

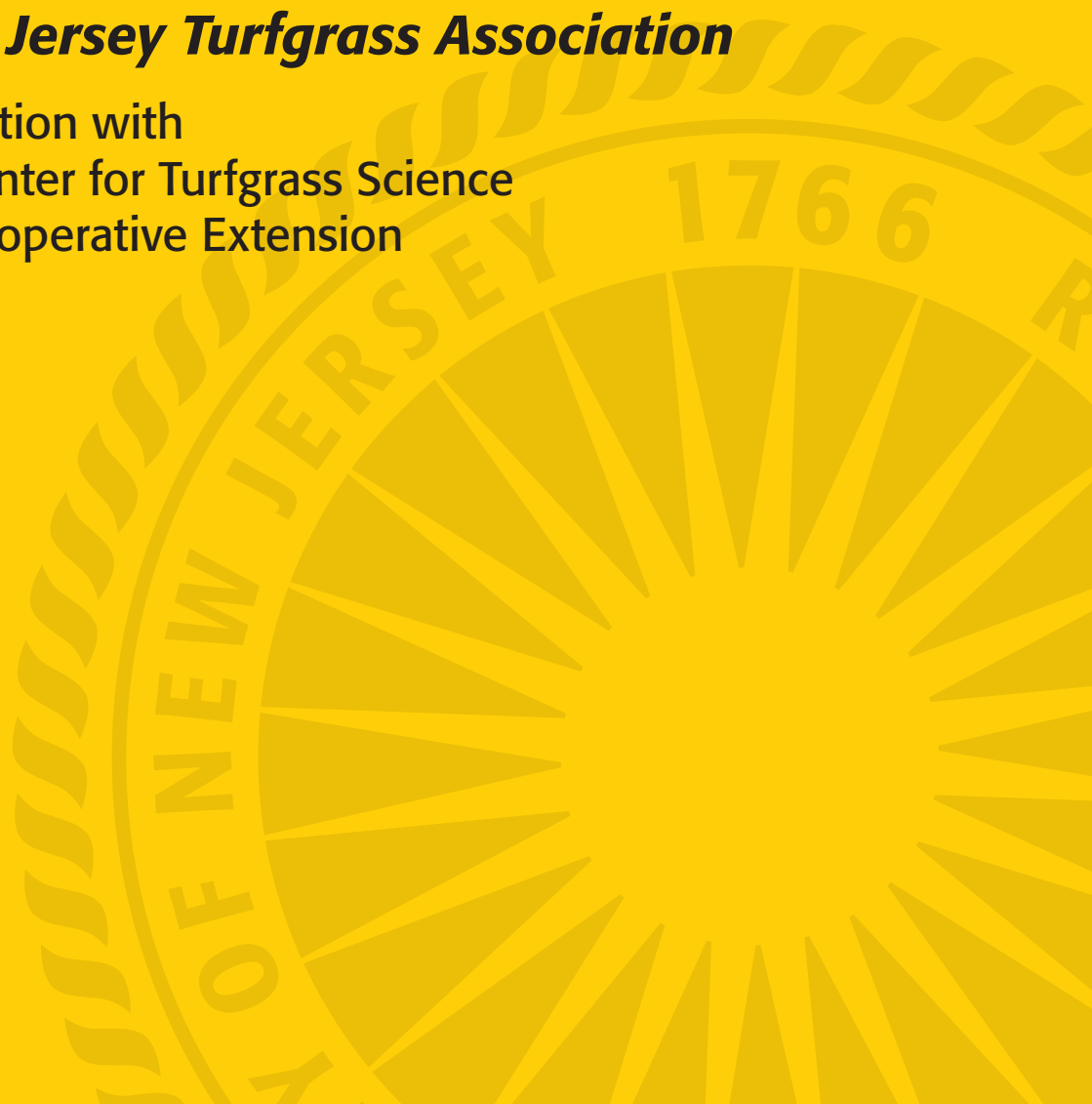
# RUTGERS

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

## EFFECT OF SELECTED FUNGICIDES FOR THE SUPPRESSION OF LEAF SPOT ON KENTUCKY BLUEGRASS, 2014

Bruce B. Clarke, Pradip R. Majumdar, Mark Peacos, Samantha Flatley, Michael Mus, Gerard Rappa, Glen Groben, Susan Butterworth, Joseph B. Clark, and Charles J. Schmid<sup>1</sup>

