

Title: Evaluation of Fungicides for Control of Dollar Spot on Creeping Bentgrass Fairways
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Objective: The objective of this research was to assess the effectiveness of various fungicides against dollar spot on creeping bentgrass fairways.

Rationale: Dollar spot is the most important disease of golf turf in the northeastern quadrant of the U.S. An outbreak ruins aesthetic turf quality and can adversely affect playability. More fungicides are applied to limit dollar spot damage than any other disease of fine turf. Because superintendents rely on fungicides for dollar spot control, they require accurate and objective assessments of fungicide performance. These fungicide trials provide a basis for comparison of the efficacy of selected products.

How it was done: The research was conducted at the Purdue University Daniel Turfgrass Research and Diagnostic Center in West Lafayette, IN. The plots were located on a sward (identified as 9.3) of L93 creeping bentgrass maintained at a height of 0.5 in. Fertilization, irrigation and aerification operations were done according to standard practices for creeping bentgrass at fairway height. During spring and summer 2005, fertilizer (18-4-10) was applied at a rate of approximately 0.75 lb N per 1000 sq ft on 19 May and 1.0 lb N per 1000 sq ft on 21 September. The site was treated with Subdue MAXX (1.0 fl oz per 1000 sq ft) on 23 June to protect against Pythium blight. Individual treatment plots measured 3.3 ft by 6.6 ft (1m x 2m) and were randomized within each of the 4 replications. Plots were left to natural inoculation. Fungicide applications were made using a custom-built boom sprayer. Three nozzles (Tee-Jet 8004 EVS, flat fan) were mounted approximately 12 in. apart on the boom located 12 in. from the ground. The sprayer was calibrated to deliver 2 gal per 1000 sq ft at 40 psi. All treatments were initiated on 8 June. Treatments applied at 14 day intervals were sprayed on May 25, June 8, June 22, July 6, and July 20. Treatments applied at 21 day intervals were sprayed on May 25, June 15, July 06, and July 27. Treatments applied at 28 day intervals were sprayed on May 25, June 22, and July 20.

Results to date: Visual evaluations of disease severity were recorded at approximately 7 day intervals. Data were subjected to analysis of variance and mean separation procedures. Disease severity (percentage of plot with disease symptoms) results are presented in Table 9.3.1. Turf quality was assessed 4 times using a 0-9 scale where a score of 9 represented excellent turf quality. Any score below 6.0 indicated unacceptable levels of turf quality. Turf quality evaluations are presented in Tables 9.3.2.

The prevailing weather during June, July and August of 2005 was only marginally favorable for dollar spot development. Extraordinarily warm and dry weather prevailed from mid-May through mid-June. The remainder of the summer was marked by high temperatures and long dew periods, with only moderate amounts of precipitation. Unlike 2004, the growing season of 2005 was very favorable for outbreaks of Pythium blight and brown patch, although no such outbreaks occurred at this experimental site.

Disease symptoms increased slowly through mid-July. Final fungicide sprays were applied on July 20 or July 27, depending on the application interval. Evaluations were continued through mid-August to illustrate the dissipation of efficacy. Turf quality evaluations followed the same general trends. There was no phytotoxicity observed in any of the plots.

Table 9.3.1. Dollar spot severity in creeping bentgrass plots treated with various fungicides and application intervals during the summer of 2005.

