appear 4.1SL6.0 fl oz	14	14	8.0 a-d	8.9 a	7.6 a-g	7.1 ef	1.0 e	1.1 cd
59 A13703G 2.7SC.....0.62 fl oz	—	—						
+ Appear 4.1SL6.0 fl oz	14	14	7.3 c-h	8.5 a-d	7.4 c-i	4.8 m-s	1.0 e	1.0 d
60 A12531R.....3.6 fl oz	—	—						
+ Chipco Signature 80WG 4.0 oz	14	14	8.0 a-d	8.3 a-e	5.4 q-w	4.4 p-v	1.0 e	1.0 d
61 Daconil Ultrex 82.5WDG..... 3.2 oz	—	—						
+ Chipco Signature 80WG 4.0 oz	14	14	8.1 a-c	8.6 a-c	7.0 e-k	5.1 j-p	1.0 e	1.0 d
62 A13703G 2.7SC.....0.62 fl oz	—	—						
+ Daconil Action 6.1SC3.5 fl oz	14	14	8.0 a-d	7.9 a-h	8.4 ab	5.9 h-j	1.0 e	1.0 d
63 HM1106 4.1SC.....1.0 fl oz	14	14	7.1 d-h	5.6 m-o	3.6 z'd'-h'	2.1 z'g'	1.0 e	1.0 d
64 HM1106 4.1SC.....2.0 fl oz	14	14	7.1 d-h	5.9 l-n	3.9 z'b'-h'	3.0 z'a'-f'	1.0 e	1.0 d
65 HM1106 4.1SC.....3.0 fl oz	14	14	7.4 b-g	7.1 e-k	4.4 x-z'e'	3.9 t-z	1.0 e	1.0 d
66 HM1106 4.1SC.....4.0 fl oz	14	14	8.1 a-c	7.8 a-i	4.3 y-z'f'	3.9 t-z	1.0 e	1.0 d
67 HM1106 4.1SC.....5.0 fl oz	14	14	8.0 a-d	8.0 a-g	5.0 s-z	4.1 r-x	1.0 e	1.0 d
68 NB37904 1.8SC.....0.50 fl oz	14	14	7.6 a-f	8.1 a-f	4.5 w-z'd'	4.3 q-w	1.0 e	1.0 d
69 NB37904 1.8SC.....0.66 fl oz	14	14	7.6 a-f	7.9 a-h	6.3 k-q	4.5 o-u	1.0 e	1.0 d
70 NB37904 1.8SC.....0.75 fl oz	14 ¹⁷	14 ¹⁷	8.1 a-c	8.1 a-f	6.6 h-n	3.9 t-z	1.0 e	1.0 d
71 NB37904 1.8SC.....0.75 fl oz	21	21	7.4 b-g	8.0 a-g	4.4 x-z'e'	5.4 j-n	1.0 e	1.0 d
72 NB37904 1.8SC.....1.0 fl oz	21	21	7.8 a-f	7.9 a-h	5.3 r-x	6.7 fg	1.0 e	1.0 d
73 NB38205 3.3SC.....0.40 fl oz	14	14	7.8 a-f	7.9 a-h	5.3 r-x	4.1 r-x	1.0 e	1.0 d
74 NB38205 3.3SC.....0.50 fl oz	14 ¹⁷	14 ¹⁷	7.9 a-e	7.9 a-h	5.8 n-t	3.5 w-z'c'	1.0 e	1.0 d
75 NB37908 28WP 1.1 oz	14	14	7.0 e-i	5.1 n-p	3.5 z'e'-h'	2.4 z'f'g'	1.0 e	1.0 d
76 Segway 3.3SC0.45 fl oz	14	14	5.1 l	4.1 p	3.1 z'h'	3.4 x-z'd'	1.0 e	1.0 d
77 Affirm 11.3WG..... 0.87 oz	14	14	6.4 h-j	4.5 op	3.3 z'g'h'	2.5 z'e'-g'	1.0 e	1.0 d
78 NB38205 3.3SC.....0.40 fl oz	—	—						
+ NB37908 28WP 1.1 oz	14	14	7.3 c-h	7.8 a-i	4.6 v-z'c'	3.9 t-z	1.0 e	1.0 d
79 NB38205 3.3SC.....0.5 fl oz	—	—						

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(Continued)

