

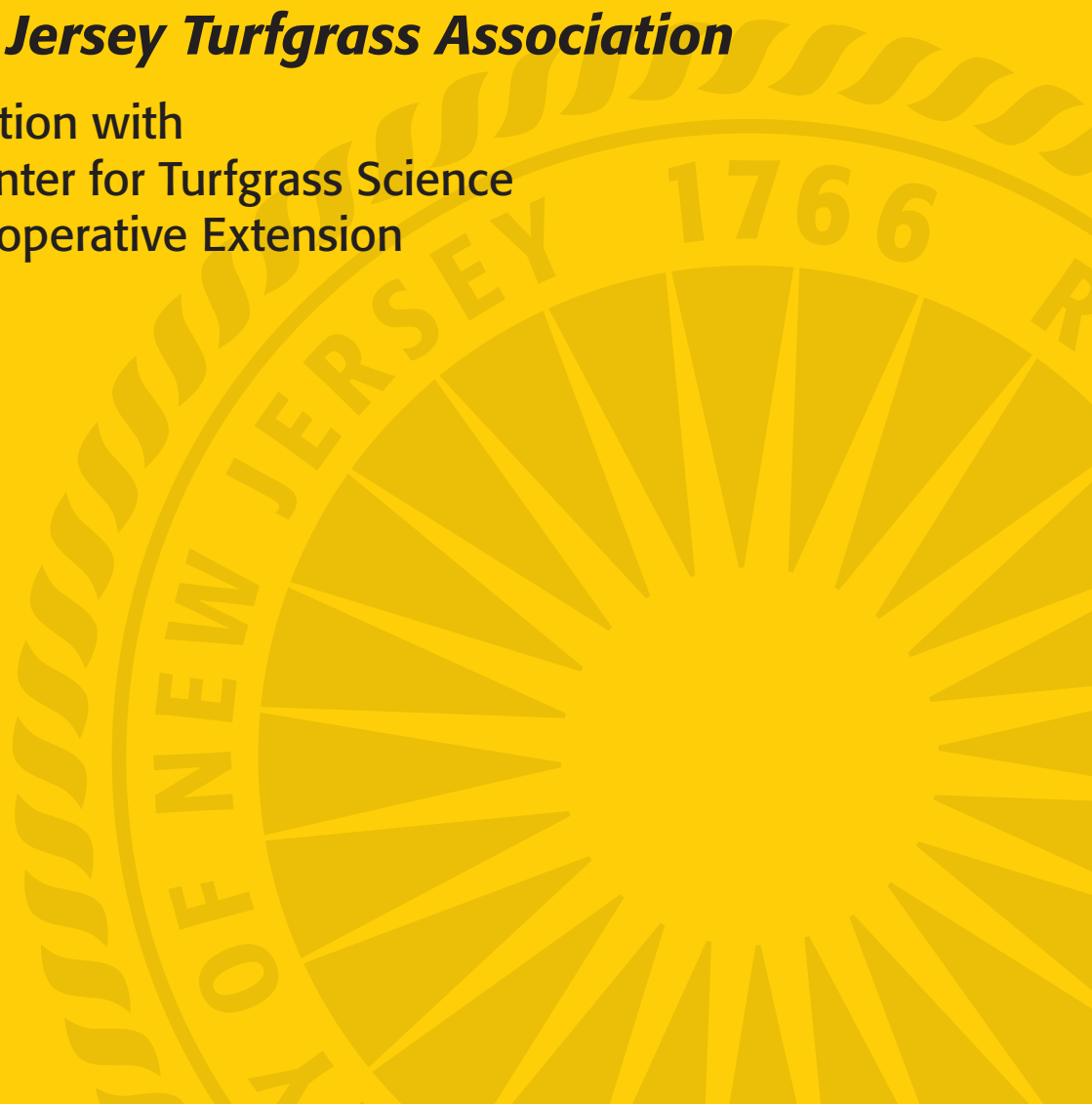
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The Rutgers Turfgrass Proceedings is published yearly by the Rutgers Center for Turfgrass Science, Rutgers Cooperative Extension, and the New Jersey Agricultural Experiment Station, School of Environmental and Biological Sciences, Rutgers, The State 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 2011 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

IMPACT OF FUNGICIDES AND BIORATIONAL PRODUCTS ON THE SUPPRESSION OF DOLLAR SPOT ON A CREEPING BENTGRASS GREEN, 2011

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Fungicides were evaluated in 2011 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 34-0-0 (0.1 lb nitrogen (N) per 1000 ft²) on 7 and 19 April, 46-0-0 (0.2 lb N per 1000 ft²) on 6 and 29 May, 30 September, and 11, 13, and 26 October, and 46-0-0 (0.1 lb N per 1000 ft²) on 14 and 27 June, 15 and 24 July, and 13 August. Dimension 2EW (6.27 fl oz per A) was applied on 15 May for pre-emergence weed control. ProStar 70W (3.0 oz per 1000 ft²) was applied on 9 July to suppress brown patch (caused by *Rhizoctonia solani*). Localized dry spots were suppressed with the wetting agent Tricure 100LC (6.0 oz per 1000 ft²) on 12 May, 18 June, and 22 July. Insect pests were controlled with Acelepryn 1.67SC (3.0 fl oz per A) on 18 June and Merit 75WP (0.16 oz per 1000 ft²) on 17 July. Turf was topdressed with sand (1 ft³ per 1,000 ft²) on 27 May, 4 June, 27 July, 26 August, and 21 September.

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 24 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 3, 17, and 29 June, 8, 19, and 29 July, 10, 16, and 26 August, and 6 September. Turf quality was rated on 21 June, 21 July, and 16 August using a 1 to 9 scale, where 9 = best turf quality and 5 = acceptable quality. Phytotoxicity was assessed on 22 June, 19 July, and 16 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 22 June, 19 July, and 16 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 21 July and 16 August. 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 28 May and became uniform throughout the study by 3 June (Table 1A). The disease progressed rapidly throughout June, peaking on 29 June at 171 lesion centers per plot on untreated turf (Table 1A). This was considered a high level of dollar 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 (24 May to 6 September; 14 to 21 days after the last application, Tables 1A and 1B) was afforded turf treated with BAS 640 00F SC @ 3.0 fl oz every 14 days (trt 6), Emerald 70WG @ 0.13 oz every 14 days (trt 8), RU

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21196-11B SC (trts 14, 16, 18), RU 21196-11J WG (trts 15, 17, and 19), RU 21196-11A SC (trts 20, 22), RU 21196-11E WG (trts 21, 23), Honor 28WG (trts 36, 37), Insignia 2.1 SC (trt 38), Concert 4.3SC (trt 45), Interface 2.27SC @ 4.0 fl oz (trt 47), Tartan 2.4SC (trt 49), Emerald 70WG @ 0.13 oz + CoRoN 28-0-0 70% CRN F @ 4.4 fl oz every 14 days (trt 53), CX-42 1.73 SC @ 0.375 fl oz (trt 57), IKF-5411 400SC @ 0.4 fl oz (trt 63), Velista 50WDG + Banner MAXX 1.3ME (trt 65), SA-0010220 SC (trt 73), and SA-0010222 SC (trt 75). Other fungicide entries that provided good to excellent control of dollar spot throughout the application period (24 May to 23 August; see evaluation date 26 August, Table 1B) included BAS 640 00F SC @ 3.0 fl oz every 21 days (trt 7), BASF 2011 Dollar Spot Program #1 (trt 39), Reserve 4.8SC (trt 44), Velista 50WDG + Daconil Ultrex 82.5WDG (trt 64), Velista 50WDG + Curalan EG 50WG (trt 66), SA-0010214 SC (trt 76), Torque 3.6SC + Spectro 90WDG alternated with 26/36 3.8SC (trt 79), and Tourney 50 WDG (trt 82).

Excellent curative control of dollar spot was afforded after one application with BAS 640 00F SC @ 3.0 fl oz every 14 days (trt 10), RU 21196-11B SC @ 0.157 fl oz every 14 days (trt 24), and RU 21196-11E WG @ 0.84 oz every 21 days (trt 31), while the following treatments provided excellent curative control after two applications: Emerald 70WG @ 0.13 oz every 14 days (trt 12), Emerald 70WG @ 0.18 oz every 21 days (trt 13), RU 21196-11J WG @ 0.13 oz every 14 days (trt 25), RU 21196-11B SC @ 0.211 fl oz every 21 days (trt 26), and RU 21196-11A SC @ 0.34 fl oz every 21 days (trt 30) (Tables 1A and 1B).

Several treatments resulted in visually darker green foliage (greater or equal to a color rating of 4) on at least 50% of the evaluation dates [i.e., BASF 2011 Dollar Spot Program #2 (trt 40), Reserve 4.8SC (trt 44), Interface 2.27SC (trts 46, 47), Tartan 2.4SC

(trt 49), HM0812 1.66SC + CoRoN 28-0-0 70% CRN F (trt 55), SA-0010216 SC (trt 69), SA-0010217 SC (trt 70), SA-0010218 SC (trt 71), SA-0010219 SC (trt 72), SA-0010220 SC (trt 73), and SA-0010222 SC (trt 75)], presumably because they either contain a pigment, a plant growth regulator, and/or a fertilizer (Table 1C). Slight foliar chlorosis was noted between 22 June and 16 August for turf treated with Concert 4.3SC (trt 45) and Banner MAXX 1.3ME (trt 81) (Table 1C).

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., Pillar 00F 0.81G (trt 1), Pillar 03F 0.81G (trt 2), Heritage 0.31G (trts 4, 5), RU 21196-11A SC @ 0.472 fl oz every 28 days (curative trt 32), SP8010-DEC LC + Pentathlon 4LF (trt 50), SP8010-DEC LC (trts 51, 52), HM0812 1.66SC (trt 54), NB 37904 20SC (trts 58, 59), Turf Formula LC (trt 60), IKF-5411 400SC @ 0.2 fl oz (trt 61), and IKF-5411 400SC @ 0.3 fl oz (trt 62)] (Table 1D).

Algae was observed in the study on 21 July and 16 August. Since untreated turf (trt 85) had a limited algal infestation (6 to 11%), a statistical reduction was not detected for any of the entries. However, several treatments increased the percent algal cover on 16 August [i.e., Pillar 00F 0.81G (trt 1), Heritage 0.31G (trts 4, 5), RU 21196-11B SC @ 0.211 fl oz every 21 days (trt 16), RU 21196-11B SC @ 0.262 fl oz every 28 days (trt 18), RU 21196-11E WG @ 0.84 oz every 21 days (trt 21), RU 21196-11B SC @ 0.262 fl oz every 28 days (curative trt 28), Honor 28WG @ 1.1 oz every 21 days (trt 37), Tartan 2.4SC (trt 49), SP8010-DEC LC (trts 51), HM0812 1.66SC (trt 54), Velista 50WDG + Banner MAXX 1.3ME (trt 65), and SA-0010220 SC (trt 73)].

