

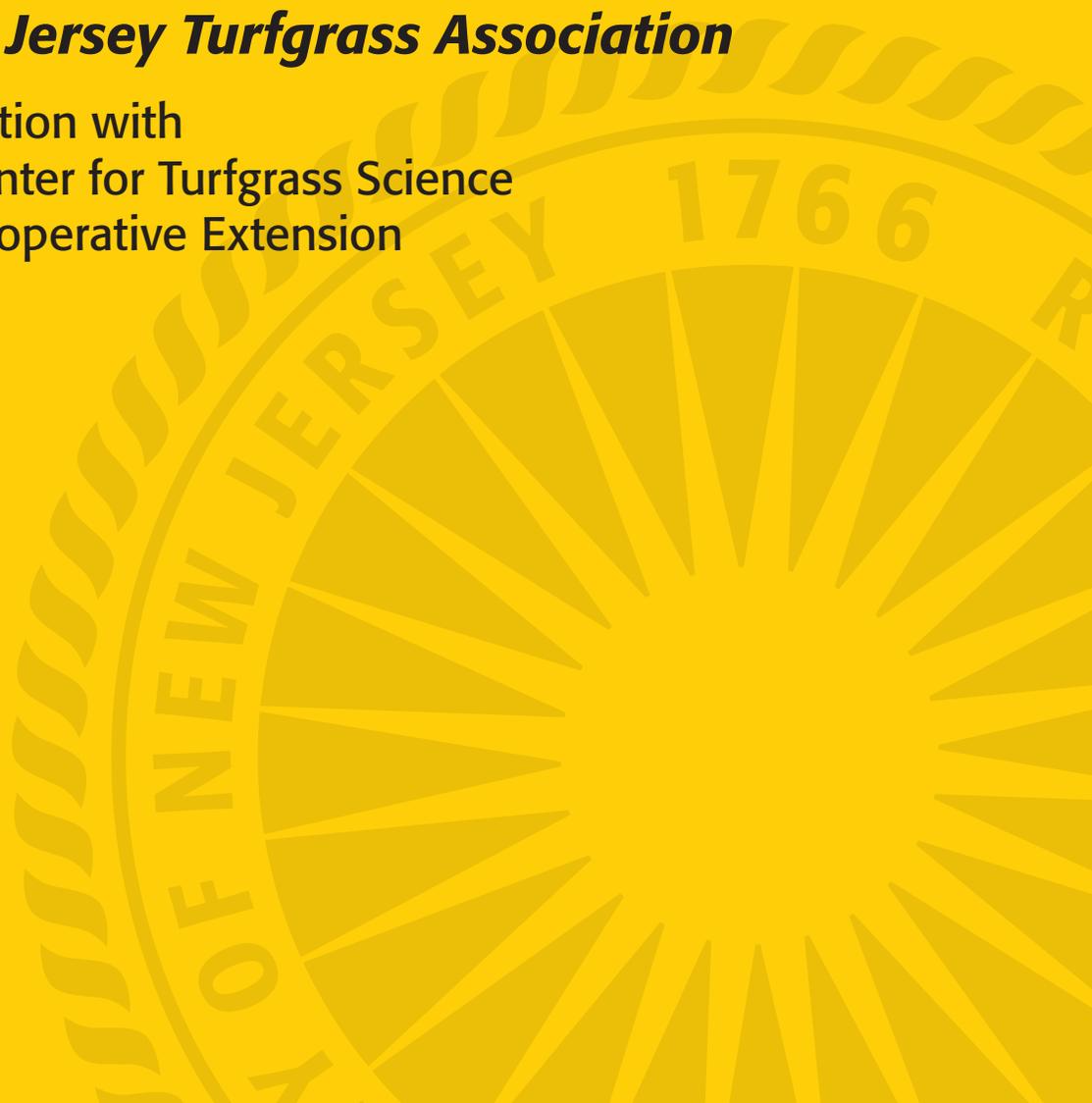
# RUTGERS

New Jersey Agricultural  
Experiment Station

## **2015 Turfgrass Proceedings**

***The New Jersey Turfgrass Association***

In Cooperation with  
Rutgers Center for Turfgrass Science  
Rutgers Cooperative Extension



# **2015 RUTGERS TURFGRASS PROCEEDINGS**

of the

## **GREEN EXPO Turf and Landscape Conference**

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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 2015 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

## EARLY SPRING APPLICATIONS OF FUNGICIDES FOR THE CONTROL OF DOLLAR SPOT ON A CREEPING BENTGRASS FAIRWAY, 2014

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Fungicides were evaluated in 2014 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* cv. Crenshaw) maintained under golf course fairway conditions. Turf was established September 2010 on a Nixon loam with a pH of 6.2. Mowing was performed 3 days per week at a height of 0.375 inches with clippings collected. The site was irrigated as needed to prevent drought stress. Fertilizer was applied as 16-0-8 (0.7 lb N per 1000 ft<sup>2</sup>) on 9 April and 26-0-5 (0.9 lb N per 1000 ft<sup>2</sup>) on 25 April. Localized dry spots were suppressed with the wetting agent TriCure 100LC (4.0 fl oz per 1000 ft<sup>2</sup>) on 28 April and 30 May. Plots were 3 x 5 ft and were arranged in a randomized complete block with four replications.