Table 1C (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Turf Quality ^{1,2}				Phytotoxicity ^{1,3}	
			8 June	6 July	5 Aug.	9 Sept.	6 July	5 Aug.
+ NB37908 28WP	1.1 oz	14 ¹⁷	8.0 a-d	8.3 a-e	4.9 t-z'a'	3.3 t-z'e'	1.0 e	1.0 d
80 Emerald 70WG	0.18 oz	28	7.0 e-i	7.8 a-i	8.0 a-d	4.1 r-x	1.0 e	1.0 d
81 Emerald 70WG	0.18 oz	CUR-28 ⁹	7.9 a-e	8.3 a-e	8.3 a-c	7.1 ef	1.0 e	1.0 d
82 Velista 50WDG.....	0.3 oz	14	7.3 c-h	7.9 a-h	6.4 j-p	4.3 q-w	1.0 e	1.0 d
83 Velista 50WDG.....	0.5 oz	14	7.5 a-f	8.0 a-g	6.9 f-l	5.1 j-p	1.0 e	1.0 d
84 Velista 50WDG.....	0.3 oz	-						
+ Daconil Ultrex 82.5WDG.....	3.25 oz	14	7.6 a-f	7.9 a-h	7.0 e-k	5.4 j-n	1.0 e	1.0 d
85 Velista 50WDG.....	0.3 oz	-						
+ Curalan 50EG	1.0 oz	14	7.0 e-i	8.1 a-f	7.9 a-e	5.5 i-m	1.0 e	1.0 d
86 KO.....	1.5 fl oz	21	6.1 i-k	4.6 op	3.3 z'g'h'	3.0 z'a'-f'	1.0 e	1.0 d
87 QP Enclave 5.3F.....	3.0 fl oz	-						
+ Foursome 100SL	0.4 fl oz	14	7.3 c-h	8.1 a-f	4.5 w-z'd'	3.3 y-z'e'	1.0 e	1.0 d
88 QP Enclave 5.3F.....	4.0 fl oz	-						
+ Foursome 100SL	0.4 fl oz	21	7.3 c-h	7.9 a-h	4.3 y-z'f'	4.4 p-v	1.0 e	1.0 d
89 QP Enclave 5.3F.....	3.0 fl oz	-						
+ QP Fosetyl-AI 80WG.....	4.0 oz	-						
+ Foursome 100SL	0.4 fl oz	14	7.4 b-g	8.5 a-d	6.6 h-n	4.5 o-u	1.0 e	1.0 d
90 QP Enclave 5.3F.....	4.0 fl oz	-						
+ QP Fosetyl-AI 80WG.....	4.0 oz	-						
+ Foursome 100SL	0.4 fl oz	21	7.5 a-f	8.5 a-d	4.8 u-z'b'	5.8 h-k	1.0 e	1.0 d
91 Chipco 26GT 2SC.....	4.0 fl oz	14	7.5 a-f	7.5 c-j	6.0 l-r	4.0 s-y	1.0 e	1.0 d
92 Curalan 50EG	1.0 oz	14	7.9 a-e	8.1 a-f	4.8 u-z'b'	3.8 u-z'a'	1.0 e	1.0 d
93 Insignia Intransic 2.1SC.....	0.7 fl oz	14	8.4 a	8.5 a-d	7.5 b-h	5.4 j-n	1.0 e	1.0 d
94 Banner MAXX 1.3ME.....	1.0 fl oz	21	7.0 e-i	6.9 g-l	4.9 t-z'a'	5.1 j-p	1.0 e	1.1 cd
95 Daconil Ultrex 82.5WDG.....	3.25 oz	14	7.6 a-f	7.5 c-j	5.3 r-x	4.4 p-v	1.3 cd	1.0 d
96 Echo 6F ETQ	3.6 fl oz	-						
+ SA-0010234 SC.....	10.0 fl oz	14	7.9 a-e	7.1 e-k	7.3 d-j	5.0 k-q	1.4 bc	1.0 d
97 Untreated Check.....	-	-	5.3 kl	4.3 p	3.4 z'f'-h'	2.6 z'd'-f'	1.0 e	1.0 d

(Continued)

Table 1C (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Turf Quality ^{1,2}				Phytotoxicity ^{1,3}	
			8 June	6 July	5 Aug.	9 Sept.	6 July	5 Aug.
		INT ¹⁸	DAT ¹⁹	DAT	DAT	DAT	DAT	DAT
		7	1	1	3	38	1	3
		14	1	1	3	38	1	3
		21	8	15	3	38	15	3
		28	1	1	3	38	1	3

¹ Values are means of four replicates. Means followed by the same letter are not significantly different according to Waller-Duncan *k*-ratio *t*-test (*k*=100).