Table 1A. Impact of fungicides and biorational products on the suppression of dollar spot on a creeping bentgrass green: Rutgers University, 2011.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Number of Dollar Spot Lesion Centers per Plot ¹				
			3 June	17 June	29 June	8 July	19 July
1 Pillar 00F 0.81G.....	48.0 oz	28 ³	2.8 g-m	19.8 e-h	41.5 gh	15.5 g-k	15.0 g-l
2 Pillar 03F 0.81G.....	48.0 oz	14 ³	2.8 g-m	6.0 m-s	31.0 g-m	17.8 f-i	10.0 j-u
3 Pillar 03F 0.81G.....	48.0 oz	28 ³	3.5 g-m	21.8 e-g	56.3 ef	19.3 e-g	21.3 f-i
4 Heritage 0.31G.....	48.0 oz	14 ³	6.3 f-i	30.3 d	67.8 c-e	34.3 bc	33.0 c-e
5 Heritage 0.31G.....	48.0 oz	28 ³	6.8 f-h	40.8 c	76.8 c	32.0 b-d	41.8 bc
6 BAS 640 00F SC.....	3.0 fl oz	14	0.5 k-m	0.5 rs	4.0 t-x	3.0 s-y	1.0 t-w
7 BAS 640 00F SC.....	3.0 fl oz	21	0.5 k-m	6.3 l-s	5.8 t-x	0.0 y	2.0 r-w
8 Emerald 70WG	0.13 oz	14	1.3 j-m	1.8 p-s	4.5 t-x	3.5 r-y	0.5 vw
9 Emerald 70WG	0.13 oz	21	1.5 i-m	9.3 i-q	21.5 l-r	4.8 o-y	5.3 n-w
10 BAS 640 00F SC.....	3.0 fl oz	14-CUR ⁴	12.8 de	2.0 p-s	3.5 t-x	2.5 t-y	0.5 vw
11 BAS 640 00F SC.....	3.0 fl oz	21-CUR ⁴	14.3 b-d	1.3 q-s	21.8 l-q	2.5 t-y	4.8 n-w
12 Emerald 70WG	0.13 oz	14-CUR ⁴	16.5 a-d	24.0 de	20.3 m-s	7.0 l-y	1.0 t-w
13 Emerald 70WG	0.18 oz	21-CUR ⁴	13.8 c-e	2.5 o-s	14.8 o-v	3.5 r-y	1.8 s-w
14 RU 21196-11B SC.....	0.157 fl oz	14	1.8 i-m	2.3 o-s	2.0 u-x	1.3 w-y	0.0 w
15 RU 21196-11J WG	0.13 oz	14	1.5 i-m	1.3 q-s	5.3 t-x	3.8 q-y	1.0 t-w
16 RU 21196-11B SC.....	0.211 fl oz	21	1.0 j-m	4.5 n-s	0.3 x	0.0 y	0.0 w
17 RU 21196-11J WG	0.18 oz	21	1.0 j-m	6.5 k-s	11.5 p-x	2.0 t-y	2.5 q-w
18 RU 21196-11B SC.....	0.262 fl oz	28	1.0 j-m	9.8 i-p	9.3 q-x	3.5 r-y	5.8 l-w
19 RU 21196-11J WG	0.18 oz	28	1.3 j-m	7.5 j-s	14.3 o-w	4.3 o-y	6.5 l-w
20 RU 21196-11A SC.....	0.34 fl oz	21	1.0 j-m	2.5 o-s	0.0 x	0.0 y	0.0 w
21 RU 21196-11E WG.....	0.84 oz	21	1.8 i-m	8.8 i-r	12.5 p-x	1.3 w-y	0.3 w
22 RU 21196-11A SC.....	0.472 fl oz	28	0.3 lm	0.8 rs	1.5 v-x	1.8 u-y	0.8 u-w
23 RU 21196-11E WG.....	1.1 oz	28	0.0 m	0.0 s	0.5 x	1.5 v-y	1.3 t-w
24 RU 21196-11B SC.....	0.157 fl oz	14-CUR ⁴	16.0 a-d	6.0 m-s	3.8 t-x	2.8 t-y	0.0 w
25 RU 21196-11J WG	0.13 oz	14-CUR ⁴	17.5 a-d	6.3 l-s	11.5 p-x	4.5 o-y	0.0 w
26 RU 21196-11B SC.....	0.211 fl oz	21-CUR ⁴	15.8 a-d	0.5 rs	14.8 o-v	2.5 t-y	0.5 vw
27 RU 21196-11J WG	0.18 oz	21-CUR ⁴	19.3 a	19.8 e-h	57.3 d-f	7.3 l-y	7.3 l-w
28 RU 21196-11B SC.....	0.262 fl oz	28-CUR ⁴	18.5 a-c	4.8 n-s	23.3 k-p	13.3 g-n	24.5 d-f
29 RU 21196-11J WG	0.18 oz	28-CUR ⁴	17.0 a-d	6.0 m-s	26.5 i-o	14.5 g-l	18.0 f-k
30 RU 21196-11A SC.....	0.34 fl oz	21-CUR ⁴	17.8 a-c	0.8 rs	33.8 g-l	3.8 q-y	3.0 p-w

(Continued)

Table 1A (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Number of Dollar Spot Lesion Centers per Plot ¹				
			3 June	17 June	29 June	8 July	19 July
31 RU 21196-11E WG.....	0.84 oz	21-CUR ⁴	15.3 a-d	0.3 s	8.3 r-x	0.5 xy	0.0 w
32 RU 21196-11A SC.....	0.472 fl oz	28-CUR ⁴	19.5 a	0.8 rs	32.0 g-m	18.8 f-h	25.0 d-f
33 RU 21196-11E WG.....	1.1 oz	28-CUR ⁴	14.0 b-e	0.3 s	8.0 s-x	6.8 m-y	10.3 j-t
34 Banner MAXX 1.3ME.....	1.0 fl oz	21	1.8 i-m	24.0 de	34.0 g-l	6.3 n-y	6.5 l-w
35 Emerald 70WG	0.18 oz	21	1.3 j-m	7.3 j-s	8.0 s-x	1.0 w-y	1.3 t-w
36 Honor 28WG	0.83 oz	14	1.5 i-m	0.0 s	0.0 x	0.5 xy	0.0 w
37 Honor 28WG	1.1 oz	21	1.8 i-m	12.0 h-n	4.3 t-x	0.0 y	0.0 w
38 Insignia 2.1 SC.....	0.7 fl oz	14	0.5 k-m	0.5 rs	0.8 x	3.3 s-y	0.8 u-w
39 2011 Dollar Spot Program #1	(BASF)	14-VAR ⁵	1.0 j-m	0.0 s	1.0 wx	2.8 t-y	2.8 p-w
40 2011 Dollar Spot Program #2	(BASF)	14-VAR ⁶	0.8 j-m	2.3 o-s	8.5 q-x	7.5 l-y	6.3 l-w
41 2011 Dollar Spot Program #3	(BASF)	14-VAR ⁷	1.0 j-m	10.5 i-o	12.5 p-x	9.3 j-u	5.3 n-w
42 2011 Dollar Spot Program #4	(BASF)	14-VAR ⁸	1.0 j-m	11.8 h-n	20.0 m-s	10.5 i-s	10.8 j-s
43 Reserve 4.8SC.....	2.5 fl oz	-					
/Interface 2.27SC.....	3.0 fl oz	14-ALT ⁹	1.5 i-m	0.0 s	6.3 t-x	11.5 h-p	11.3 j-r
44 Reserve 4.8SC.....	3.5 fl oz	14	1.5 i-m	0.8 rs	4.0 t-x	5.8 n-y	4.8 n-w
45 Concert 4.3SC	5.5 fl oz	14	0.5 k-m	0.3 s	0.0 x	0.0 y	0.0 w
46 Interface 2.27SC.....	3.0 fl oz	14	1.8 i-m	0.0 s	4.0 t-x	9.0 j-v	5.3 n-w
47 Interface 2.27SC.....	4.0 fl oz	14	0.3 lm	0.0 s	1.0 wx	3.8 q-y	0.0 w
48 Iprodione Pro 2SE.....	4.0 fl oz	14	2.3 h-m	0.0 s	15.0 o-u	16.3 g-j	14.0 h-n
49 Tartan 2.4SC	1.5 fl oz	14	0.0 m	0.0 s	0.3 x	1.3 w-y	0.0 w
50 SP8010-DEC LC.....	0.72 fl oz	-					
+ Pentathlon 4LF	6.4 fl oz	14 ¹⁰	15.5 a-d	64.8 b	115.8 b	36.0 b	36.0 c
51 SP8010-DEC LC.....	1.44 fl oz	14	5.3 f-k	21.0 e-g	44.3 fg	18.8 f-h	24.3 e-g
52 SP8010-DEC LC.....	2.87 fl oz	14	5.5 f-j	22.0 d-f	72.3 c	26.8 c-e	35.8 c
53 Emerald 70WG	0.13 oz	-					
+ CoRoN 28-0-0 70% CRN F.....	4.4 fl oz	14	1.8 i-m	1.8 p-s	5.3 t-x	4.0 p-y	1.8 s-w
54 HM0812 1.66SC	0.275 fl oz	14	2.8 g-m	9.5 i-q	35.5 g-k	16.3 g-j	23.0 f-h
55 HM0812 1.66SC	0.275 fl oz	-					
+ CoRoN 28-0-0 70% CRN F.....	4.4 fl oz	14	0.8 j-m	4.5 n-s	26.3 j-o	9.5 j-t	11.5 j-q
56 CX-42 1.73SC.....	0.25 fl oz	14	1.8 i-m	3.8 n-s	7.0 s-x	4.5 o-y	1.8 s-w

(Continued)

Table 1A (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Number of Dollar Spot Lesion Centers per Plot ¹				
			3 June	17 June	29 June	8 July	19 July
57 CX-42 1.73 SC.....	0.375 fl oz	14	1.5 i-m	3.0 o-s	5.0 t-x	3.3 s-y	0.0 w
58 NB 37904 20SC.....	0.75 fl oz	14 ¹¹	4.0 g-m	5.0 n-s	10.3 p-x	7.8 l-x	14.8 h-m
59 NB 37904 20SC.....	1.10 fl oz	14 ¹¹	3.3 g-m	4.0 n-s	39.8 g-i	18.0 f-i	24.5 d-f
60 Turf Formula LC.....	3.0 fl oz	7	16.8 a-d	30.3 d	70.3 cd	30.0 b-d	50.8 b
61 IKF-5411 400SC.....	0.2 fl oz	14	6.8 f-h	16.5 e-i	31.0 g-m	13.3 g-n	12.5 i-o
62 IKF-5411 400SC.....	0.3 fl oz	14	5.0 f-l	13.5 g-m	28.8 h-n	11.0 i-r	12.0 i-p
63 IKF-5411 400SC.....	0.4 fl oz	14	3.0 g-m	5.8 m-s	16.0 n-t	9.3 j-u	4.5 o-w
64 Velista 50WDG.....	0.3 oz	—					
+ Daconil Ultrex 82.5WDG.....	3.25 oz	14	1.8 i-m	0.0 s	0.0 x	0.8 w-y	1.5 s-w
65 Velista 50WDG.....	0.3 oz	—					
+ Banner MAXX 1.3ME.....	1.0 fl oz	14	1.8 i-m	1.8 p-s	7.5 s-x	7.5 l-y	5.5 m-w
66 Velista 50WDG.....	0.3 oz	—					
+ Curalan EG 50WG.....	1.0 oz	14	1.0 j-m	0.0 s	1.5 v-x	5.5 o-y	4.0 o-w
67 Velista 50WDG.....	0.3 oz	14	9.3 ef	14.8 f-k	37.3 g-j	14.0 g-m	18.3 f-j
68 Velista 50WDG.....	0.5 oz	14	7.3 fg	6.0 m-s	12.3 p-x	7.0 l-y	5.8 l-w
69 SA-0010216 SC.....	5.0 fl oz	14	0.3 lm	1.5 p-s	3.0 t-x	3.8 q-y	1.5 s-w
70 SA-0010217 SC.....	5.0 fl oz	14	1.5 i-m	8.0 j-s	5.3 t-x	9.0 j-v	9.8 j-v
71 SA-0010218 SC.....	5.0 fl oz	14	0.0 m	4.0 n-s	8.5 q-x	7.0 l-y	8.8 k-w
72 SA-0010219 SC.....	5.0 fl oz	14	0.5 k-m	2.0 p-s	19.8 m-s	11.8 g-o	17.5 f-k
73 SA-0010220 SC.....	5.0 fl oz	14	0.3 lm	0.3 s	2.3 u-x	0.0 y	0.0 w
74 SA-0010221 SC.....	5.0 fl oz	14	1.3 j-m	0.3 s	7.0 s-x	8.3 k-w	6.8 l-w
75 SA-0010222 SC.....	5.0 fl oz	14	0.0 m	0.0 s	0.0 x	0.0 y	0.0 w
76 SA-0010214 SC.....	1.86 fl oz	7	1.5 i-m	2.8 o-s	0.5 x	0.0 y	0.0 w
77 SA-0010214 SC.....	3.6 fl oz	14	1.3 j-m	3.0 o-s	6.0 t-x	5.3 o-y	4.0 o-w
78 SA-0011501 WG.....	4.25 oz	14	2.5 g-m	15.5 f-j	16.3 n-t	11.3 h-q	12.5 i-o
79 Torque 3.6SC.....	0.6 fl oz	—					
+Spectro 90WDG.....	3.6 oz	—					
/26/36 3.8SC.....	4.0 fl oz	14-ALT ¹²	0.0 m	0.0 s	0.3 x	2.3 t-y	0.5 vw
80 Chipco Signature 80 WG.....	4.0 oz	—					
+ Daconil Ultrex 82.5 WDG.....	3.25 oz	14	0.5 k-m	1.3 q-s	5.0 t-x	5.3 o-y	5.5 m-w