Fungicides were applied in water equivalent to 1.9 gal per 1000 ft<sup>2</sup> with a CO<sub>2</sub> powered sprayer at 30 psi using 85025 air induction nozzles. Treatments (trt) were initiated on 17 April. Additionally, several treatments were reapplied on 15 May and are listed in Tables 1A and 1B. Turf was visually evaluated for number of dollar spot infection centers per plot on 29 May and 5, 12, and 19 June. Less than 10 infection centers per plot represented an acceptable level of disease control for this study. Turf quality was rated on 15 May and 12 June using a 1 to 9 scale, where 9 = best turf quality and 5 = acceptable quality. Color of foliage was visually estimated on 15 May and 12 June using a 1 to 10 scale, where 5 = color of healthy untreated turf, less than 5 = progressively more chlorotic or necrotic turf, and greater than 5 = progressively darker green turf. Data were subjected

to analysis of variance and means were separated using the Waller-Duncan *k*-ratio *t*-test (*k* = 100).

Dollar spot was first observed on 24 May and became uniform throughout the study by 29 May (Table 1A). The disease progressed slowly, peaking at 183 lesion centers per plot on untreated turf on 19 June. This was considered a high level of dollar spot infestation and thus a stringent test of a product's ability to control this disease on a creeping bentgrass fairway. None of the early spring fungicide treatments controlled dollar spot throughout the entire study period (17 April through 19 June) (Table 1A). However, two treatments [Velista 50WG @ 0.5 oz + Secure 4.2SC @ 0.5 fl oz (trt 12) and Velista 50WG @ 0.5 oz + A20235A 4.2SC @ 0.5 fl oz (trt 14)] provided an acceptable level of dollar spot control (i.e., less than 10 infection centers per plot) through 5 June [49 days after the last treatment application (DAT)]. Seven other product or product combinations afforded good to excellent disease control through 29 May (42 DAT): Secure 4.2SC (trt 7), A20235A SC (trt 8), Velista 50WG @ 0.3 oz + A20235A SC 0.5 fl oz (trt 13), A19188 0.8ME + Secure 4.2SC (trt 16), A18126B 45WG + Secure 4.2SC (trt 18), Bayleton Flo 4.2SC (trt 21), and Curalan 50EG (trt 23). All treatments that were reapplied on 15 May [Bayleton Flo 4.2SC (trt 1), Tartan 2.4SC (trt 2), RU-2125-14X SC (trt 3), and Emerald 70WG (trt 20)] provided an acceptable level of control until 5 June (21 DAT).

All products resulted in good to excellent turf quality (6.6 to 8.5, where 5 = acceptable and 9 = best) on the 15 May evaluation, 14 days prior to the initial dollar spot outbreak; however, by 12 June only 13% of the

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products evaluated resulted in acceptable turf quality [Bayleton Flo 4.2SC (trt 1), Tartan 2.4SC (trt 2), and Velista 50WG @ 0.5 oz + A20235A 4.2SC @ 0.5 fl oz (trt 14)] (Table 1B). Turf treated with Tartan 2.4SC (trt 2) had improved turf color ratings (i.e., darker green turf) on 15 May and 12 June, and RU-2125-14X SC (trt 3) and Daconil Ultrex 82.5WG (trt 22) improved turf color only on 15 May. No phytotoxicity was observed in this study.

Table 1A. Early spring application of fungicides for the control of dollar spot on a creeping bentgrass fairway: Rutgers University, 2014.