Fungicides were evaluated in 2014 for their ability to control leaf spot (caused by *Drechslera poae*) at the Rutgers Turf Research Farm in North Brunswick, NJ on Kentucky bluegrass (*Poa pratensis* cv. Kenblue). Turf was established 15 July 2011 with 5.5 lb seed per 1000 ft<sup>2</sup> on a Norton loam with a pH of 6.2. Mowing was performed three days per week at a height of 1.5 inches with clippings returned. The site was irrigated as needed to prevent drought stress and to encourage gray leaf spot. Fertilizer was applied as 16-0-8 (0.72 lb nitrogen per 1000 ft<sup>2</sup>) on 18 April. The pre-emergent herbicide Dimension 2EW (0.37 fl oz per 1000 ft<sup>2</sup>) was applied to turf on 14 April. Plots were 3 x 5 ft and were arranged in a randomized complete block with four replications.

Fungicides were applied in water equivalent to 1.89 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 when environmental conditions were conducive to leaf spot development. Fungicides were reapplied at specified intervals until 12 June as indicated in Tables 1A and 1B. Turf was visually evaluated for percent turf area infested with *D. poae* on 27 April, 7, 17, and 27 May, and 6, 16, and 26 June. Less than 10% turf area infested per plot represented an acceptable level of disease control. Turf quality was visually evaluated on 15 May, 13 June, and 3 July using a 1 to 9 scale, where 9 = best turf quality and 5 = acceptable quality. Data were subjected to analysis of variance and means were separated using the Waller-Duncan *k*-ratio *t*-test (*k* = 100).

Leaf spot developed on 20 April and became uniformly distributed throughout the study by 27 April. Disease severity increased quickly in the test and peaked on 6 June (76% turf area infested with *D. poae* on the untreated control). Due to the rapid development and extreme severity of the disease epidemic, only 7 of the 21 treatments, including experimental materials, provided season long control (17 April through 3 July) (Tables 1A and 1B): RU-2125-14H SC @ 3.0 fl oz every 14 days (trt 2), RU-2125-14H SC @ 4.135 fl oz every 21 days (trt 4), Lexicon 4.1SC (trt 15), A20964A WG (trt 16), Briskway 2.7SC (trt 17), Chipco 26GT 2SC (trt 18), and Heritage TL 0.8ME (trt 20). In addition, six treatments provided an acceptable level of leaf spot suppression (less than 10% turf area infested with *D. poae*) on at least five of the seven evaluation dates [RU-2125-14H SC @ 3.0 fl oz every 21 days (trt 3), RU-2125-14U SC @ 3.0 fl oz every 21 days (trt 6), Velista 50WG @ 0.5 oz (trt 8), A18126B WG (trt 10), Secure 4.2SC (trt 12), and A20235A SC (trt 13)]. RU-2125-14H SC @ 4.135 fl oz (trt 5) was applied on a curative basis on 1 May and provided an acceptable level of disease control from 17 May (16 DAT) through 26 June (28 DAT) .

Turf quality was acceptable (greater or equal to 5.0) for all products evaluated in this study, except for RU-2125-14H SC (trt 5) which had unacceptable quality on two of three rating dates (Table 1B). Reduced quality of this treatment was a result of damage associated with leaf spot (31% turf area infested with *D. poae* by 26 June). No phytotoxicity was observed during the study.

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Table 1A. Effect of selected fungicides for the suppression of leaf spot on Kentucky bluegrass: Rutgers University, 2014.