(Continued)

Table 1A (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Number of Dollar Spot Lesion Centers per Plot ¹				
			3 June	17 June	29 June	8 July	19 July
81 Banner MAXX 1.3 ME.....	1.0 fl oz	14	1.3 j-m	0.5 rs	3.0 t-x	4.8 o-y	3.8 o-w
82 Tourney 50 WDG	0.37 oz	14	1.0 j-m	0.0 s	3.3 t-x	5.0 o-y	2.5 q-w
83 Pentathlon 4LF.....	6.4 fl oz	14	3.3 g-m	14.5 f-l	56.5 ef	25.3 d-f	33.8 cd
84 Pentathlon 4LF.....	12.8 fl oz	14	3.5 g-m	16.5 e-i	58.3 de	33.0 bc	39.3 c
85 Untreated Check.....	–	–	18.8 ab	96.5 a	171.3 a	83.8 a	110.0 a
		INT ¹³	DAT ¹⁴	DAT	DAT	DAT	DAT
		7	3	3	1	3	7
		14	10	10	8	3	14
		21	10	3	15	3	14
		28	10	24	8	17	28

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 24 May (all treatments, except treatments 10 to 13, 24 to 33, and 60), 27 May (initiated treatment 60), 31 May (7-day treatment), 7 June (7- and 14-day treatments and initiated treatments 10 to 13 and 24 to 33), 14 June (7- and 21-day treatments), 21 June (7-, 14-, and 28-day treatments), 28 June (7-day treatment), 5 July (7-, 14-, and 21-day treatments), 12 July (7-day treatment), 19 July (7-, 14-, and 28-day treatments), 26 July (7- and 21-day treatments), 2 August (7- and 14-day treatments), 9 August (7-day treatment), 16 August (7-, 14-, 21-, and 28-day treatments), and 23 August (7-day treatment).

³ Treatments 1 to 5 were applied to dry foliage and then immediately irrigated with 1.0 gal of water per plot.

⁴ Treatments 10 to 13 and 24 to 33 were applied on a curative basis (treatments 10, 12, 24, and 25 were applied every 14 days on 7 and 21 June, 5 and 19 July, and 2 and 16 August; treatments 11, 13, 26, 27, 30 and 31 were applied every 21 days on 7 and 28 June, 19 July, and 9 August; and treatments 28, 29, 32, and 33 were applied every 28 days on 7 June, 5 July, and 2 August). The initial application of each treatment was initiated when a threshold of five dollar spot lesion centers was exceeded on any of the four replicate plots.

⁵ VAR = Variable spray schedule, where treatment 39 (BASF Dollar Spot Program #1) consisted of Honor 28WG (1.1 oz) applied on 24 May, Insignia 2.1SC (0.7 fl oz) on 7 June, Spectro 90WDG (5.75 oz) on 21 June, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 5 July, Insignia 2.1SC (0.7 fl oz) on 19 July, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 2 August, Chipco 26GT 2SC (4.0 fl oz) on 16 August, and Honor 28WG (1.1 oz) on 30 August.

(Continued)

Table 1A (continued).

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- ⁶ VAR = Variable spray schedule, where treatment 40 (BASF Dollar Spot Program #2) consisted of Headway 1.39EC (3.0 fl oz) applied on 24 May, Heritage TL 0.8ME (2.0 fl oz) on 7 June, Spectro 90WDG (5.75 oz) on 21 June, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 5 July, Heritage TL 0.8ME (2.0 fl oz) on 19 July, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 2 August, Chipco 26GT 2SC (4.0 fl oz) on 16 August, and Headway 1.39EC (3.0 fl oz) on 30 August.
- ⁷ VAR = Variable spray schedule, where treatment 41 (BASF Dollar Spot Program #3) consisted of Disarm M 3.9SC (1.0 fl oz) applied on 24 May, Disarm 480SC (0.36 fl oz) on 7 June, Spectro 90WDG (5.75 oz) on 21 June, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 5 July, Disarm 480SC (0.36 fl oz) on 19 July, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 2 August, Chipco 26GT 2SC (4.0 fl oz) on 16 August, and Disarm M 3.9SC (1.0 fl oz) on 30 August.
- ⁸ VAR = Variable spray schedule, where treatment 42 (BASF Dollar Spot Program #4) consisted of Tartan 2.4SC (2.0 fl oz) applied on 24 May, Compass 50WG (0.25 oz) on 7 June, Spectro 90WG (5.75 oz) on 21 June, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 5 July, Compass 50WG (0.25 oz) on 19 July, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 2 August, Chipco 26GT 2SC (4.0 fl oz) on 16 August, and Tartan 2.4SC (2.0 fl oz) on 30 August.
- ⁹ ALT = Alternation treatment, where treatment 43 consisted of Reserve 4.8SC (2.5 fl oz) applied on 24 May, 21 June, 19 July, and 16 August, and Interface 2.27SC (3.0 fl oz) on 7 June, 5 July, 2 August, and 30 August.
- ¹⁰ Treatment 50 consisted of SP8010-DEC SC (0.72 fl oz) applied on 24 May and then SP8010-DEC SC (0.72 fl oz) + Pentathlon 4LF (6.4 fl oz) every 14 days thereafter.
- ¹¹ Treatment 58 was applied on 24 May at 0.41 fl oz and then 7 and 21 June at 0.75 fl oz; whereas treatment 59 was only applied on 24 May at 0.82 fl oz and then 7 June at 1.1 fl oz.
- ¹² ALT = Alternation treatment, where treatment 79 consisted of Torque 3.6SC (0.6 fl oz) + Spectro 90WDG (3.6 oz) applied on 24 May, 21 June, 19 July, and 16 August and 26/36 3.8SC (4.0 fl oz) on 7 June, 5 July, and 2 and 30 August.
- ¹³ Spray interval in days.
- ¹⁴ Days after the last treatment.

Table 1B. Impact of fungicides and biorational products on the suppression of dollar spot on a creeping bentgrass green: Rutgers University, 2011.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Number of Dollar Spot Lesion Centers per Plot ¹				
			29 July	10 Aug.	16 Aug.	26 Aug.	6 Sept.
1 Pillar 00F 0.81G.....	48.0 oz	28 ³	13.0 h-p	10.3 j-q	21.8 l-t	23.3 k-m	38.5 l-n
2 Pillar 03F 0.81G.....	48.0 oz	14 ³	7.0 j-t	2.3 q-t	9.3 v-z ^f	7.5 q-y	14.8 q-x
3 Pillar 03F 0.81G.....	48.0 oz	28 ³	16.3 hi	19.0 g-i	37.5 ij	50.0 fg	60.8 e-i
4 Heritage 0.31G.....	48.0 oz	14 ³	28.8 e-g	38.8 e	75.8 cd	73.8 b-d	81.3 cd
5 Heritage 0.31G.....	48.0 oz	28 ³	56.3 bc	56.8 b	90.0 b	79.3 b	66.3 e-h
6 BAS 640 00F SC.....	3.0 fl oz	14	0.8 t	0.0 t	4.3 z ^a -f ^f	2.5 w-y	3.8 u-y
7 BAS 640 00F SC.....	3.0 fl oz	21	5.0 n-t	3.0 p-t	11.0 s-z ^f	8.0 q-y	13.0 q-y
8 Emerald 70WG	0.13 oz	14	0.0 t	0.5 st	0.0 z ^f	3.3 v-y	2.3 w-y
9 Emerald 70WG	0.13 oz	21	11.3 h-q	4.0 o-t	19.5 o-w	10.5 n-y	13.8 q-y
10 BAS 640 00F SC.....	3.0 fl oz	14-CUR ⁴	0.0 t	0.0 t	0.5 z ^e f ^f	0.0 y	4.0 u-y
11 BAS 640 00F SC.....	3.0 fl oz	21-CUR ⁴	2.5 q-t	7.0 l-t	8.5 v-z ^f	18.8 l-q	31.5 m-p
12 Emerald 70WG	0.13 oz	14-CUR ⁴	0.0 t	0.0 t	1.0 z ^e f ^f	3.8 v-y	1.8 w-y
13 Emerald 70WG	0.18 oz	21-CUR ⁴	0.0 t	0.8 r-t	1.5 z ^d -f ^f	8.3 q-y	7.8 s-y
14 RU 21196-11B SC.....	0.157 fl oz	14	0.0 t	0.0 t	0.0 z ^f	1.3 xy	0.0 y
15 RU 21196-11J WG	0.13 oz	14	0.0 t	0.0 t	0.0 z ^f	3.8 v-y	0.0 y
16 RU 21196-11B SC.....	0.211 fl oz	21	0.0 t	0.0 t	1.5 z ^d -f ^f	2.3 w-y	2.8 v-y
17 RU 21196-11J WG	0.18 oz	21	3.8 q-t	1.3 r-t	8.5 v-z ^f	7.0 r-y	8.8 r-y
18 RU 21196-11B SC.....	0.262 fl oz	28	0.5 t	1.0 r-t	10.3 t-z ^f	5.0 u-y	7.5 s-y
19 RU 21196-11J WG	0.18 oz	28	1.3 st	2.8 p-t	11.3 s-z ^f	5.0 u-y	9.0 r-y
20 RU 21196-11A SC.....	0.34 fl oz	21	1.0 t	0.0 t	4.0 z ^a -f ^f	0.8 y	3.3 u-y
21 RU 21196-11E WG.....	0.84 oz	21	5.5 l-t	1.8 r-t	9.3 v-z ^f	2.8 w-y	7.8 s-y
22 RU 21196-11A SC.....	0.472 fl oz	28	0.0 t	0.8 r-t	4.0 z ^a -f ^f	3.8 v-y	2.0 w-y
23 RU 21196-11E WG.....	1.1 oz	28	0.0 t	0.0 t	2.5 z ^c -f ^f	3.8 v-y	1.8 w-y
24 RU 21196-11B SC.....	0.157 fl oz	14-CUR ⁴	0.0 t	0.0 t	0.3 z ^e f ^f	5.0 u-y	1.5 w-y
25 RU 21196-11J WG	0.13 oz	14-CUR ⁴	0.0 t	0.0 t	0.8 z ^e f ^f	5.5 t-y	3.5 u-y
26 RU 21196-11B SC.....	0.211 fl oz	21-CUR ⁴	0.0 t	1.5 r-t	1.3 z ^e f ^f	9.8 p-y	12.8 q-y
27 RU 21196-11J WG	0.18 oz	21-CUR ⁴	2.0 r-t	4.0 o-t	8.0 w-z ^f	12.5 m-x	21.8 o-s
28 RU 21196-11B SC.....	0.262 fl oz	28-CUR ⁴	30.0 ef	13.0 h-m	22.5 k-s	45.0 g-i	51.5 i-l
29 RU 21196-11J WG	0.18 oz	28-CUR ⁴	31.3 ef	17.5 h-j	22.3 k-s	55.5 e-g	69.3 d-g
30 RU 21196-11A SC.....	0.34 fl oz	21-CUR ⁴	0.0 t	1.0 r-t	2.0 z ^d -f ^f	7.5 q-y	17.5 p-u