Treatment	Rate per 1000 sq ft	Application Schedule <sup>2</sup>	Number of Lesion Centers per Plot <sup>1</sup>			
			29 May	5 June	12 June	19 June
1 Bayleton Flo 4.2SC	1.5 fl oz	4/17 <sup>3</sup> , 5/15	2.5 l-n	6.0 jk	30.5 j	33.8 l
2 Tartan 2.4SC	2.0 fl oz	4/17 <sup>3</sup> , 5/15	0.5 n	2.5 k	28.3 j	40.0 l
3 RU-2125-14X SC	2.0 fl oz	4/17 <sup>3</sup> , 5/15	1.3 mn	6.3 jk	49.0 h-j	92.5 g-i
4 Velista 50WG	0.3 oz	4/17	24.8 b-d	43.0 b-e	115.8 bc	129.8 bc
5 Velista 50WG	0.5 oz	4/17	20.5 c-e	41.5 c-e	107.5 cd	128.3 bc
6 Velista 50WG	0.7 oz	4/17	21.0 c-e	43.3 b-e	104.5c-e	118.5 c-e
7 Secure 4.2SC	0.5 fl oz	4/17	10.8 g-j	20.3 gh	71.5 f-h	90.3 g-j
8 A20235A SC	0.5 fl oz	4/17	10.0 h-k	16.0 h-j	75.5 fg	85.0 g-j
9 A20581A SC	0.47 fl oz	4/17	18.5 d-f	35.5 d-f	102.8 c-e	115.0 c-f
10 A20866A SC	0.26 fl oz	4/17	17.5 d-g	33.5 ef	83.0 e-g	94.8 f-h
11 Velista 50WG	0.3 oz	-	-	-	-	-
+ Secure 4.2SC	0.5 fl oz	4/17	12.8 f-j	29.3 fg	81.3 e-g	98.3 e-h
12 Velista 50WG	0.5 oz	-	-	-	-	-
+ Secure 4.2SC	0.5 fl oz	4/17	5.0 j-n	10.8 h-k	47.0 h-j	48.3 kl
13 Velista 50WG	0.3 oz	-	-	-	-	-
+ A20235A SC	0.5 fl oz	4/17	6.8 i-n	12.8 h-j	49.3 h-j	70.5 i-k
14 Velista 50WG	0.5 oz	-	-	-	-	-
+ A20235A 4.2SC	0.5 fl oz	4/17	3.3 k-n	9.8 i-k	41.3 ij	44.0 l
15 A19188 0.8ME	1.0 fl oz	4/17	16.3 e-h	44.0 b-d	101.3 c-e	121.0 cd
16 A19188 0.8ME	1.0 fl oz	-	-	-	-	-
+ Secure 4.2SC	0.5 fl oz	4/17	9.3 h-l	19.0 hi	80.3 e-g	102.5 d-g
17 A18126B 45WG	0.16 oz	4/17	26.0 bc	52.5 b	137.5 ab	144.8 b
18 A18126B 45WG	0.16 oz	-	-	-	-	-
+ Secure 4.2SC	0.5 fl oz	4/17	7.8 i-n	14.5 h-j	61.8 g-i	68.0 jk
19 Emerald 70WG	0.18 oz	4/17	23.0 b-e	46.8 bc	133.3 ab	133.0 bc
20 Emerald 70WG	0.18 oz	4/17 <sup>3</sup> , 5/15	3.8 j-n	7.3 jk	65.5 f-i	72.0 ij
21 Bayleton Flo 4.2SC	1.5 fl oz	4/17	8.8 i-l	15.8 h-j	88.5 d-f	97.3 e-h
22 Daconil Ultrex 82.5WG	5.0 oz	4/17	30.0 b	51.3 bc	113.3 bc	121.0 cd
23 Curalan 50EG	1.0 oz	4/17	8.3 i-m	13.8 h-j	66.3 f-h	78.8 h-j
24 Untreated Check	-	-	87.8 a	92.5 a	148.3 a	182.5 a

(Continued)

Table 1A. Spring dollar spot control on a creeping bentgrass fairway, 2014 (continued).

Treatment	Rate per 1000 sq ft	Application Schedule <sup>2</sup>	Number of Lesion Centers per Plot <sup>1</sup>			
			29 May	5 June	12 June	19 June
		INT <sup>4</sup>	DAT <sup>5</sup>	DAT	DAT	DAT
		4/17	42	49	56	63
		5/15	14	21	28	35

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

<sup>2</sup> Fungicides were applied on 17 April (all treatments) and 15 May (treatments 1, 2, 3, and 20).

<sup>3</sup> Applied when soil temperature at a 2-inch depth reached a maximum of 50 to 55°F and then repeated 28 days later.

<sup>4</sup> INT = Spray interval in days.

<sup>5</sup> DAT = Days after the last treatment.

Table 1B. Early spring application of fungicides for the control of dollar spot on a creeping bentgrass fairway: Rutgers University, 2014.