Treatment	Rate per 1000 sq ft	Application Schedule (days) <sup>2</sup>	Turf Area Infested per Plot (%) <sup>1</sup>					
			27 April	7 May	17 May	27 May	6 June	16 June
1 RU-2125-14H SC	2.135 fl oz	14	19.5 b-d	11.8 d-f	12.3 ef	10.0 f-i	14.0 d-g	6.0 hi
2 RU-2125-14H SC	3.0 fl oz	14	7.8 f-h	5.8 f-i	4.8 fg	3.8 i-k	3.5 i-k	3.8 hi
3 RU-2125-14H SC	3.0 fl oz	21	5.0 gh	3.8 hi	3.3 g	3.0 i-k	5.3 h-k	17.3 c-e
4 RU-2125-14H SC	4.135 fl oz	21	4.0 h	3.3 hi	2.8 g	1.3 k	0.3 k	3.8 hi
5 RU-2125-14H SC	4.135 fl oz	CUR-21 <sup>3</sup>	31.8 a	23.8 c	9.3 e-g	5.8 h-k	3.3 jk	3.0 hi
6 RU-2125-14U SC	3.0 fl oz	21	16.5 c-e	11.0 e-g	3.3 g	1.0 k	1.0 jk	5.3 hi
7 Velista 50WG	0.3 oz	14	15.8 c-f	15.0 de	34.8 c	22.8 de	26.0 c	22.3 bc
8 Velista 50WG	0.5 oz	14	5.5 gh	4.0 hi	9.3 e-g	12.0 f-h	8.8 g-i	4.5 hi
9 A15457B EC	0.236 fl oz	14	11.5 d-h	17.3 d	44.3 b	57.0 b	34.0 b	26.3 b
10 A18126B WG	0.164 oz	14	14.8 d-f	10.5 e-g	6.8 e-g	8.8 f-j	6.3 h-j	8.8 f-h
11 A19188A ME	1.0 fl oz	14	7.5 f-h	8.5 f-h	13.8 de	15.5 ef	16.5 de	13.8 d-f
12 Secure 4.2SC	0.5 fl oz	14	9.8 e-h	8.5 f-h	9.8 e-g	14.8 fg	12.3 e-g	2.0 i
13 A20235A SC	0.5 fl oz	14	6.0 gh	6.0 f-i	9.3 e-g	12.5 f-h	14.3 d-f	3.8 hi
14 Xzemplar 2.5SC	0.262 fl oz	14	24.0 a-c	34.0 b	22.0 d	23.8 d	37.0 b	19.5 cd
15 Lexicon 4.1SC	0.34 fl oz	14	7.3 f-h	5.3 g-i	5.0 fg	2.5 jk	2.5 jk	4.0 hi
16 A20964A WG	0.2 oz	14	4.3 h	3.8 hi	2.5 g	3.5 i-k	2.5 jk	6.3 g-i
17 Briskway 2.7SC	0.5 fl oz	14	8.3 e-h	5.0 g-i	7.3 e-g	7.5 g-k	4.0 i-k	1.8 i
18 Chipco 26GT 2SC	4.0 fl oz	14	10.0 e-h	5.0 g-i	5.0 fg	4.5 i-k	2.3 jk	3.0 hi
19 Headway 1.39EC	3.0 fl oz	14	13.3 d-g	8.3 f-h	10.3 e-g	13.0 f-h	10.0 f-h	2.8 hi
20 Heritage TL 0.8ME	1.0 fl oz	14	3.5 h	1.0 i	3.3 g	6.8 h-k	4.0 i-k	9.0 f-h
21 Headway 0.011G	2.25 lb	14 <sup>4</sup>	26.3 ab	33.0 b	35.5 c	35.0 c	18.3 d	12.8 e-g
22 Untreated Check	—	—	32.5 a	47.0 a	60.5 a	68.8 a	75.5 a	74.3 a

INT <sup>5</sup>	DAT <sup>6</sup>	DAT	DAT	DAT	DAT
14	10	6	2	12	4
21	10	16	9	19	18

(Continued)

Table 1A. Suppression of leaf spot on Kentucky bluegrass, 2014 (continued).

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- <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; except treatment 5), 1 May (14-day treatment; initiated treatment 5), 8 May (21-day treatment), 15 May (14-day treatment), 22 May (treatment 5 only), 29 May (14- and 21-day treatments), and 12 June (14-day treatment and treatment 5).
- <sup>3</sup> Treatment 5 was applied on a curative basis on 1 May when any replication exceeded 10% turf area infected and repeated every 21 days thereafter.
- <sup>4</sup> Treatment 21 was immediately irrigated with 0.5 gal of H<sub>2</sub>O per plot after application.
- <sup>5</sup> INT = Spray interval in days.
- <sup>6</sup> DAT = Days after the last treatment.

Table 1B. Effect of selected fungicides for the suppression of leaf spot on Kentucky bluegrass: Rutgers University, 2014.

