

1999 RUTGERS Turfgrass Proceedings



THE NEW JERSEY TURFGRASS ASSOCIATION

In Cooperation With

RUTGERS COOPERATIVE EXTENSION
NEW JERSEY AGRICULTURAL EXPERIMENT STATION
RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY
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1999 RUTGERS TURFGRASS PROCEEDINGS

of the

**New Jersey Turfgrass Expo
December 7-9, 1999
Trump Taj Mahal
Atlantic City, New Jersey**

**Volume 31
Published July, 2000**

The Rutgers Turfgrass Proceedings is published yearly by the Rutgers Center for Turfgrass Science, Rutgers Cooperative Extension, and the New Jersey Agricultural Experiment Station, Cook College, Rutgers University 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. Articles appearing in these proceedings are divided into two sections.

The first section includes lecture notes of papers presented at the 1999 New Jersey Turfgrass Expo. Publication of the New Jersey Turfgrass Expo Notes provides a readily available

source of information covering a wide range of topics. The Expo Notes include technical and popular presentations of importance to the turfgrass industry.

The second section includes research papers containing original research findings and reviews covering selected subjects in turfgrass science. The primary objective of this section is to facilitate the timely dissemination of original turfgrass research for use by the turfgrass industry.

Special thanks are given to those who have submitted papers for this proceedings, to the New Jersey Turfgrass Association for financial assistance, and to those individuals who have provided support to the Rutgers Turf Research Program at Cook College - Rutgers, The State University of New Jersey.

Dr. Ann B. Gould, Editor
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EFFICACY OF FUNGICIDES FOR THE CONTROL OF GRAY LEAF SPOT ON PERENNIAL RYEGRASS

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Fungicides were evaluated in 1999 for their ability to control gray leaf spot caused by *Pyricularia grisea* on perennial ryegrass (*Lolium perenne* 'Palmer II') at the Rutgers Turf Research Farm in North Brunswick, New Jersey. Turf was established 31 July 1998 on a Norton loam with a pH of 6.4. Turf was mowed two times weekly at a height of 2.0 inches and clippings were not collected. The site was irrigated to prevent drought stress.

Fertilizer was applied as 46-0-0 on 25 June (1.0 lb N/1000 ft²), 26 July (0.50 lb N/1000 ft²), 25 August (1.0 lb N/1000 ft²), and 24 September (0.5 lb N/1000 ft²). ProStar 70W was applied to the entire test on 23 June (2.0 oz/1000 ft²), 27 July (2.0 oz /1000 ft²), and 23 August (2.2 oz/1000 ft²) to prevent brown patch. Plots were 3 ft x 7 ft and were arranged in a randomized complete block with four replications.

Fungicides were applied in water equivalent to 2 gal/1000 ft² with a CO₂ powered sprayer at 30 psi using TeeJet 8003E nozzles. Treatments (trt) were initiated on 18 August. Fungicides were reapplied at the appropriate intervals as indicated in the Table 1. Turf was inoculated with infected clippings (7 g/ft²) on 27 August and 3 September and was sprayed with a conidial suspension of *P. grisea* (11 ml/plot at approx. 55,000 conidia/ml) on 20 August. Percent turf area exhibiting foliar symptoms of gray leaf spot was assessed on 18 September. Turf quality was evaluated on 1 October using a 1 to 9 scale, where 9 = the best turf quality. Data were subjected to analy-

sis of variance and means separation by Waller-Duncan *k*-ratio *t*-test (*k* =100).

Gray leaf spot was first observed on 7 September. Disease pressure was low to moderate in September and disease activity peaked on 18 September. Compass 50WG (trt 1 to 3), Compass 0.7MC (trt 4), Cleary 3336 4F (trt 5), Cleary 3336 50W (trt 6), Cleary 3336 50W + Compass 50WG (trt 7, 8), Cleary 3336 50W + Protect T/O 80W (trt 9), Daconil Ultrex 82.5SDG (trt 10 to 12), Lynx 45W + Daconil Ultrex 82.5SDG (trt 15, 16), Bayleton 50W (trt 17), Bayleton 50W + Daconil Ultrex 82.5SDG (trt 18, 19), the 0.5 fl oz rate of Banner Maxx 1.3MC (trt 20), Banner Maxx 1.3MC + Daconil Ultrex 82.5SDG (trt 22), Heritage 50WG (trt 23, 24), Spectro 90WDG (trt 25), the 6.0 and 8.0 oz rates of Junction 61.1WDG (trt 32, 33), Junction 61.1WDG + Banner Maxx 1.3MC (trt 34, 35), and Pentathlon 37F (trt 36, 37) provided good to excellent gray leaf spot control throughout the study.

Lynx 45W (trt 13, 14), Banner Maxx 1.3MC (trt 21), the 0.30 oz rate of TADS 12529 70WG (trt 30), and the 4.0 oz rate of Junction 61.1WDG (trt 31) did not provide acceptable control of the target disease. WAC 79/Spectro 90WDG (trt 26), Chipco Triton 1.67S (trt 27, 28), and the 0.15 oz rate of TADS 12529 70WG (trt 29) actually enhanced the severity of gray leaf spot in this study. Turf quality was closely associated with the incidence of gray leaf spot (7 September to 1 October). No phytotoxicity was observed.

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Table 1. Impact of fungicides on the severity of gray leaf spot on perennial ryegrass turf in North Brunswick, NJ: 1999.