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

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

⁴ Fungicides were applied on 10 May (all treatments, except treatments 96B, 16 to 27, 81), 17 May (7-day treatment), 24 May (7- and 14-day treatments; initiated treatments 16 to 27, 81), 31 May (7- and 21-day treatments), 7 June (7-, 14-, and 28-day treatments; treatments 16 to 18 and 19B), 14 June (7-day treatment; treatments 20 to 24), 21 June (7-, 14-, and 21-day treatments; treatments 25 to 27, 81), 28 June (7-day treatment), 5 July (7-, 14-, and 28-day treatments), 12 July (7- and 21-day treatments), 19 July (7- and 14-day treatments), 26 July (7-day treatment), 2 August (7-, 14-, 21-, and 28-day treatments), and 16 August (treatments 9, 36 to 40, 48, 49).

⁵ VAR = Variable spray schedule, where treatment 9 (2012 Sipcam Advan \$-Spot Greens Prog. #1) consisted of Echo Dyad ETQ (5.0 fl oz) + Phyte-off LC (2.0 fl oz) applied on 10 May; SA-0010228 SC (5.0 fl oz) on 24 May, 7 June, and 21 June, 5 and 19 July, and 2 August; and SA-0010228 SC (4.0 fl oz) + Phyte-off LC (2.0 fl oz) on 16 August.

⁶ Treatments 16 to 18 were applied on a curative basis when the number of dollar spot lesion centers exceeded 5 for any replicate plot on 24 May and then were repeated on 7 June only.

⁷ ALT = Alternation treatment, where treatment 19 consisted of Daconil Ultrex 82.5WDG (4.0 oz) applied on a curative basis when the number of dollar spot lesion centers exceeded 5 for any replicate plot on 24 May and then was repeated on 7 June only and Emerald 70WG (0.18 oz) was applied on 7 June only.

⁸ Treatments 20 to 24 were applied on a curative basis when the number of dollar spot lesion centers exceeded 5 for any replicate plot on 24 May and then were repeated on 14 June only.

⁹ Treatments 25 to 27 and 81 were applied on a curative basis when the number of dollar spot lesion centers exceeded 5 for any replicate plot on 24 May and then were repeated on 21 June only.

(Continued)

Table 1C (continued).

- ¹⁰ VAR = Variable spray schedule, where treatment 36 (2012 BASF \$-Spot Greens Prog. #2) consisted of Honor 28WG (1.1 oz) applied on 10 May; Insignia 2.1SC (0.7 fl oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Insignia 2.1SC (0.7 fl oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Honor 28WG (1.1 oz) on 16 August.
- ¹¹ VAR = Variable spray schedule, where treatment 37 (2012 BASF \$-Spot Greens Prog. #3) consisted of Lexicon Intrinsic 4.17SC (0.47 fl oz) applied on 10 May; Insignia 2.1SC (0.7 fl oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Insignia 2.1SC (0.7 fl oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ulrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Lexicon Intrinsic 4.17SC (0.47 fl oz) on 16 August.
- ¹² VAR = Variable spray schedule, where treatment 38 (2012 BASF \$-Spot Greens Prog. #4) consisted of Headway 1.39EC (3.0 fl oz) applied on 10 May; Heritage TL 0.8ME (2.0 fl oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Heritage TL 0.8ME (2.0 fl oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Headway 1.39EC (3.0 fl oz) on 16 August.
- ¹³ VAR = Variable spray schedule, where treatment 39 (2012 BASF \$-Spot Greens Prog. #5) consisted of Disarm M 3.9SC (1.0 fl oz) applied on 10 May; Disarm 480SC (0.36 fl oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Disarm 480SC (0.36 fl oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Disarm M 3.9SC (1.0 fl oz) on 16 August.
- ¹⁴ VAR = Variable spray schedule, where treatment 40 (2012 BASF \$-Spot Greens Prog. #6) consisted of Tartan 2.4SC (2.0 fl oz) applied on 10 May; Compass 50WG (0.25 oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Compass 50WG (0.25 oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Tartan 2.4SC (2.0 fl oz) on 16 August.
- ¹⁵ ALT = Alternation spray schedule, where treatment 48 (2012 Bayer \$-Spot Greens Prog. #7) consisted of Chipco Signature 80WG (4.0 oz) + Triton Flo 3SC (0.5 fl oz) applied on 10 May, 7 June, 5 July, and 2 August; and Chipco Signature 80WG (4.0 oz) + Daconil Action 6.1SC (3.6 fl oz) on 24 May, 21 June, 19 July, and 16 August.
- ¹⁶ ALT = Alternation spray schedule, where treatment 49 (2012 Bayer \$-Spot Greens Prog. #8) consisted of Chipco Signature 80WG (4.0 oz) + Triton Flo 3SC (0.5 fl oz) applied on 10 May, 7 June, 5 July, and 2 August; and Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 24 May, 21 June, 19 July, and 16 August.
- ¹⁷ Treatments 70, 74, and 79 were applied every 14 days from 10 May through 19 July.
- ¹⁸ Spray interval in days.
- ¹⁹ Days after the last treatment.