Treatment	Spray interval	Disease severity (% of plots with symptoms)															
		27-Jun		5-Jul		10-Jul		17-Jul		25-Jul		1-Aug		8-Aug		15-Aug	
No fungicide		0.67	b	1.95	ab	3.06	a	15.31	a	10.45	a	4.30	a	7.40	a	15.21	a
Headway 1.39EC, 1.5 fl oz	21	0.19	c	0.00	c	0.19	b	0.28	b	0.32	b	0.36	d	0.28	c	0.75	e
Headway 1.39EC, 3.0 fl oz	28	0.00	c	0.00	c	0.19	b	0.41	b	0.41	b	0.19	d	0.32	c	0.66	e
Heritage TL, 1.0 fl oz+ Ban Mx, 1.0 fl oz	21	0.00	c	0.19	c	0.19	b	0.32	b	0.58	b	0.36	d	0.28	c	1.01	e
Heritage TL, 2.0 fl oz + Ban Mx, 2.0 fl oz	28	0.00	c	0.00	c	0.00	b	0.58	b	0.32	b	0.19	d	0.32	c	0.41	e
Banner Maxx, 1.0 fl oz	21	0.19	c	0.00	c	0.28	b	0.32	b	0.67	b	0.36	d	0.41	c	0.75	e
Banner Maxx, 2.0 fl oz	28	0.24	c	0.24	c	0.28	b	2.48	b	0.58	b	0.19	d	0.32	c	2.12	de
A14472, 0.5 fl oz	21	0.24	c	0.00	c	0.19	b	0.32	b	0.93	b	0.58	d	0.41	c	0.84	e
A14472, 1.0 fl oz	28	0.24	c	0.00	c	0.00	b	0.28	b	0.32	b	0.24	d	0.41	c	1.10	e
Concert 4.3SE, 4.2 fl oz	21	0.36	bc	0.28	bc	0.50	b	2.83	b	2.44	b	1.55	c	5.85	a	6.60	bcd
Mana-PPZ-143, 0.5 fl oz	14	0.19	c	0.00	c	0.24	b	0.32	b	0.32	b	0.32	d	0.66	bc	3.94	cde
Banner Maxx, 0.5 fl oz	14	0.24	c	0.00	c	0.24	b	0.32	b	0.58	b	0.54	d	2.04	bc	2.66	de
Mana-PPZ-143, 1.0 fl oz	14	0.00	c	0.00	c	0.00	b	0.24	b	0.32	b	0.19	d	0.41	c	1.01	e
Banner Maxx, 1.0 fl oz	14	0.00	c	0.00	c	0.00	b	0.24	b	0.32	b	0.19	d	0.32	c	0.58	e
Mana-PPZ-143, 0.5 fl oz	28	0.00	c	0.00	c	0.24	b	0.67	b	0.32	b	0.32	d	2.08	bc	8.70	bc
Banner Maxx, 0.5 fl oz	28	0.28	c	0.00	c	0.19	b	3.86	b	1.95	b	0.28	d	1.19	bc	1.55	de
Mana-PPZ-143, 1.0 fl oz	28	0.00	c	0.00	c	0.00	b	0.75	b	0.58	b	0.24	d	1.03	bc	1.55	de
Banner Maxx, 1.0 fl oz	28	0.24	c	0.28	bc	0.32	b	1.19	b	0.67	b	0.24	d	1.11	bc	3.85	cde
Emerald 70 WG(0.13 oz) water pH 5	21	0.00	c	0.00	c	0.24	b	0.41	b	0.93	b	0.41	d	0.32	c	0.32	e
Emerald 70 WG(0.13 oz) water pH 7	21	0.19	c	0.00	c	0.19	b	0.41	b	1.19	b	0.41	d	0.32	c	0.32	e
Emerald 70 WG(0.13 oz) water pH9	21	0.19	c	0.00	c	0.24	b	0.41	b	0.93	b	0.24	d	0.32	c	0.32	e
Emerald 70WG, 0.18 oz	21	0.19	c	0.00	c	0.19	b	0.24	b	0.41	b	0.28	d	0.19	c	0.19	e
Emerald 70WG, 0.18 oz	28	0.00	c	0.00	c	0.19	b	0.41	b	0.41	b	0.36	d	1.78	bc	1.72	de
Insignia 20WG, 0.9 oz	14	0.00	c	0.00	c	0.00	b	0.28	b	0.32	b	0.58	d	3.02	b	9.81	b
Insignia (0.9 oz)+ PX056 (.125%)	14	0.00	c	0.00	c	0.00	b	0.28	b	0.41	b	0.24	d	1.10	bc	1.91	de
Emerald 70WG, 0.13 oz	21	0.00	c	0.00	c	0.24	b	0.28	b	0.32	b	0.32	d	0.32	c	0.32	e
Emerald 70WG (0.13 oz) + PX056(.125%)	21	0.19	c	0.00	c	0.19	b	0.24	b	0.32	b	0.24	d	0.24	c	0.32	e
Tartan SC, 1 fl oz	21	0.32	c	0.81	bc	0.32	b	0.24	b	0.93	b	0.32	d	0.67	bc	1.37	de
Tartan SC, 2 fl oz	21	0.00	c	0.00	c	0.00	b	0.19	b	0.32	b	0.19	d	0.24	c	0.41	e
LSD		0.339		1.679		0.843		6.688		2.831		0.748		2.442		5.281	

Within columns, values followed by the same letter are not significantly different according to Fischer's unprotected LSD (P=0.05).