Treatment and rate/1000 sq ft	Spray interval ¹ (days)	Turf area infected (%) per plot ² 18 Sept.	Turf quality ³ 1 Oct.
1. Compass 50WG 0.2 oz	Once	8.2 a-d	6.9 c-f
2. Compass 50WG 0.2 oz	14 ⁴	2.8 ab	7.2 d-f
3. Compass 50WG 0.2 oz	14 ⁵	2.8 ab	7.5 d-f
4. Compass 0.7MC 1.14 fl oz	14 ⁴	4.0 a-c	7.0 c-f
5. Cleary 3336 4F 4.0 fl oz	14	3.2 a-c	7.2 d-f
6. Cleary 3336 50W 4.0 oz	14	2.2 ab	7.6 ef
7. Cleary 3336 50W 4.0 oz + Compass 50WG 0.1 oz	14	3.0 ab	7.4 d-f
8. Cleary 3336 50W 4.0 oz + Compass 50WG 0.2 oz	14	2.0 ab	7.7 f
9. Cleary 3336 50W 4.0 oz + Protect T/O 80W 4.0 oz	14	1.8 a	7.9 f
10. Daconil Ultrex 82.5SDG 1.9 oz	14	1.8 a	7.7 f
11. Daconil Ultrex 82.5SDG 3.8 oz	5	2.2 ab	7.6 ef
12. Daconil Ultrex 82.5SDG 3.8 oz	14	2.5 ab	7.3 d-f
13. Lynx 45W 0.56 oz	14	16.2 d-g	5.7 bc
14. Lynx 45W 1.1 oz	21	19.8 fg	5.5 b
15. Lynx 45W 0.56 oz + Daconil Ultrex 82.5SDG 1.9 oz	14	1.5 a	7.5 d-f
16. Lynx 45W 0.56 oz + Daconil Ultrex 82.5SDG 3.8 oz	14	1.5 a	7.5 d-f
17. Bayleton 50W 1.0 oz	14	3.8 a-c	7.5 d-f
18. Bayleton 50W 0.5 oz + Daconil Ultrex 82.5SDG 3.8 oz	14	3.8 a-c	7.1 d-f
19. Bayleton 50W 1.0 oz + Daconil Ultrex 82.5SDG 3.8 oz	14	1.5 a	7.4 d-f
20. Banner Maxx 1.3MC 0.5 fl oz	7	9.2 a-e	6.9 c-f
21. Banner Maxx 1.3MC 1.0 fl oz	14	12.0 c-f	6.5 c-e
22. Banner Maxx 1.3MC 1.0 fl oz + Daconil Ultrex 82.5SDG 3.8 oz	14	4.5 a-c	6.8 c-f
23. Heritage 50WG 0.2 oz	14 ⁴	2.2 ab	7.7 f
24. Heritage 50WG 0.4 oz	Once	4.5 a-c	6.9 c-f
25. Spectro 90WDG 4.0 oz	14	2.0 ab	7.6 ef
26. WAC 79 10.0 fl oz / Spectro 90WDG 4.0 oz	14 ⁶	31.2 h	5.0 ab
27. Chipco Triton 1.67S 0.5 fl oz	14	39.0 i	5.0 ab
28. Chipco Triton 1.67S 1.0 fl oz	14	39.2 i	5.2 ab
29. TADS 12529 70WG 0.15 oz	14	37.0 hi	4.5 a

(continued)

Table 1 (continued).

Treatment and rate/1000 sq ft	Spray interval ¹ (days)	Turf area infected (%) per plot ² 18 Sept.	Turf quality ³ 1 Oct.
30. TADS 12529 70WG 0.30 oz.....	14	20.8 g	5.8 bc
31. Junction 61.1WDG 4.0 oz	7	11.0 b-e	6.5 c-e
32. Junction 61.1WDG 6.0 oz	7	9.2 a-e	6.4 cd
33. Junction 61.1WDG 8.0 oz	7	6.0 a-c	6.8 c-f
34. Junction 61.1WDG 4.0 oz + Banner Maxx 1.3MC 0.5 fl oz.....	7	8.0 a-d	6.9 c-f
35. Junction 61.1WDG 6.0 oz + Banner Maxx 1.3MC 0.5 fl oz.....	7	6.5 a-c	7.0 c-f
36. Pentathlon 37F 9.6 fl oz	7	0.8 a	7.8 f
37. Pentathlon 37F 12.8 fl oz	7	1.5 a	7.8 f
38. Untreated Check	—	19.0 fg	5.7 bc
	INT ⁷	DAT ⁸	DAT
	5	3	2
	7	3	2
	14	3	2
	21	10	2
	Once	31	44

¹ Fungicides were applied on 18 August (all treatments), 23 August (5 day treatment), 25 August (7 day treatment), 27 August (5 day treatment), 1 September (5, 7, and 14 day treatments), 8 September (7 and 21 day treatments), 10 September (5 day treatment), 15 September (5, 7, and 14 day treatments), 20 September (5 day treatment), 22 September (7 day treatment), 24 September (5 day treatment), 29 September (5, 7, 14, and 21 day treatments), and 4 October (5 day treatment).

² 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).

³ Turf quality on a scale of 1 to 9, where 9 = best turf quality. Values above 6.0 represent acceptable turf quality.

⁴ Treatments 2, 4 and 23 were applied on 18 August and 1 September only.

⁵ Treatment 3 was applied on 18 August, 1 September, and 15 September only.

⁶ For treatment 26, WAC 79 was applied on a preventive basis on 18 August, 1 September, and 15 September, whereas Spectro 90WDG was applied on 22 September and 29 September after symptoms developed on the untreated check.

⁷ Spray interval in days.

⁸ Days after treatment (DAT) for each spray interval.