Table 1D. Influence of fungicides and biorational products on dollar spot development in a creeping bentgrass green: Rutgers University, 2012.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Color ^{1,2}			Algae ^{1,3} (%)
			8 June	6 July	5 Aug.	20 July
1 Echo 6F ETQ	3.6 fl oz	14	3.1 hi	3.3 f-i	3.1 ef	0.0 x
2 SA-0010233 SC	5.0 fl oz	14	4.4 bc	4.1 ab	4.9 a	2.5 v-x
3 SA-0010221 SC	4.0 fl oz	14	4.1 de	3.0 h-k	3.0 f	37.5 e-k
4 SA-0010222 SC	2.6 fl oz	14	4.0 ef	3.1 g-j	3.4 de	3.8 v-x
5 Clearscape ETQ	0.6 fl oz	14	3.3 h	2.9 i-k	3.1 ef	31.3 i-o
6 SA-0010228 SC	5.0 fl oz	14	4.1 de	3.1 g-j	3.0 f	0.0 x
7 Echo Dyad ET	5.0 fl oz	14	4.6 a	3.4 e-h	3.0 f	0.0 x
8 SA-0010231 SC	5.25 fl oz	14	3.1 hi	3.0 h-k	3.0 f	0.0 x
9 2012 \$-Spot Greens Prog. #1 Sipc	cam Advan	VAR-14 ⁵	4.0 ef	3.3 f-i	3.0 f	0.0 x
10 Emerald 70WG	0.13 oz	14	3.0 ij	3.0 h-k	3.5 d	23.8 l-r
11 Headway 1.39EC	1.5 fl oz	14	3.0 ij	3.4 e-h	4.5 b	25.0 l-q
12 HM0812 1.66SC	1.2 fl oz	14	3.1 hi	3.4 e-h	4.0 c	58.8 ab
13 HM0812 1.66SC	1.5 fl oz	14	3.0 ij	3.3 f-i	4.8 ab	65.0 a
14 HM0812 1.66SC	2.0 fl oz	14	3.1 hi	3.8 b-e	4.6 ab	58.8 ab
15 HM0812 1.66SC	2.4 fl oz	14	3.3 h	4.0 a-c	4.6 ab	43.8 c-h
16 Encartis 6.24SC	4.0 fl oz	CUR-14 ⁶	3.0 ij	3.0 h-k	3.0 f	13.8 q-v
17 Emerald 70WG	0.18 oz	CUR-14 ⁶	3.0 ij	3.0 h-k	3.0 f	40.0 c-i
18 Daconil Ultrex 82.5WDG	4.0 oz	CUR-14 ⁶	3.1 hi	3.0 h-k	3.0 f	0.0 x
19 Daconil Ultrex 82.5WDG	4.0 oz	-				
/ Emerald 70WG	0.18 oz	CUR-14 ⁷	3.0 ij	3.0 h-k	3.0 f	23.8 l-r
20 Xzemplar 2.5SC	0.211 fl oz	CUR-21 ⁸	3.0 ij	3.0 h-k	3.3 d-f	35.0 f-l
21 Emerald 70WG	0.18 oz	CUR-21 ⁸	3.0 ij	3.0 h-k	3.0 f	26.3 k-p
22 Lexicon Intrinsic 4.17SC	0.34 fl oz	CUR-21 ⁸	3.0 ij	3.0 h-k	3.1 ef	0.0 x
23 Honor Intrinsic 28WG	0.84 oz	CUR-21 ⁸	3.0 ij	3.0 h-k	3.0 f	26.3 k-p
24 Encartis 6.24SC	3.0 fl oz	CUR-21 ⁸	3.0 ij	3.3 f-i	3.0 f	0.5 x
25 Xzemplar 2.5SC	0.262 fl oz	CUR-28 ⁹	3.0 ij	3.3 f-i	3.0 f	31.3 i-o
26 Lexicon Intrinsic 4.17SC	0.472 fl oz	CUR-28 ⁹	3.0 ij	3.0 h-k	3.1 ef	25.0 l-q
27 Encartis 6.24SC	3.0 fl oz	CUR-28 ⁹	3.0 ij	2.9 i-k	3.0 f	8.8 t-x
28 Xzemplar 2.5SC	0.157 fl oz	14	3.0 ij	3.0 h-k	3.1 ef	41.3 c-i
29 Xzemplar 2.5SC	0.211 fl oz	21	3.0 ij	3.0 h-k	3.3 d-f	17.5 p-u