Treatment	Rate per 1000 sq ft	Application Schedule <sup>5</sup>	Turf Quality <sup>1,2,3</sup>		Color <sup>4</sup>	
			15 May	12 June	15 May	12 June
1 Bayleton Flo 4.2SC	1.5 fl oz	4/17 <sup>6</sup> , 5/15	6.7 jk	6.2 a	5.0 c	5.1 b
2 Tartan 2.4SC	2.0 fl oz	4/17 <sup>6</sup> , 5/15	8.5 a	5.8 ab	6.3 a	5.5 a
3 RU-2125-14X SC	2.0 fl oz	4/17 <sup>6</sup> , 5/15	8.3 ab	4.9 b-d	6.5 a	5.0 b
4 Velista 50WG	0.3 oz	4/17	6.8 jk	3.3 h-k	5.0 c	5.0 b
5 Velista 50WG	0.5 oz	4/17	6.8 i-k	3.6 f-j	5.1 bc	5.0 b
6 Velista 50WG	0.7 oz	4/17	6.6 k	3.6 f-j	5.0 c	5.0 b
7 Secure 4.2SC	0.5 fl oz	4/17	8.2 a-c	4.3 c-f	5.2 bc	5.0 b
8 A20235A SC	0.5 fl oz	4/17	8.0 a-e	4.1 c-h	5.1 bc	5.1 b
9 A20581A SC	0.47 fl oz	4/17	7.7 a-g	3.6 f-j	5.0 c	5.0 b
10 A20866A SC	0.26 fl oz	4/17	7.4 d-j	3.9 e-i	5.1 bc	5.0 b
11 Velista 50WG	0.3 oz	-	-	-	-	-
+ Secure 4.2SC	0.5 fl oz	4/17	7.7 b-h	4.1 d-h	5.1 bc	5.0 b
12 Velista 50WG	0.5 oz	-	-	-	-	-
+ Secure 4.2SC	0.5 fl oz	4/17	8.1 a-d	4.9 b-d	5.1 bc	5.1 b
13 Velista 50WG	0.3 oz	-	-	-	-	-
+ A20235A SC	0.5 fl oz	4/17	8.4 ab	4.8 c-e	5.0 c	5.1 b
14 Velista 50WG	0.5 oz	-	-	-	-	-
+ A20235A 4.2SC	0.5 fl oz	4/17	8.3 ab	5.0 bc	5.1 bc	5.1 b
15 A19188 0.8ME	1.0 fl oz	4/17	7.8 a-f	3.4 g-k	5.1 bc	5.0 b
16 A19188 0.8ME	1.0 fl oz	-	-	-	-	-
+ Secure 4.2SC	0.5 fl oz	4/17	8.4 ab	4.3 c-g	5.0 c	5.0 b
17 A18126B 45WG	0.16 oz	4/17	7.6 c-i	2.8 jk	5.1 bc	5.0 b
18 A18126B 45WG	0.16 oz	-	-	-	-	-
+ Secure 4.2SC	0.5 fl oz	4/17	8.5 a	4.4 c-f	5.0 c	5.3 ab
19 Emerald 70WG	0.18 oz	4/17	6.9 h-k	3.0 i-k	5.0 c	5.0 b
20 Emerald 70WG	0.18 oz	4/17 <sup>6</sup> , 5/15	7.1 f-k	4.5 c-f	5.0 c	5.0 b
21 Bayleton Flo 4.2SC	1.5 fl oz	4/17	7.3 e-k	4.2 c-h	5.0 c	5.0 b
22 Daconil Ultrex 82.5WG	5.0 oz	4/17	7.0 g-k	3.1 i-k	5.4 b	5.0 b
23 Curalan 50EG	1.0 oz	4/17	7.9 a-e	4.3 c-g	5.2 bc	5.0 b
24 Untreated Check	-	-	5.5 l	2.5 k	5.0 c	5.0 b

(Continued)

Table 1B. Spring dollar spot control on a creeping bentgrass fairway, 2014 (continued).

Treatment	Rate per 1000 sq ft	Application Schedule <sup>5</sup>	Turf Quality <sup>1,2,3</sup>		Color <sup>4</sup>	
			15 May	12 June	15 May	12 June
		INT <sup>7</sup>	DAT <sup>8</sup>	DAT	DAT	DAT
		4/17	28	56	28	56
		5/15	28	28	28	28

<sup>1</sup> 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).

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

<sup>3</sup> Phytotoxicity as a percentage of turf area per plot with visible foliar chlorosis or necrosis. No phytotoxicity was observed in this study.

<sup>4</sup> Color of foliage on a 1 to 10 scale, where 5 = color of healthy untreated turf, less than 5 = progressively more chlorotic or necrotic turf, and greater than 5 = progressively darker green turf.

<sup>5</sup> Fungicides were applied on 17 April (all treatments) and 15 May (treatments 1, 2, 3, and 20).

<sup>6</sup> Applied when soil temperature at a 2-inch depth reached a maximum of 50 to 55°F and then repeated 28 days later.

<sup>7</sup> INT = Spray interval in days.

<sup>8</sup> DAT = Days after the last treatment.