(Continued)

Table 1B (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Number of Dollar Spot Lesion Centers per Plot ¹				
			29 July	10 Aug.	16 Aug.	26 Aug.	6 Sept.
31 RU 21196-11E WG.....	0.84 oz	21-CUR ⁴	0.0 t	0.5 st	0.8 z'e'f'	2.5 w-y	8.5 r-y
32 RU 21196-11A SC.....	0.472 fl oz	28-CUR ⁴	48.8 cd	19.3 g-i	24.3 k-q	48.8 fg	72.5 de
33 RU 21196-11E WG.....	1.1 oz	28-CUR ⁴	14.0 h-n	8.8 k-s	13.0 q-z'd'	18.8 l-q	25.5 n-q
34 Banner MAXX 1.3ME.....	1.0 fl oz	21	13.8 h-o	5.5 m-t	13.8 q-z'c'	7.3 q-y	12.0 q-y
35 Emerald 70WG	0.18 oz	21	2.8 q-t	1.5 r-t	5.5 z'a'-f'	3.5 v-y	3.8 u-y
36 Honor 28WG	0.83 oz	14	0.0 t	0.0 t	0.0 z'f'	0.0 y	0.0 y
37 Honor 28WG	1.1 oz	21	0.5 t	0.0 t	1.3 z'e'-f'	0.0 y	0.0 y
38 Insignia 2.1 SC.....	0.7 fl oz	14	1.5 st	0.0 t	4.8 z'a'-f'	2.5 w-y	10.5 r-y
39 2011 Dollar Spot Program #1	(BASF)	14-VAR ⁵	3.3 q-t	1.5 r-t	10.0 u-z'f'	7.5 q-y	13.3 q-y
40 2011 Dollar Spot Program #2	(BASF)	14-VAR ⁶	10.3 i-s	5.3 m-t	21.8 l-t	17.5 l-s	33.8 m-o
41 2011 Dollar Spot Program #3	(BASF)	14-VAR ⁷	7.3 i-t	5.5 m-t	23.0 k-r	16.8 l-t	34.5 m-o
42 2011 Dollar Spot Program #4	(BASF)	14-VAR ⁸	16.0 h-j	12.8 h-n	26.8 j-p	24.8 j-l	40.8 k-m
43 Reserve 4.8SC.....	2.5 fl oz	-					
/Interface 2.27SC.....	3.0 fl oz	14-ALT ⁹	14.3 h-m	14.3 h-l	28.0 i-o	25.0 j-l	40.5 k-m
44 Reserve 4.8SC.....	3.5 fl oz	14	5.0 n-t	4.3 o-t	11.3 s-z'f'	10.0 o-y	13.3 q-y
45 Concert 4.3SC	5.5 fl oz	14	0.0 t	0.0 t	0.0 z'f'	1.3 xy	0.5 xy
46 Interface 2.27SC.....	3.0 fl oz	14	1.5 st	1.5 r-t	17.8 o-x	21.5 k-o	31.8 m-p
47 Interface 2.27SC.....	4.0 fl oz	14	0.0 t	0.5 st	5.8 yz'f'	5.0 u-y	6.8 t-y
48 Iprodione Pro 2SE.....	4.0 fl oz	14	14.8 h-k	4.8 m-t	31.5 i-n	50.0 fg	56.0 g-j
49 Tartan 2.4SC	1.5 fl oz	14	0.5 t	0.0 t	1.8 z'd'-f'	0.0 y	2.3 w-y
50 SP8010-DEC LC.....	0.72 fl oz	-					
+ Pentathlon 4LF	6.4 fl oz	14 ¹⁰	53.8 b-d	45.0 de	95.0 b	65.5 c-e	56.3 g-i
51 SP8010-DEC LC.....	1.44 fl oz	14	30.5 ef	41.3 e	90.8 b	81.3 b	105.5 a
52 SP8010-DEC LC.....	2.87 fl oz	14	46.8 d	52.5 b-d	39.3 hi	57.5 ef	50.5 i-l
53 Emerald 70WG	0.13 oz	-					
+ CoRoN 28-0-0 70% CRN F.....	4.4 fl oz	14	0.0 t	0.0 t	3.3 z'b'-f'	2.0 xy	4.8 t-y
54 HM0812 1.66SC	0.275 fl oz	14	32.3 ef	26.8 fg	57.5 gf	47.5 f-h	60.0 e-i
55 HM0812 1.66SC	0.275 fl oz	-					
+ CoRoN 28-0-0 70% CRN F.....	4.4 fl oz	14	14.5 h-l	15.5 h-k	31.8 i-m	35.0 ij	57.5 f-i
56 CX-42 1.73SC.....	0.25 fl oz	14	2.8 q-t	0.5 st	5.8 yz'f'	12.5 m-x	18.5 p-t

(Continued)

Table 1B (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Number of Dollar Spot Lesion Centers per Plot ¹				
			29 July	10 Aug.	16 Aug.	26 Aug.	6 Sept.
57 CX-42 1.73 SC.....	0.375 fl oz	14	0.5 t	0.0 t	1.0 z'e'f	8.5 q-y	11.8 q-y
58 NB 37904 20SC.....	0.75 fl oz	14 ¹¹	25.5 fg	30.0 f	75.0 c-e	72.5 b-d	52.5 h-l
59 NB 37904 20SC.....	1.10 fl oz	14 ¹¹	35.5 e	40.0 e	72.5 de	62.5 de	54.8 h-k
60 Turf Formula LC.....	3.0 fl oz	7	51.3 cd	46.3 c-e	77.5 cd	76.3 bc	71.0 d-f
61 IKF-5411 400SC.....	0.2 fl oz	14	15.5 h-j	11.8 i-o	21.3 m-u	15.5 l-u	18.5 p-t
62 IKF-5411 400SC.....	0.3 fl oz	14	13.0 h-p	9.0 k-r	15.5 p-z'a'	9.8 p-y	11.8 q-y
63 IKF-5411 400SC.....	0.4 fl oz	14	4.5 p-t	4.3 o-t	8.5 v-z'f	6.3 s-y	6.8 t-y
64 Velista 50WDG.....	0.3 oz	—					
+ Daconil Ultrex 82.5WDG.....	3.25 oz	14	1.8 st	1.0 r-t	8.5 v-z'f	3.0 v-y	14.0 q-y
65 Velista 50WDG.....	0.3 oz	—					
+ Banner MAXX 1.3ME.....	1.0 fl oz	14	5.3 m-t	0.5 st	11.8 r-z'e'	9.8 p-y	8.8 r-y
66 Velista 50WDG.....	0.3 oz	—					
+ Curalan EG 50WG.....	1.0 oz	14	3.3 q-t	2.8 p-t	11.8 r-z'e'	7.8 q-y	17.0 q-v
67 Velista 50WDG.....	0.3 oz	14	13.8 h-o	16.0 h-k	33.8 i-k	31.3 jk	59.8 e-i
68 Velista 50WDG.....	0.5 oz	14	4.8 o-t	4.0 o-t	11.5 r-z'f	13.8 l-w	14.3 q-y
69 SA-0010216 SC.....	5.0 fl oz	14	4.3 p-t	1.8 r-t	15.5 p-z'a'	8.8 p-y	22.5 o-r
70 SA-0010217 SC.....	5.0 fl oz	14	13.3 h-p	11.0 i-p	33.0 i-l	22.0 k-n	41.8 j-m
71 SA-0010218 SC.....	5.0 fl oz	14	11.0 h-r	12.3 h-o	32.5 i-m	30.8 jk	38.8 l-n
72 SA-0010219 SC.....	5.0 fl oz	14	20.0 gh	20.5 gh	50.0 gh	36.3 h-j	64.5 e-i
73 SA-0010220 SC.....	5.0 fl oz	14	0.0 t	0.0 t	0.0 z'f	0.0 y	0.0 y
74 SA-0010221 SC.....	5.0 fl oz	14	3.0 q-t	2.0 q-t	14.3 q-z'b'	20.3 k-p	33.8 m-o
75 SA-0010222 SC.....	5.0 fl oz	14	0.0 t	0.0 t	0.0 z'f	0.0 y	0.0 y
76 SA-0010214 SC.....	1.86 fl oz	7	0.0 t	0.5 st	5.8 yz'f	5.0 u-y	13.0 q-y
77 SA-0010214 SC.....	3.6 fl oz	14	5.8 k-t	5.3 m-t	17.3 o-y	17.5 l-s	21.8 o-s
78 SA-0011501 WG.....	4.25 oz	14	10.3 i-s	7.8 k-t	20.0 n-v	18.3 l-r	33.8 m-o
79 Torque 3.6SC.....	0.6 fl oz	—					
+Spectro 90WDG.....	3.6 oz	—					
/26/36 3.8SC.....	4.0 fl oz	14-ALT ¹²	1.8 st	1.3 r-t	7.3 x-z'f	4.0 u-y	13.8 q-y
80 Chipco Signature 80 WG.....	4.0 oz	—					
+ Daconil Ultrex 82.5 WDG.....	3.25 oz	14	5.3 m-t	4.5 n-t	17.0 o-z	14.5 l-v	33.3 m-o

(Continued)

Table 1B (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ²	Number of Dollar Spot Lesion Centers per Plot ¹				
			29 July	10 Aug.	16 Aug.	26 Aug.	6 Sept.
81 Banner MAXX 1.3 ME.....	1.0 fl oz	14	5.0 n-t	4.5 n-t	14.8 q-z'b'	11.3 n-y	15.0 q-w
82 Tourney 50 WDG	0.37 oz	14	0.5 t	1.0 r-t	9.3 v-z'f	3.0 v-y	12.0 q-y
83 Pentathlon 4LF.....	6.4 fl oz	14	31.8 ef	41.8 e	63.8 ef	71.8 b-d	90.0 bc
84 Pentathlon 4LF.....	12.8 fl oz	14	61.3 b	54.3 bc	85.0 bc	82.5 b	103.8 ab
85 Untreated Check.....	–	–	117.5 a	105.8 a	127.5 a	96.3 a	105.0 a
		INT ¹³	DAT ¹⁴	DAT	DAT	DAT	DAT
		7	3	1	7	3	14
		14	10	8	14	10	21
		21	3	15	21	10	21
		28	10	22	28	10	21

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 24 May (all treatments, except treatments 10 to 13, 24 to 33, and 60), 27 May (initiated treatment 60), 31 May (7-day treatment), 7 June (7- and 14-day treatments and initiated treatments 10 to 13 and 24 to 33), 14 June (7- and 21-day treatments), 21 June (7-, 14-, and 28-day treatments), 28 June (7-day treatment), 5 July (7-, 14-, and 21-day treatments), 12 July (7-day treatment), 19 July (7-, 14-, and 28-day treatments), 26 July (7- and 21-day treatments), 2 August (7- and 14-day treatments), 9 August (7-day treatment), 16 August (7-, 14-, 21-, and 28-day treatments), and 23 August (7-day treatment).