(Continued)

Table 1D (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Color ^{1,2}			Algae ^{1,3} (%)
			8 June	6 July	5 Aug.	20 July
30 Emerald 70WG	0.18 oz	21	3.0 ij	3.0 h-k	3.1 ef	27.5 j-p
31 Xzemplar 2.5SC.....	0.262 fl oz	28	3.0 ij	3.0 h-k	3.0 f	50.0 b-d
32 Lexicon Intrinsic 4.17SC	0.34 fl oz	21	3.0 ij	2.9 i-k	3.1 ef	48.8 b-e
33 Honor Intrinsic 28WG.....	0.84 oz	21	3.0 ij	3.0 h-k	3.3 d-f	21.3 n-s
34 Lexicon Intrinsic 4.17SC	0.472 fl oz	28	3.0 ij	3.0 h-k	3.1 ef	27.5 j-p
35 Encartis 6.24SC.....	3.0 fl oz	28	3.0 ij	3.0 h-k	3.1 ef	3.8 v-x
36 2012 \$-Spot Greens Prog. #2	BASF	VAR-14 ¹⁰	3.0 ij	3.1 g-j	3.3 d-f	0.0 x
37 2012 \$-Spot Greens Prog. #3	BASF	VAR-14 ¹¹	3.0 ij	3.3 f-i	3.4 de	0.0 x
38 2012 \$-Spot Greens Prog. #4	BASF	VAR-14 ¹²	3.1 hi	3.5 d-g	3.4 de	0.0 x
39 2012 \$-Spot Greens Prog. #5	BASF	VAR-14 ¹³	2.9 jk	3.4 e-h	3.3 d-f	0.0 x
40 2012 \$-Spot Greens Prog. #6	BASF	VAR-14 ¹⁴	3.0 ij	3.3 f-i	3.3 d-f	0.0 x
41 Reserve 4.8SC.....	2.5 fl oz	7	4.0 ef	3.6 c-f	3.3 d-f	0.0 x
42 Reserve 4.8SC.....	3.5 fl oz	14	4.1 de	3.4 e-h	3.0 f	0.0 x
43 Concert II 4.3SE.....	3.0 fl oz	7	3.0 ij	2.9 i-k	4.1 c	0.0 x
44 Tourney 50WG	0.28 oz	14	3.0 ij	3.0 h-k	3.4 de	38.3 d-j
45 Interface 2.27SC	3.0 fl oz	14	4.0 ef	3.3 f-i	3.0 f	20.0 o-t
46 Interface 2.27SC	4.0 fl oz	14	4.5 ab	4.0 a-c	3.3 d-f	22.5 m-r
47 Iprodione Pro 2SE.....	4.0 fl oz	14	3.0 ij	3.0 h-k	3.1 ef	10.0 s-x
48 2012 \$-Spot Greens Prog. #7	Bayer	ALT-14 ¹⁵	4.1 de	3.0 h-k	3.3 d-f	0.0 x
49 2012 \$-Spot Greens Prog. #8	Bayer	ALT-14 ¹⁶	3.9 f	3.1 g-j	3.0 f	0.0 x
50 Secure 4.17SC.....	0.5 fl oz	14	3.0 ij	3.1 g-j	3.0 f	37.5 e-k
51 Daconil Action 6.1SC	3.5 fl oz	14	3.0 ij	3.0 h-k	3.1 ef	0.0 x
52 Heritage TL 0.8ME	1.0 fl oz	14	3.0 ij	3.0 h-k	3.0 f	22.5 m-r
53 Secure 4.17SC.....	0.5 fl oz	-				
+ Heritage TL 0.8ME	1.0 fl oz	14	3.0 ij	3.1 g-j	3.3 d-f	17.5 p-u
54 RU192514-12Q SC.....	0.236 fl oz	-				
+ RU192514-12J SC.....	0.5 fl oz	14	3.0 ij	3.1 g-j	3.4 de	10.0 s-x
55 Daconil Action 6.1SC	3.5 fl oz	-				
+ Appear 4.1SL	3.0 fl oz	14	4.3 cd	3.3 f-i	3.1 ef	0.0 x
56 Daconil Action 6.1SC	3.5 fl oz	-				
+ Appear 4.1SL	4.0 fl oz	14	4.1 de	3.4 e-h	3.1 ef	0.0 x