Treatment	Rate per 1000 sq ft	Application Schedule <sup>3</sup>	Turf Area Infested ----per Plot (%) <sup>1</sup> ----		Turf Quality <sup>2</sup>		
			26 June	15 May	13 June	3 July	
1 RU-2125-14H SC.....	2.135 fl oz	14	23.0 c	6.8 a-d	8.1 a-e	6.9 ef	
2 RU-2125-14H SC.....	3.0 fl oz	14	5.0 e-h	7.5 a-c	8.3 a-d	6.9 ef	
3 RU-2125-14H SC.....	3.0 fl oz	21	4.8 e-h	7.0 a-c	7.3 d-g	7.1 d-f	
4 RU-2125-14H SC.....	4.135 fl oz	21	6.0 e-g	7.7 a	8.3 a-d	6.7 f	
5 RU-2125-14H SC.....	4.135 fl oz	CUR-21 <sup>4</sup>	2.5 f-h	6.6 cd	8.5 ab	8.1 a-d	
6 RU-2125-14U SC.....	3.0 fl oz	21	4.8 e-h	7.7 ab	8.7 a	7.4 b-f	
7 Velista 50WG.....	0.3 oz	14	9.0 e	5.2 ef	6.9 fg	8.2 a-c	
8 Velista 50WG.....	0.5 oz	14	2.3 f-h	6.0 de	7.2 e-g	8.4 a	
9 A15457B EC.....	0.236 fl oz	14	31.3 b	4.5 fg	4.8 h	7.3 c-f	
10 A18126B WG.....	0.164 oz	14	3.8 e-h	7.0 a-c	8.4 a-c	8.4 a	
11 A19188A ME.....	1.0 fl oz	14	15.3 d	6.0 de	7.0 fg	7.8 a-e	
12 Secure 4.2SC.....	0.5 fl oz	14	3.5 f-h	6.7 b-d	7.6 b-f	8.2 a-c	
13 A20235A SC.....	0.5 fl oz	14	3.3 f-h	6.6 cd	7.8 a-f	8.5 a	
14 Xzemplar 2.5SC.....	0.262 fl oz	14	25.3 c	5.1 ef	6.4 g	7.7 a-e	
15 Lexicon 4.1SC.....	0.34 fl oz	14	3.8 e-h	7.3 a-c	8.2 a-d	7.6 a-f	
16 A20964A WG.....	0.2 oz	14	5.0 e-h	7.5 a-c	7.5 c-f	8.4 a	
17 Briskway 2.7SC.....	0.5 fl oz	14	3.5 f-h	7.0 a-c	8.6 a	7.8 a-e	
18 Chipco 26GT 2SC.....	4.0 fl oz	14	0.5 h	6.9 a-d	8.1 a-e	8.1 a-d	
19 Headway 1.39EC.....	3.0 fl oz	14	1.3 gh	6.0 de	8.6 a	8.4 ab	
20 Heritage TL 0.8ME.....	1.0 fl oz	14	6.0 e-g	7.1 a-c	8.1 a-e	7.7 a-e	
21 Headway 0.011G.....	2.25 lb	14 <sup>5</sup>	6.8 ef	5.1 ef	7.2 e-g	8.0 a-d	
22 Untreated Check.....	—	—	67.8 a	4.0 g	4.5 h	4.8 g	
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		INT <sup>6</sup>	DAT <sup>7</sup>	DAT	DAT	DAT	
		14	14	14	1	21	
		21	28	7	15	35	

(Continued)

Table 1B. Suppression of leaf spot on Kentucky bluegrass, 2014 (continued).

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- <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> Fungicides were applied on 17 April (all treatments; except treatment 5), 1 May (14-day treatment; initiated treatment 5), 8 May (21-day treatment), 15 May (14-day treatment), 22 May (treatment 5 only), 29 May (14- and 21-day treatments), and 12 June (14-day treatment and treatment 5).
  - <sup>4</sup> Treatment 5 was applied on a curative basis on 1 May when any replication exceeded 10% turf area infected and repeated every 21 days thereafter.
  - <sup>5</sup> Treatment 21 was immediately irrigated with 0.5 gal of H<sub>2</sub>O per plot after application.
  - <sup>6</sup> INT = Spray interval in days.
  - <sup>7</sup> DAT = Days after the last treatment.