³ Treatments 1 to 5 were applied to dry foliage and then immediately irrigated with 1.0 gal of water per plot.

⁴ Treatments 10 to 13 and 24 to 33 were applied on a curative basis (treatments 10, 12, 24, and 25 were applied every 14 days on 7 and 21 June, 5 and 19 July, and 2 and 16 August; treatments 11, 13, 26, 27, 30 and 31 were applied every 21 days on 7 and 28 June, 19 July, and 9 August; and treatments 28, 29, 32, and 33 were applied every 28 days on 7 June, 5 July, and 2 August). The initial application of each treatment was initiated when a threshold of five dollar spot lesion centers was exceeded on any of the four replicate plots.

⁵ VAR = Variable spray schedule, where treatment 39 (BASF Dollar Spot Program #1) consisted of Honor 28WG (1.1 oz) applied on 24 May, Insignia 2.1SC (0.7 fl oz) on 7 June, Spectro 90WDG (5.75 oz) on 21 June, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 5 July, Insignia 2.1SC (0.7 fl oz) on 19 July, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 2 August, Chipco 26GT 2SC (4.0 fl oz) on 16 August, and Honor 28WG (1.1 oz) on 30 August.

(Continued)

Table 1B (continued).

- ⁶ VAR = Variable spray schedule, where treatment 40 (BASF Dollar Spot Program #2) consisted of Headway 1.39EC (3.0 fl oz) applied on 24 May, Heritage TL 0.8ME (2.0 fl oz) on 7 June, Spectro 90WDG (5.75 oz) on 21 June, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 5 July, Heritage TL 0.8ME (2.0 fl oz) on 19 July, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 2 August, Chipco 26GT 2SC (4.0 fl oz) on 16 August, and Headway 1.39EC (3.0 fl oz) on 30 August.
- ⁷ VAR = Variable spray schedule, where treatment 41 (BASF Dollar Spot Program #3) consisted of Disarm M 3.9SC (1.0 fl oz) applied on 24 May, Disarm 480SC (0.36 fl oz) on 7 June, Spectro 90WDG (5.75 oz) on 21 June, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 5 July, Disarm 480SC (0.36 fl oz) on 19 July, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 2 August, Chipco 26GT 2SC (4.0 fl oz) on 16 August, and Disarm M 3.9SC (1.0 fl oz) on 30 August.
- ⁸ VAR = Variable spray schedule, where treatment 42 (BASF Dollar Spot Program #4) consisted of Tartan 2.4SC (2.0 fl oz) applied on 24 May, Compass 50WG (0.25 oz) on 7 June, Spectro 90WG (5.75 oz) on 21 June, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 5 July, Compass 50WG (0.25 oz) on 19 July, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 2 August, Chipco 26GT 2SC (4.0 fl oz) on 16 August, and Tartan 2.4SC (2.0 fl oz) on 30 August.
- ⁹ ALT = Alternation treatment, where treatment 43 consisted of Reserve 4.8SC (2.5 fl oz) applied on 24 May, 21 June, 19 July, and 16 August, and Interface 2.27SC (3.0 fl oz) on 7 June, 5 July, 2 August, and 30 August.
- ¹⁰ Treatment 50 consisted of SP8010-DEC SC (0.72 fl oz) applied on 24 May and then SP8010-DEC SC (0.72 fl oz) + Pentathlon 4LF (6.4 fl oz) every 14 days thereafter.
- ¹¹ Treatment 58 was applied on 24 May at 0.41 fl oz and then 7 and 21 June at 0.75 fl oz; whereas treatment 59 was only applied on 24 May at 0.82 fl oz and then 7 June at 1.1 fl oz.
- ¹² ALT = Alternation treatment, where treatment 79 consisted of Torque 3.6SC (0.6 fl oz) + Spectro 90WDG (3.6 oz) applied on 24 May, 21 June, 19 July, and 16 August and 26/36 3.8SC (4.0 fl oz) on 7 June, 5 July, and 2 and 30 August.
- ¹³ Spray interval in days.
- ¹⁴ Days after the last treatment.

Table 1C. Impact of fungicides and biorational products on the suppression of dollar spot on a creeping bentgrass green: Rutgers University, 2011.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Phytotoxicity ^{1,2}			Color ³		
			22 June	19 July	16 Aug	22 June	19 July	16 Aug.
1 Pillar 00F 0.81G.....	48.0 oz	28 ⁵	1.0 b	1.0 c	1.0 d	3.0 fg	2.9 j-l	3.4 g-k
2 Pillar 03F 0.81G.....	48.0 oz	14 ⁵	1.0 b	1.0 c	1.0 a	3.0 fg	3.0 i-l	3.3 h-l
3 Pillar 03F 0.81G.....	48.0 oz	28 ⁵	1.0 b	1.0 c	1.0 d	3.0 fg	2.6 kl	3.3 h-l
4 Heritage 0.31G.....	48.0 oz	14 ⁵	1.0 b	1.0 c	1.0 a	3.0 fg	3.0 i-l	3.5 f-j
5 Heritage 0.31G.....	48.0 oz	28 ⁵	1.0 b	1.0 c	1.0 d	3.0 fg	2.9 j-l	3.4 g-k
6 BAS 640 00F SC.....	3.0 fl oz	14	1.0 b	1.0 c	1.0 d	3.3 ef	3.6 e-i	4.0 b-f
7 BAS 640 00F SC.....	3.0 fl oz	21	1.0 b	1.0 c	1.0 d	3.3 ef	3.1 h-l	3.8 d-h
8 Emerald 70WG.....	0.13 oz	14	1.0 b	1.0 c	1.0 d	3.0 fg	3.3 h-l	3.6 e-i
9 Emerald 70WG.....	0.13 oz	21	1.0 b	1.0 c	1.0 d	3.0 fg	2.8 kl	3.3 h-l
10 BAS 640 00F SC.....	3.0 fl oz	14-CUR ⁶	1.0 b	1.0 c	1.0 d	3.5 de	3.5 f-j	3.3 h-l
11 BAS 640 00F SC.....	3.0 fl oz	21-CUR ⁶	1.0 b	1.0 c	1.0 d	3.0 fg	3.6 e-i	3.5 f-j
12 Emerald 70WG.....	0.13 oz	14-CUR ⁶	1.0 b	1.0 c	1.0 d	3.0 fg	3.3 h-l	3.3 h-l
13 Emerald 70WG.....	0.18 oz	21-CUR ⁶	1.0 b	1.0 c	1.0 d	3.0 fg	3.1 h-l	3.3 h-l
14 RU 21196-11B SC.....	0.157 fl oz	14	1.0 b	1.0 c	1.0 d	3.0 fg	2.9 j-l	3.1 i-l
15 RU 21196-11J WG.....	0.13 oz	14	1.0 b	1.0 c	1.0 d	3.0 fg	2.9 j-l	3.3 h-l
16 RU 21196-11B SC.....	0.211 fl oz	21	1.0 b	1.0 c	1.0 d	3.0 fg	3.0 i-l	3.1 i-l
17 RU 21196-11J WG.....	0.18 oz	21	1.0 b	1.0 c	1.0 d	3.0 fg	3.0 i-l	3.4 g-k
18 RU 21196-11B SC.....	0.262 fl oz	28	1.0 b	1.0 c	1.0 d	3.0 fg	3.0 i-l	4.0 b-f
19 RU 21196-11J WG.....	0.18 oz	28	1.0 b	1.0 c	1.0 d	3.0 fg	2.9 j-l	3.3 h-l
20 RU 21196-11A SC.....	0.34 fl oz	21	1.0 b	1.1 bc	1.0 d	3.0 fg	3.0 i-l	3.1 i-l
21 RU 21196-11E WG.....	0.84 oz	21	1.0 b	1.0 c	1.0 d	3.0 fg	3.5 f-j	3.0 j-l
22 RU 21196-11A SC.....	0.472 fl oz	28	1.0 b	1.1 bc	1.0 d	3.0 fg	3.1 h-l	3.4 g-k
23 RU 21196-11E WG.....	1.1 oz	28	1.0 b	1.0 c	1.0 d	3.0 fg	2.9 j-l	3.0 j-l
24 RU 21196-11B SC.....	0.157 fl oz	14-CUR ⁶	1.0 b	1.0 c	1.0 d	3.3 ef	3.5 f-j	3.6 e-i
25 RU 21196-11J WG.....	0.13 oz	14-CUR ⁶	1.0 b	1.0 c	1.0 d	3.0 fg	2.9 j-l	3.5 f-j
26 RU 21196-11B SC.....	0.211 fl oz	21-CUR ⁶	1.0 b	1.0 c	1.0 d	3.0 fg	3.0 i-l	3.0 j-l
27 RU 21196-11J WG.....	0.18 oz	21-CUR ⁶	1.0 b	1.0 c	1.0 d	3.0 fg	3.0 i-l	3.0 j-l
28 RU 21196-11B SC.....	0.262 fl oz	28-CUR ⁶	1.0 b	1.0 c	1.0 d	3.0 fg	3.3 h-l	3.0 j-l
29 RU 21196-11J WG.....	0.18 oz	28-CUR ⁶	1.0 b	1.0 c	1.0 d	3.0 fg	3.0 i-l	3.0 j-l
30 RU 21196-11A SC.....	0.34 fl oz	21-CUR ⁶	1.0 b	1.0 c	1.0 d	2.8 gh	2.9 j-l	2.9 kl

(Continued)