(Continued)

Table 1D (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Color ^{1,2}			Algae ^{1,3} (%)
			8 June	6 July	5 Aug.	20 July
57 Daconil Action 6.1SC	3.5 fl oz	—				
+ Appear 4.1SL	6.0 fl oz	14	4.4 bc	3.4 e-h	3.0 f	0.0 x
58 Concert II 4.3SE.....	4.0 fl oz	—				
+Appear 4.1SL.....	6.0 fl oz	14	4.3 cd	3.3 f-i	4.0 c	0.0 x
59 A13703G 2.7SC.....	0.62 fl oz	—				
+ Appear 4.1SL	6.0 fl oz	14	4.0 ef	3.1 g-j	3.1 ef	0.0 x
60 A12531R.....	3.6 fl oz	—				
+ Chipco Signature 80WG	4.0 oz	14	3.6 g	3.5 d-g	3.0 f	0.0 x
61 Daconil Ultrex 82.5WDG.....	3.2 oz	—				
+ Chipco Signature 80WG	4.0 oz	14	3.3 h	3.3 f-i	3.0 f	0.0 x
62 A13703G 2.7SC.....	0.62 fl oz	—				
+ Daconil Action 6.1SC	3.5 fl oz	14	3.0 ij	3.4 e-h	3.4 de	0.0 x
63 HM1106 4.1SC.....	1.0 fl oz	14	3.0 ij	2.9 i-k	3.0 f	12.5 r-w
64 HM1106 4.1SC.....	2.0 fl oz	14	3.0 ij	2.8 jk	3.0 f	2.5 v-x
65 HM1106 4.1SC.....	3.0 fl oz	14	3.0 ij	3.0 h-k	3.0 f	1.3 wx
66 HM1106 4.1SC.....	4.0 fl oz	14	3.0 ij	3.0 h-k	3.0 f	0.0 x
67 HM1106 4.1SC.....	5.0 fl oz	14	3.1 hi	3.0 h-k	3.0 f	0.0 x
68 NB37904 1.8SC.....	0.50 fl oz	14	3.0 ij	3.0 h-k	3.0 f	45.0 c-g
69 NB37904 1.8SC.....	0.66 fl oz	14	3.3 h	3.0 h-k	3.1 ef	33.8 g-m
70 NB37904 1.8SC.....	0.75 fl oz	14 ¹⁷	3.0 ij	3.0 h-k	3.0 f	37.5 e-k
71 NB37904 1.8SC.....	0.75 fl oz	21	3.0 ij	3.1 g-j	3.0 f	50.0 b-d
72 NB37904 1.8SC.....	1.0 fl oz	21	3.0 ij	3.0 h-k	3.0 f	27.5 j-p
73 NB38205 3.3SC.....	0.40 fl oz	14	3.0 ij	3.0 h-k	3.0 f	51.3 bc
74 NB38205 3.3SC.....	0.50 fl oz	14 ¹⁷	3.0 ij	3.0 h-k	3.0 f	46.3 c-f
75 NB37908 28WP	1.1 oz	14	3.0 ij	3.0 h-k	3.4 de	21.3 n-s
76 Segway 3.3SC	0.45 fl oz	14	2.8 k	3.0 h-k	3.0 f	3.8 v-x
77 Affirm 11.3WG.....	0.87 oz	14	3.0 ij	3.0 h-k	3.0 f	27.5 j-p
78 NB38205 3.3SC.....	0.40 fl oz	—				
+ NB37908 28WP	1.1 oz	14	3.0 ij	3.0 h-k	3.0 f	12.5 r-w
79 NB38205 3.3SC.....	0.5 fl oz	—				
+ NB37908 28WP	1.1 oz	14 ¹⁷	3.0 ij	3.1 g-j	3.1 ef	8.8 t-x

(Continued)

Table 1D (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Color ^{1,2}			Algae ^{1,3} (%)
			8 June	6 July	5 Aug.	20 July
80 Emerald 70WG	0.18 oz	28	3.0 ij	3.0 h-k	3.1 ef	26.3 k-p
81 Emerald 70WG	0.18 oz	CUR-28 ⁹	3.0 ij	2.9 i-k	3.4 de	32.5 h-n
82 Velista 50WDG.....	0.3 oz	14	3.0 ij	3.0 h-k	3.1 ef	27.5 j-p
83 Velista 50WDG.....	0.5 oz	14	3.0 ij	3.0 h-k	3.0 f	47.5 b-e
84 Velista 50WDG.....	0.3 oz	—				
+ Daconil Ultrex 82.5WDG.....	3.25 oz	14	3.0 ij	3.0 h-k	3.0 f	0.0 x
85 Velista 50WDG.....	0.3 oz	—				
+ Curalan 50EG	1.0 oz	14	3.0 ij	3.0 h-k	3.5 d	6.3 u-x
86 KO.....	1.5 fl oz	21	3.3 h	3.1 g-j	3.0 f	43.8 c-h
87 QP Enclave 5.3F.....	3.0 fl oz	—				
+ Foursome 100SL	0.4 fl oz	14	4.5 cd	3.9 a-d	3.1 ef	0.0 x
88 QP Enclave 5.3F.....	4.0 fl oz	—				
+ Foursome 100SL	0.4 fl oz	21	4.0 ef	3.9 a-d	3.1 ef	0.0 x
89 QP Enclave 5.3F.....	3.0 fl oz	—				
+ QP Fosetyl-AI 80WG.....	4.0 oz	—				
+ Foursome 100SL	0.4 fl oz	14	4.5 ab	4.3 a	3.3 d-f	0.0 x
90 QP Enclave 5.3F.....	4.0 fl oz	—				
+ QP Fosetyl-AI 80WG.....	4.0 oz	—				
+ Foursome 100SL	0.4 fl oz	21	3.9 f	3.8 b-e	3.0 f	0.0 x
91 Chipco 26GT 2SC.....	4.0 fl oz	14	3.0 ij	3.0 h-k	3.0 f	12.5 r-w
92 Curalan 50EG	1.0 oz	14	3.0 ij	3.1 g-j	3.0 f	26.3 k-p
93 Insignia Intransic 2.1SC	0.7 fl oz	14	3.0 ij	3.0 h-k	3.1 ef	27.5 j-p
94 Banner MAXX 1.3ME.....	1.0 fl oz	21	3.0 ij	2.9 i-k	4.0 c	58.8 ab
95 Daconil Ultrex 82.5WDG.....	3.25 oz	14	3.0 ij	3.0 h-k	3.0 f	0.0 x
96 Echo 6F ETQ	3.6 fl oz	—				
+ SA-0010234 SC.....	10.0 fl oz	14	3.0 ij	2.6 k	3.0 f	0.0 x
97 Untreated Check.....	—	—	3.0 ij	3.0 h-k	3.0 f	31.3 i-o

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(Continued)

Table 1D (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Color ^{1,2}			Algae ^{1,3} (%)
			8 June	6 July	5 Aug.	20 July
		INT ¹⁸	DAT ¹⁹	DAT	DAT	DAT
		7	1	1	3	1
		14	1	1	3	1
		21	8	15	3	8
		28	1	1	3	15

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 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.

³ Percent soil surface covered with blue-green algae (cyanobacteria).

⁴ Fungicides were applied on 10 May (all treatments, except treatments 96B, 16 to 27, 81), 17 May (7-day treatment), 24 May (7- and 14-day treatments; initiated treatments 16 to 27, 81), 31 May (7- and 21-day treatments), 7 June (7-, 14-, and 28-day treatments; treatments 16 to 18 and 19B), 14 June (7-day treatment; treatments 20 to 24), 21 June (7-, 14-, and 21-day treatments; treatments 25 to 27, 81), 28 June (7-day treatment), 5 July (7-, 14-, and 28-day treatments), 12 July (7- and 21-day treatments), 19 July (7- and 14-day treatments), 26 July (7-day treatment), 2 August (7-, 14-, 21-, and 28-day treatments), and 16 August (treatments 9, 36 to 40, 48, 49).