Table 1C (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Phytotoxicity ^{1,2}			Color ³		
			22 June	19 July	16 Aug	22 June	19 July	16 Aug.
31 RU 21196-11E WG.....	0.84 oz	21-CUR ⁶	1.0 b	1.0 c	1.0 d	3.0 fg	3.3 h-l	3.8 d-h
32 RU 21196-11A SC.....	0.472 fl oz	28-CUR ⁶	1.0 b	1.0 c	1.0 d	3.0 fg	3.0 i-l	3.0 j-l
33 RU 21196-11E WG.....	1.1 oz	28-CUR ⁶	1.0 b	1.0 c	1.0 d	3.0 fg	2.9 j-l	3.0 j-l
34 Banner MAXX 1.3ME.....	1.0 fl oz	21	1.0 b	1.1 bc	1.0 d	3.3 ef	2.9 j-l	3.1 i-l
35 Emerald 70WG	0.18 oz	21	1.0 b	1.0 c	1.0 d	3.0 fg	3.0 i-l	3.0 j-l
36 Honor 28WG	0.83 oz	14	1.0 b	1.0 c	1.0 d	3.0 fg	3.3 h-l	3.4 g-k
37 Honor 28WG	1.1 oz	21	1.0 b	1.0 c	1.0 d	3.0 fg	3.4 g-k	3.6 e-i
38 Insignia 2.1 SC.....	0.7 fl oz	14	1.0 b	1.0 c	1.0 d	3.0 fg	3.1 h-l	3.3 h-l
39 2011 Dollar Spot Program #1	(BASF)	14-VAR ⁷	1.0 b	1.0 c	1.0 d	3.0 fg	4.0 c-g	3.9 c-g
40 2011 Dollar Spot Program #2	(BASF)	14-VAR ⁸	1.0 b	1.1 bc	1.0 d	4.0 bc	4.5 a-c	3.3 h-l
41 2011 Dollar Spot Program #3	(BASF)	14-VAR ⁹	1.5 a	1.0 c	1.0 d	3.0 fg	3.6 e-i	3.3 h-l
42 2011 Dollar Spot Program #4	(BASF)	14-VAR ¹⁰	1.5 a	1.0 c	1.0 d	3.3 ef	3.4 g-k	3.0 j-l
43 Reserve 4.8SC.....	2.5 fl oz	–						
/Interface 2.27SC.....	3.0 fl oz	14-ALT ¹¹	1.0 b	1.0 c	1.0 d	3.8 cd	4.0 c-g	3.6 e-i
44 Reserve 4.8SC.....	3.5 fl oz	14	1.0 b	1.0 c	1.0 d	4.0 bc	4.4 a-d	4.3 a-d
45 Concert 4.3SC	5.5 fl oz	14	1.5 a	1.9 a	2.0 a	3.5 de	3.0 i-l	3.3 h-l
46 Interface 2.27SC.....	3.0 fl oz	14	1.0 b	1.0 c	1.0 d	4.3 ab	4.5 a-c	4.1 a-e
47 Interface 2.27SC.....	4.0 fl oz	14	1.0 b	1.0 c	1.0 d	4.5 a	4.9 a	4.6 a
48 Iprodione Pro 2SE.....	4.0 fl oz	14	1.0 b	1.0 c	1.0 d	3.3 ef	3.0 i-l	3.0 j-l
49 Tartan 2.4SC	1.5 fl oz	14	1.0 b	1.0 c	1.0 d	3.8 cd	4.5 a-c	4.1 a-e
50 SP8010-DEC LC.....	0.72 fl oz	–						
+ Pentathlon 4LF	6.4 fl oz	14 ¹²	1.0 b	1.0 c	1.0 d	3.0 fg	2.9 j-l	3.4 g-k
51 SP8010-DEC LC.....	1.44 fl oz	14	1.0 b	1.0 c	1.0 d	2.5 h	3.0 i-l	3.0 j-l
52 SP8010-DEC LC.....	2.87 fl oz	14	1.0 b	1.0 c	1.0 d	2.5 h	2.6 kl	2.8 l
53 Emerald 70WG	0.13 oz	–						
+ CoRoN 28-0-0 70% CRN F.....	4.4 fl oz	14	1.0 b	1.0 c	1.0 d	3.3 ef	4.4 a-d	3.5 f-j
54 HM0812 1.66SC	0.275 fl oz	14	1.0 b	1.0 c	1.0 d	3.3 ef	3.1 h-l	3.0 j-l
55 HM0812 1.66SC	0.275 fl oz	–						
+ CoRoN 28-0-0 70% CRN F.....	4.4 fl oz	14	1.0 b	1.0 c	1.0 d	4.0 bc	4.4 a-d	3.3 h-l
56 CX-42 1.73SC.....	0.25 fl oz	14	1.0 b	1.0 c	1.0 d	3.0 fg	3.0 i-l	3.0 j-l

(Continued)

Table 1C (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Phytotoxicity ^{1,2}			Color ³		
			22 June	19 July	16 Aug	22 June	19 July	16 Aug.
57 CX-42 1.73 SC.....	0.375 fl oz	14	1.0 b	1.0 c	1.0 d	3.0 fg	3.0 i-l	3.5 f-j
58 NB 37904 20SC.....	0.75 fl oz	14 ¹³	1.0 b	1.0 c	1.0 d	2.8 gh	3.1 h-l	3.0 j-l
59 NB 37904 20SC.....	1.10 fl oz	14 ¹³	1.0 b	1.0 c	1.0 d	3.0 fg	3.0 i-l	3.0 j-l
60 Turf Formula LC.....	3.0 fl oz	7	1.0 b	1.0 c	1.0 d	3.0 fg	2.8 kl	3.0 j-l
61 IKF-5411 400SC.....	0.2 fl oz	14	1.0 b	1.0 c	1.0 d	3.0 fg	3.0 i-l	3.0 j-l
62 IKF-5411 400SC.....	0.3 fl oz	14	1.0 b	1.0 c	1.0 d	3.0 fg	2.8 kl	3.0 j-l
63 IKF-5411 400SC.....	0.4 fl oz	14	1.0 b	1.0 c	1.0 d	3.0 fg	3.0 i-l	3.3 h-l
64 Velista 50WDG.....	0.3 oz	-	-	-	-	-	-	-
+ Daconil Ultrex 82.5WDG.....	3.25 oz	14	1.0 b	1.0 c	1.0 d	3.5 de	3.8 d-h	4.1 a-e
65 Velista 50WDG.....	0.3 oz	-	-	-	-	-	-	-
+ Banner MAXX 1.3ME.....	1.0 fl oz	14	1.5 a	1.3 b	1.5 c	2.5 h	3.0 i-l	3.4 g-k
66 Velista 50WDG.....	0.3 oz	-	-	-	-	-	-	-
+ Curalan EG 50WG.....	1.0 oz	14	1.0 b	1.0 c	1.0 d	3.0 fg	2.9 j-l	3.0 j-l
67 Velista 50WDG.....	0.3 oz	14	1.0 b	1.0 c	1.0 d	3.0 fg	2.9 j-l	3.1 i-l
68 Velista 50WDG.....	0.5 oz	14	1.0 b	1.0 c	1.0 d	3.0 fg	3.0 i-l	3.1 i-l
69 SA-0010216 SC.....	5.0 fl oz	14	1.0 b	1.0 c	1.0 d	4.0 bc	4.8 ab	4.3 a-d
70 SA-0010217 SC.....	5.0 fl oz	14	1.0 b	1.0 c	1.0 d	4.0 bc	4.3 a-e	4.0 b-f
71 SA-0010218 SC.....	5.0 fl oz	14	1.0 b	1.0 c	1.0 d	4.3 ab	4.4 a-d	4.4 a-c
72 SA-0010219 SC.....	5.0 fl oz	14	1.0 b	1.0 c	1.0 d	4.0 bc	4.1 b-f	4.0 b-f
73 SA-0010220 SC.....	5.0 fl oz	14	1.0 b	1.0 c	1.0 d	3.5 de	4.6 a-c	4.6 a
74 SA-0010221 SC.....	5.0 fl oz	14	1.0 b	1.0 c	1.0 d	4.0 bc	3.8 d-h	3.3 h-l
75 SA-0010222 SC.....	5.0 fl oz	14	1.0 b	1.0 c	1.0 d	4.0 bc	4.5 a-c	4.5 ab
76 SA-0010214 SC.....	1.86 fl oz	7	1.0 b	1.0 c	1.0 d	3.5 de	4.5 a-c	3.6 e-i
77 SA-0010214 SC.....	3.6 fl oz	14	1.0 b	1.0 c	1.0 d	3.3 ef	4.3 a-e	3.6 e-i
78 SA-0011501 WG.....	4.25 oz	14	1.0 b	1.0 c	1.0 d	3.0 fg	3.5 f-j	3.6 e-i
79 Torque 3.6SC.....	0.6 fl oz	-	-	-	-	-	-	-
+Spectro 90WDG.....	3.6 oz	-	-	-	-	-	-	-
/26/36 3.8SC.....	4.0 fl oz	14-ALT ¹⁴	1.0 b	1.0 c	1.0 d	3.8 cd	3.3 h-l	3.3 h-l
80 Chipco Signature 80 WG.....	4.0 oz	-	-	-	-	-	-	-
+ Daconil Ultrex 82.5 WDG.....	3.25 oz	14	1.0 b	1.0 c	1.0 d	4.0 bc	4.4 a-d	3.9 c-g

(Continued)

Table 1C (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Phytotoxicity ^{1,2}			Color ³		
			22 June	19 July	16 Aug	22 June	19 July	16 Aug.
81 Banner MAXX 1.3 ME.....	1.0 fl oz	14	1.0 b	1.1 bc	1.6 b	2.5 h	3.3 h-l	3.4 g-k
82 Tourney 50 WDG	0.37 oz	14	1.0 b	1.3 b	1.0 d	2.8 gh	3.0 i-l	3.3 h-l
83 Pentathlon 4LF.....	6.4 fl oz	14	1.0 b	1.0 c	1.0 d	3.3 ef	3.3 h-l	3.6 e-i
84 Pentathlon 4LF.....	12.8 fl oz	14	1.0 b	1.0 c	1.0 d	3.0 fg	3.0 i-l	3.1 i-l
85 Untreated check.....	–	–	1.0 b	1.0 c	1.0 d	3.0 fg	2.6 kl	2.8 l
		INT ¹⁵	DAT ¹⁶	DAT	DAT	DAT	DAT	DAT
		7	7	7	7	7	7	7
		14	14	14	14	14	14	14
		21	7	14	21	7	14	21
		28	28	28	28	28	28	28

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 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.

³ Color of foliage, where 1 = very chlorotic turf, 2 = slightly chlorotic, 3 = normal green color, 4 = slightly dark green color, and 5 = very dark green color.

⁴ Fungicides were applied on 24 May (all treatments, except treatments 10 to 13, 24 to 33, and 60), 27 May (initiated treatment 60), 31 May (7-day treatment), 7 June (7- and 14-day treatments and initiated treatments 10 to 13 and 24 to 33), 14 June (7- and 21-day treatments), 21 June (7-, 14-, and 28-day treatments), 28 June (7-day treatment), 5 July (7-, 14-, and 21-day treatments), 12 July (7-day treatment), 19 July (7-, 14-, and 28-day treatments), 26 July (7- and 21-day treatments), 2 August (7- and 14-day treatments), 9 August (7-day treatment), 16 August (7-, 14-, 21-, and 28-day treatments), and 23 August (7-day treatment).

⁵ Treatments 1 to 5 were applied to dry foliage and then immediately irrigated with 1.0 gal of water per plot.

⁶ Treatments 10 to 13 and 24 to 33 were applied on a curative basis (treatments 10, 12, 24, and 25 were applied every 14 days on 7 and 21 June, 5 and 19 July, and 2 and 16 August; treatments 11, 13, 26, 27, 30 and 31 were applied every 21 days on 7 and 28 June, 19 July, and 9 August; and treatments 28, 29, 32, and 33 were applied every 28 days on 7 June, 5 July, and 2 August). The initial application of each treatment was initiated when a threshold of five dollar spot lesion centers was exceeded on any of the four replicate plots.

(Continued)

Table 1C (continued).

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- ⁷ VAR = Variable spray schedule, where treatment 39 (BASF Dollar Spot Program #1) consisted of Honor 28WG (1.1 oz) applied on 24 May, Insignia 2.1SC (0.7 fl oz) on 7 June, Spectro 90WDG (5.75 oz) on 21 June, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 5 July, Insignia 2.1SC (0.7 fl oz) on 19 July, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 2 August, Chipco 26GT 2SC (4.0 fl oz) on 16 August, and Honor 28WG (1.1 oz) on 30 August.
- ⁸ VAR = Variable spray schedule, where treatment 40 (BASF Dollar Spot Program #2) consisted of Headway 1.39EC (3.0 fl oz) applied on 24 May, Heritage TL 0.8ME (2.0 fl oz) on 7 June, Spectro 90WDG (5.75 oz) on 21 June, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 5 July, Heritage TL 0.8ME (2.0 fl oz) on 19 July, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 2 August, Chipco 26GT 2SC (4.0 fl oz) on 16 August, and Headway 1.39EC (3.0 fl oz) on 30 August.
- ⁹ VAR = Variable spray schedule, where treatment 41 (BASF Dollar Spot Program #3) consisted of Disarm M 3.9SC (1.0 fl oz) applied on 24 May, Disarm 480SC (0.36 fl oz) on 7 June, Spectro 90WDG (5.75 oz) on 21 June, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 5 July, Disarm 480SC (0.36 fl oz) on 19 July, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 2 August, Chipco 26GT 2SC (4.0 fl oz) on 16 August, and Disarm M 3.9SC (1.0 fl oz) on 30 August.
- ¹⁰ VAR = Variable spray schedule, where treatment 42 (BASF Dollar Spot Program #4) consisted of Tartan 2.4SC (2.0 fl oz) applied on 24 May, Compass 50WG (0.25 oz) on 7 June, Spectro 90WG (5.75 oz) on 21 June, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 5 July, Compass 50WG (0.25 oz) on 19 July, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 2 August, Chipco 26GT 2SC (4.0 fl oz) on 16 August, and Tartan 2.4SC (2.0 fl oz) on 30 August.
- ¹¹ ALT = Alternation treatment, where treatment 43 consisted of Reserve 4.8SC (2.5 fl oz) applied on 24 May, 21 June, 19 July, and 16 August, and Interface 2.27SC (3.0 fl oz) on 7 June, 5 July, 2 August, and 30 August.
- ¹² Treatment 50 consisted of SP8010-DEC SC (0.72 fl oz) applied on 24 May and then SP8010-DEC SC (0.72 fl oz) + Pentathlon 4LF (6.4 fl oz) every 14 days thereafter.
- ¹³ Treatment 58 was applied on 24 May at 0.41 fl oz and then 7 and 21 June at 0.75 fl oz; whereas treatment 59 was only applied on 24 May at 0.82 fl oz and then 7 June at 1.1 fl oz.
- ¹⁴ ALT = Alternation treatment, where treatment 79 consisted of Torque 3.6SC (0.6 fl oz) + Spectro 90WDG (3.6 oz) applied on 24 May, 21 June, 19 July, and 16 August and 26/36 3.8SC (4.0 fl oz) on 7 June, 5 July, and 2 and 30 August.
- ¹⁵ Spray interval in days.
- ¹⁶ Days after the last treatment.

Table 1D. Impact of fungicides and biorational products on the suppression of dollar spot on a creeping bentgrass green: Rutgers University, 2011.

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Turf Quality ^{1,2}			Algae (%) per plot ³	
			21 June	21 July	16 Aug.	21 July	16 Aug.
1 Pillar 00F 0.81G.....	48.0 oz	28 ⁵	6.5 f-j	4.8 k-o	4.6 o-v	22.5 a-c	39.3 ab
2 Pillar 03F 0.81G.....	48.0 oz	14 ⁵	7.3 c-g	6.3 e-i	5.4 i-p	6.0 a-d	25.8 b-l
3 Pillar 03F 0.81G.....	48.0 oz	28 ⁵	6.0 h-k	4.8 k-o	4.1 s-z	3.0 d	24.0 b-n
4 Heritage 0.31G.....	48.0 oz	14 ⁵	6.0 h-k	4.3 m-p	3.9 u-z	3.5 d-i	31.0 a-g
5 Heritage 0.31G.....	48.0 oz	28 ⁵	5.5 j-l	4.0 n-p	3.3 zz'a'	6.5 a-d	35.5 a-d
6 BAS 640 00F SC.....	3.0 fl oz	14	8.8 a	7.8 a-c	7.4 ab	0.0 d	1.8 t-w
7 BAS 640 00F SC.....	3.0 fl oz	21	8.5 ab	6.8 c-g	5.5 h-o	1.0 d	2.8 r-w
8 Emerald 70WG	0.13 oz	14	7.0 d-h	7.5 a-d	7.0 a-d	6.8 a-d	9.5 m-w
9 Emerald 70WG	0.13 oz	21	7.0 d-h	5.3 i-m	4.6 o-v	4.0 b-d	9.5 m-w
10 BAS 640 00F SC.....	3.0 fl oz	14-CUR ⁶	7.0 d-h	7.3 a-e	7.3 a-c	0.0 d	0.8 u-w
11 BAS 640 00F SC.....	3.0 fl oz	21-CUR ⁶	7.8 a-e	6.8 c-g	6.0 e-k	0.0 d	0.8 u-w
12 Emerald 70WG	0.13 oz	14-CUR ⁶	6.5 f-j	6.3 e-i	6.4 c-h	14.5 a-d	21.3 d-o
13 Emerald 70WG	0.18 oz	21-CUR ⁶	7.8 a-e	7.5 a-d	6.5 b-g	0.5 d	18.0 f-s
14 RU 21196-11B SC.....	0.157 fl oz	14	7.8 a-e	6.8 c-g	6.1 d-j	4.5 a-d	16.5 g-t
15 RU 21196-11J WG	0.13 oz	14	7.3 c-g	6.0 f-j	6.0 e-k	4.0 b-d	9.0 n-w
16 RU 21196-11B SC.....	0.211 fl oz	21	8.0 a-d	6.0 f-j	5.6 g-n	12.8 a-d	32.8 a-f
17 RU 21196-11J WG	0.18 oz	21	7.3 c-g	6.0 f-j	5.6 g-n	9.8 a-d	17.0 g-t
18 RU 21196-11B SC.....	0.262 fl oz	28	6.5 f-j	5.3 i-m	5.3 j-q	13.5 a-d	28.3 a-c
19 RU 21196-11J WG	0.18 oz	28	6.5 f-j	6.5 d-h	5.6 g-n	8.0 a-d	22.0 d-o
20 RU 21196-11A SC.....	0.34 fl oz	21	8.0 a-d	7.3 a-e	5.6 g-n	11.8 a-d	23.8 b-n
21 RU 21196-11E WG.....	0.84 oz	21	7.5 b-f	6.8 c-g	5.4 i-p	8.3 a-d	29.5 a-j
22 RU 21196-11A SC.....	0.472 fl oz	28	7.0 d-h	7.0 b-f	6.1 d-j	2.5 d	17.8 f-s
23 RU 21196-11E WG.....	1.1 oz	28	7.0 d-h	6.0 f-j	5.0 l-s	5.5 a-d	25.5 b-l
24 RU 21196-11B SC.....	0.157 fl oz	14-CUR ⁶	6.5 f-j	6.5 d-h	6.4 c-h	10.5 a-d	20.0 d-q
25 RU 21196-11J WG	0.13 oz	14-CUR ⁶	6.8 e-i	6.3 e-i	6.0 e-k	15.8 a-d	14.8 i-w
26 RU 21196-11B SC.....	0.211 fl oz	21-CUR ⁶	7.3 c-g	7.8 a-c	6.8 a-f	0.0 d	15.3 h-w
27 RU 21196-11J WG	0.18 oz	21-CUR ⁶	6.0 h-k	5.8 g-k	5.4 i-p	0.0 d	1.5 t-w
28 RU 21196-11B SC.....	0.262 fl oz	28-CUR ⁶	6.8 e-i	5.0 j-n	4.5 p-w	23.3 ab	31.3 a-g
29 RU 21196-11J WG	0.18 oz	28-CUR ⁶	7.5 b-f	5.3 i-m	4.4 q-x	5.0 a-d	16.0 g-v
30 RU 21196-11A SC.....	0.34 fl oz	21-CUR ⁶	7.3 c-g	6.3 e-i	6.0 e-k	14.0 a-d	18.0 f-s

(Continued)

Table 1D (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Turf Quality ^{1,2}			Algae (%) per plot ³	
			21 June	21 July	16 Aug.	21 July	16 Aug.
31 RU 21196-11E WG.....	0.84 oz	21-CUR ⁶	8.0 a-d	6.8 c-g	7.0 a-d	9.5 a-d	21.5 d-o
32 RU 21196-11A SC.....	0.472 fl oz	28-CUR ⁶	7.5 b-f	4.8 k-o	4.3 r-y	10.5 a-d	16.3 g-u
33 RU 21196-11E WG.....	1.1 oz	28-CUR ⁶	7.8 a-e	6.0 f-j	5.8 g-m	1.5 d	4.5 q-w
34 Banner MAXX 1.3ME.....	1.0 fl oz	21	7.0 d-h	5.8 g-k	4.8 n-u	3.3 cd	19.0 e-q
35 Emerald 70WG	0.18 oz	21	8.0 a-d	7.0 b-f	5.8 g-m	14.5 a-d	17.0 g-t
36 Honor 28WG	0.83 oz	14	8.5 ab	7.5 a-d	7.0 a-d	5.5 a-d	21.0 d-p
37 Honor 28WG	1.1 oz	21	8.3 a-c	6.5 d-h	6.0 e-k	23.0 ab	42.0 a
38 Insignia 2.1 SC.....	0.7 fl oz	14	7.3 c-g	7.5 a-d	6.1 d-j	2.0 d	16.3 g-u
39 2011 Dollar Spot Program #1	(BASF)	14-VAR ⁷	8.0 a-d	7.5 a-d	5.8 g-m	6.0 a-d	0.0 w
40 2011 Dollar Spot Program #2	(BASF)	14-VAR ⁸	6.5 f-j	6.5 d-h	5.0 l-s	0.0 d	0.0 w
41 2011 Dollar Spot Program #3	(BASF)	14-VAR ⁹	6.5 f-j	6.0 f-j	4.6 o-v	1.0 d	0.0 w
42 2011 Dollar Spot Program #4	(BASF)	14-VAR ¹⁰	6.0 h-k	6.0 f-j	4.6 o-v	1.3 d	0.0 w
43 Reserve 4.8SC.....	2.5 fl oz	—					
/Interface 2.27SC.....	3.0 fl oz	14-ALT ¹¹	7.8 a-e	5.8 g-k	4.6 o-v	1.5 d	17.8 f-s
44 Reserve 4.8SC.....	3.5 fl oz	14	7.5 b-f	7.0 b-f	5.5 h-o	0.0 d	0.5 vw
45 Concert 4.3SC	5.5 fl oz	14	7.3 c-g	5.5 h-l	5.9 f-l	1.5 d	0.0 w
46 Interface 2.27SC.....	3.0 fl oz	14	7.3 c-g	6.3 e-i	4.9 m-t	5.8 a-d	23.3 c-n
47 Interface 2.27SC.....	4.0 fl oz	14	8.8 a	6.8 c-g	6.0 e-k	1.3 d	7.3 o-w
48 Iprodione Pro 2SE.....	4.0 fl oz	14	7.3 c-g	5.0 j-n	4.1 s-z	0.0 d	10.5 l-w
49 Tartan 2.4SC	1.5 fl oz	14	8.3 a-c	7.3 a-e	5.6 g-n	0.0 d	39.0 ab
50 SP8010-DEC LC.....	0.72 fl oz	—					
+ Pentathlon 4LF	6.4 fl oz	14 ¹²	5.0 kl	3.8 op	3.5 x-z'a'	8.5 a-d	25.5 b-l
51 SP8010-DEC LC.....	1.44 fl oz	14	6.0 h-k	3.8 op	3.6 w-z	9.8 a-d	30.8 a-h
52 SP8010-DEC LC.....	2.87 fl oz	14	6.3 g-j	4.5 l-o	3.6 w-z	8.0 a-d	24.8 b-m
53 Emerald 70WG	0.13 oz	—					
+ CoRoN 28-0-0 70% CRN F.....	4.4 fl oz	14	7.8 a-e	7.3 a-e	6.9 a-e	0.8 d	4.8 q-w
54 HM0812 1.66SC	0.275 fl oz	14	6.0 h-k	4.8 k-o	3.9 u-z	9.5 a-d	33.8 a-e
55 HM0812 1.66SC	0.275 fl oz	—					
+ CoRoN 28-0-0 70% CRN F.....	4.4 fl oz	14	7.0 d-h	5.0 j-n	4.4 q-x	1.0 d	18.3 e-r
56 CX-42 1.73SC.....	0.25 fl oz	14	7.0 d-h	6.3 e-i	5.3 j-q	4.0 b-d	5.5 p-w