⁵ VAR = Variable spray schedule, where treatment 9 (2012 Sipcam Advan \$-Spot Greens Prog. #1) consisted of Echo Dyad ETQ (5.0 fl oz) + Phyte-off LC (2.0 fl oz) applied on 10 May; SA-0010228 SC (5.0 fl oz) on 24 May, 7 June, and 21 June, 5 and 19 July, and 2 August; and SA-0010228 SC (4.0 fl oz) + Phyte-off LC (2.0 fl oz) on 16 August.

⁶ Treatments 16 to 18 were applied on a curative basis when the number of dollar spot lesion centers exceeded 5 for any replicate plot on 24 May and then were repeated on 7 June only.

⁷ ALT = Alternation treatment, where treatment 19 consisted of Daconil Ultrex 82.5WDG (4.0 oz) applied on a curative basis when the number of dollar spot lesion centers exceeded 5 for any replicate plot on 24 May and then was repeated on 7 June only and Emerald 70WG (0.18 oz) was applied on 7 June only.

⁸ Treatments 20 to 24 were applied on a curative basis when the number of dollar spot lesion centers exceeded 5 for any replicate plot on 24 May and then were repeated on 14 June only.

⁹ Treatments 25 to 27 and 81 were applied on a curative basis when the number of dollar spot lesion centers exceeded 5 for any replicate plot on 24 May and then were repeated on 21 June only.

(Continued)

Table 1D (continued).

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- ¹⁰ VAR = Variable spray schedule, where treatment 36 (2012 BASF \$-Spot Greens Prog. #2) consisted of Honor 28WG (1.1 oz) applied on 10 May; Insignia 2.1SC (0.7 fl oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Insignia 2.1SC (0.7 fl oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Honor 28WG (1.1 oz) on 16 August.
- ¹¹ VAR = Variable spray schedule, where treatment 37 (2012 BASF \$-Spot Greens Prog. #3) consisted of Lexicon Intrinsic 4.17SC (0.47 fl oz) applied on 10 May; Insignia 2.1SC (0.7 fl oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Insignia 2.1SC (0.7 fl oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ulrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Lexicon Intrinsic 4.17SC (0.47 fl oz) on 16 August.
- ¹² VAR = Variable spray schedule, where treatment 38 (2012 BASF \$-Spot Greens Prog. #4) consisted of Headway 1.39EC (3.0 fl oz) applied on 10 May; Heritage TL 0.8ME (2.0 fl oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Heritage TL 0.8ME (2.0 fl oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Headway 1.39EC (3.0 fl oz) on 16 August.
- ¹³ VAR = Variable spray schedule, where treatment 39 (2012 BASF \$-Spot Greens Prog. #5) consisted of Disarm M 3.9SC (1.0 fl oz) applied on 10 May; Disarm 480SC (0.36 fl oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Disarm 480SC (0.36 fl oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Disarm M 3.9SC (1.0 fl oz) on 16 August.
- ¹⁴ VAR = Variable spray schedule, where treatment 40 (2012 BASF \$-Spot Greens Prog. #6) consisted of Tartan 2.4SC (2.0 fl oz) applied on 10 May; Compass 50WG (0.25 oz) on 24 May; Spectro 90WG (5.75 oz) on 7 June; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 21 June; Compass 50WG (0.25 oz) on 5 July; Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 19 July; Chipco 26GT 2SC (4.0 fl oz) on 2 August; and Tartan 2.4SC (2.0 fl oz) on 16 August.
- ¹⁵ ALT = Alternation spray schedule, where treatment 48 (2012 Bayer \$-Spot Greens Prog. #7) consisted of Chipco Signature 80WG (4.0 oz) + Triton Flo 3SC (0.5 fl oz) applied on 10 May, 7 June, 5 July, and 2 August; and Chipco Signature 80WG (4.0 oz) + Daconil Action 6.1SC (3.6 fl oz) on 24 May, 21 June, 19 July, and 16 August.
- ¹⁶ ALT = Alternation spray schedule, where treatment 49 (2012 Bayer \$-Spot Greens Prog. #8) consisted of Chipco Signature 80WG (4.0 oz) + Triton Flo 3SC (0.5 fl oz) applied on 10 May, 7 June, 5 July, and 2 August; and Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 24 May, 21 June, 19 July, and 16 August.
- ¹⁷ Treatments 70, 74, and 79 were applied every 14 days from 10 May through 19 July.
- ¹⁸ Spray interval in days.
- ¹⁹ Days after the last treatment.