(Continued)

Table 1D (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Turf Quality ^{1,2}			Algae (%) per plot ³	
			21 June	21 July	16 Aug.	21 July	16 Aug.
57 CX-42 1.73 SC.....	0.375 fl oz	14	7.3 c-g	6.5 d-h	6.3 d-i	13.8 a-d	23.8 b-n
58 NB 37904 20SC.....	0.75 fl oz	14 ¹³	6.5 f-j	4.8 k-o	3.8 v-z	2.0 d	9.3 m-w
59 NB 37904 20SC.....	1.10 fl oz	14 ¹³	7.5 b-f	4.3 m-p	3.6 w-z	4.5 a-d	14.5 j-w
60 Turf Formula LC.....	3.0 fl oz	7	5.8 i-l	4.0 n-p	3.6 w-z	0.0 d	6.8 o-w
61 IKF-5411 400SC.....	0.2 fl oz	14	7.0 d-h	4.0 n-p	4.5 p-w	23.8 a	18.5 e-q
62 IKF-5411 400SC.....	0.3 fl oz	14	6.0 h-k	4.8 k-o	4.4 q-x	5.3 a-d	12.5 k-w
63 IKF-5411 400SC.....	0.4 fl oz	14	5.8 i-l	5.8 g-k	5.4 i-p	3.0 d	14.0 j-w
64 Velista 50WDG.....	0.3 oz	—					
+ Daconil Ultrex 82.5WDG.....	3.25 oz	14	8.3 a-c	7.3 a-e	5.8 g-m	0.0 d	0.0 w
65 Velista 50WDG.....	0.3 oz	—					
+ Banner MAXX 1.3ME.....	1.0 fl oz	14	6.3 g-j	5.3 i-m	4.8 n-u	6.0 a-d	44.8 a
66 Velista 50WDG.....	0.3 oz	—					
+ Curalan EG 50WG.....	1.0 oz	14	8.0 a-d	5.3 i-m	5.0 l-s	11.0 a-d	16.3 g-u
67 Velista 50WDG.....	0.3 oz	14	6.0 h-k	5.0 j-n	4.0 t-z	2.8 d	19.3 e-q
68 Velista 50WDG.....	0.5 oz	14	7.3 c-g	6.3 e-i	5.1 k-r	2.0 d	15.0 i-w
69 SA-0010216 SC.....	5.0 fl oz	14	7.5 b-f	7.3 a-e	5.0 l-s	0.0 d	0.8 u-w
70 SA-0010217 SC.....	5.0 fl oz	14	7.3 c-g	6.0 f-j	4.4 q-x	0.0 d	0.0 w
71 SA-0010218 SC.....	5.0 fl oz	14	7.3 c-g	5.5 h-l	4.5 p-w	0.0 d	0.0 w
72 SA-0010219 SC.....	5.0 fl oz	14	7.0 d-h	5.3 i-m	4.1 s-z	0.0 d	2.5 s-w
73 SA-0010220 SC.....	5.0 fl oz	14	8.3 a-c	7.5 a-d	6.0 e-k	0.0 d	30.3 a-i
74 SA-0010221 SC.....	5.0 fl oz	14	6.8 e-i	6.0 f-j	5.0 l-s	0.0 d	20.0 d-q
75 SA-0010222 SC.....	5.0 fl oz	14	8.8 a	8.3 a	7.6 a	0.0 d	0.0 w
76 SA-0010214 SC.....	1.86 fl oz	7	8.5 ab	8.0 ab	6.1 d-j	0.0 d	0.0 w
77 SA-0010214 SC.....	3.6 fl oz	14	7.5 b-f	6.3 e-i	5.0 l-s	0.0 d	2.0 t-w
78 SA-0011501 WG.....	4.25 oz	14	6.8 e-i	5.3 i-m	5.1 k-r	0.0 d	0.0 w
79 Torque 3.6SC.....	0.6 fl oz	—					
+Spectro 90WDG.....	3.6 oz	—					
/26/36 3.8SC.....	4.0 fl oz	14-ALT ¹⁴	8.3 a-c	7.0 b-f	5.8 g-m	0.0 d	1.5 t-w
80 Chipco Signature 80 WG.....	4.0 oz	—					
+ Daconil Ultrex 82.5 WDG.....	3.25 oz	14	8.3 a-c	6.5 d-h	5.0 l-s	1.0 d	0.5 vw

(Continued)

Table 1D (continued).

Treatment	Rate per 1000 sq ft	Application Schedule (days) ⁴	Turf Quality ^{1,2}			Algae (%) per plot ³	
			21 June	21 July	16 Aug.	21 July	16 Aug.
81 Banner MAXX 1.3 ME.....	1.0 fl oz	14	7.5 b-f	5.8 g-k	5.1 k-r	8.0 a-d	17.0 g-t
82 Tourney 50 WDG	0.37 oz	14	7.0 d-h	6.5 d-h	5.8 g-m	3.0 d	26.3 b-k
83 Pentathlon 4LF.....	6.4 fl oz	14	6.5 f-j	4.8 k-o	4.0 t-z	3.0 d	14.3 j-w
84 Pentathlon 4LF.....	12.8 fl oz	14	6.0 h-k	4.3 m-p	3.4 y-z'a'	0.0 d	2.0 t-w
85 Untreated Check.....	–	–	4.8 l	3.3 p	2.6 z'a'	6.0 a-d	11.3 k-w
		INT ¹⁵	DAT ¹⁶	DAT	DAT	DAT	DAT
		7	7	2	7	2	7
		14	14	2	14	2	14
		21	7	16	21	16	21
		28	28	2	28	2	28

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

⁴ Fungicides were applied on 24 May (all treatments, except treatments 10 to 13, 24 to 33, and 60), 27 May (initiated treatment 60), 31 May (7-day treatment), 7 June (7- and 14-day treatments and initiated treatments 10 to 13 and 24 to 33), 14 June (7- and 21-day treatments), 21 June (7-, 14-, and 28-day treatments), 28 June (7-day treatment), 5 July (7-, 14-, and 21-day treatments), 12 July (7-day treatment), 19 July (7-, 14-, and 28-day treatments), 26 July (7- and 21-day treatments), 2 August (7- and 14-day treatments), 9 August (7-day treatment), 16 August (7-, 14-, 21-, and 28-day treatments), and 23 August (7-day treatment).

⁵ Treatments 1 to 5 were applied to dry foliage and then immediately irrigated with 1.0 gal of water per plot.

⁶ Treatments 10 to 13 and 24 to 33 were applied on a curative basis (treatments 10, 12, 24, and 25 were applied every 14 days on 7 and 21 June, 5 and 19 July, and 2 and 16 August; treatments 11, 13, 26, 27, 30 and 31 were applied every 21 days on 7 and 28 June, 19 July, and 9 August; and treatments 28, 29, 32, and 33 were applied every 28 days on 7 June, 5 July, and 2 August). The initial application of each treatment was initiated when a threshold of five dollar spot lesion centers was exceeded on any of the four replicate plots.

(Continued)

Table 1D (continued).

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- ⁷ VAR = Variable spray schedule, where treatment 39 (BASF Dollar Spot Program #1) consisted of Honor 28WG (1.1 oz) applied on 24 May, Insignia 2.1SC (0.7 fl oz) on 7 June, Spectro 90WDG (5.75 oz) on 21 June, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 5 July, Insignia 2.1SC (0.7 fl oz) on 19 July, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 2 August, Chipco 26GT 2SC (4.0 fl oz) on 16 August, and Honor 28WG (1.1 oz) on 30 August.
- ⁸ VAR = Variable spray schedule, where treatment 40 (BASF Dollar Spot Program #2) consisted of Headway 1.39EC (3.0 fl oz) applied on 24 May, Heritage TL 0.8ME (2.0 fl oz) on 7 June, Spectro 90WDG (5.75 oz) on 21 June, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 5 July, Heritage TL 0.8ME (2.0 fl oz) on 19 July, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 2 August, Chipco 26GT 2SC (4.0 fl oz) on 16 August, and Headway 1.39EC (3.0 fl oz) on 30 August.
- ⁹ VAR = Variable spray schedule, where treatment 41 (BASF Dollar Spot Program #3) consisted of Disarm M 3.9SC (1.0 fl oz) applied on 24 May, Disarm 480SC (0.36 fl oz) on 7 June, Spectro 90WDG (5.75 oz) on 21 June, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 5 July, Disarm 480SC (0.36 fl oz) on 19 July, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 2 August, Chipco 26GT 2SC (4.0 fl oz) on 16 August, and Disarm M 3.9SC (1.0 fl oz) on 30 August.
- ¹⁰ VAR = Variable spray schedule, where treatment 42 (BASF Dollar Spot Program #4) consisted of Tartan 2.4SC (2.0 fl oz) applied on 24 May, Compass 50WG (0.25 oz) on 7 June, Spectro 90WG (5.75 oz) on 21 June, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 5 July, Compass 50WG (0.25 oz) on 19 July, Chipco Signature 80WG (4.0 oz) + Daconil Ultrex 82.5WDG (3.2 oz) on 2 August, Chipco 26GT 2SC (4.0 fl oz) on 16 August, and Tartan 2.4SC (2.0 fl oz) on 30 August.
- ¹¹ ALT = Alternation treatment, where treatment 43 consisted of Reserve 4.8SC (2.5 fl oz) applied on 24 May, 21 June, 19 July, and 16 August, and Interface 2.27SC (3.0 fl oz) on 7 June, 5 July, 2 August, and 30 August.
- ¹² Treatment 50 consisted of SP8010-DEC SC (0.72 fl oz) applied on 24 May and then SP8010-DEC SC (0.72 fl oz) + Pentathlon 4LF (6.4 fl oz) every 14 days thereafter.
- ¹³ Treatment 58 was applied on 24 May at 0.41 fl oz and then 7 and 21 June at 0.75 fl oz; whereas treatment 59 was only applied on 24 May at 0.82 fl oz and then 7 June at 1.1 fl oz.
- ¹⁴ ALT = Alternation treatment, where treatment 79 consisted of Torque 3.6SC (0.6 fl oz) + Spectro 90WDG (3.6 oz) applied on 24 May, 21 June, 19 July, and 16 August and 26/36 3.8SC (4.0 fl oz) on 7 June, 5 July, and 2 and 30 August.
- ¹⁵ Spray interval in days.
- ¹⁶ Days after the last treatment.