

Evaluation of Fungicides for Control of Dollar Spot on Creeping Bentgrass

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Objective

The objective of this research was to evaluate various fungicides and application programs for control of dollar spot on creeping bentgrass.

Rationale

Dollar spot of creeping bentgrass is a common disease of golf turf throughout the midwestern United States. Although the etiology and epidemiology of the disease are well understood, and numerous chemical control products are available, managing dollar spot remains one of the most important pest related challenges facing golf course superintendents. In almost all cases, satisfactory control of dollar spot is achieved only through a fungicide-intensive management effort. Because outbreaks occur annually from May through October, fairways, tees and greens must be protected throughout the entire season. As a result, more golf course fungicide applications are targeted towards dollar spot than any other disease. This research is part of an ongoing project to evaluate commercial products and application programs so that our advisories remain the most accurate and objective sources of information regarding turfgrass disease management.

How It Was Done

The research was conducted at the Purdue University William H. Daniel Turfgrass Research and Diagnostic Center in West Lafayette, IN. The experimental site was a stand of Pennlinks creeping bentgrass maintained at a height of 0.25 in. Fertilization, irrigation, aerification, and topdressing were done according to standard practices for creeping bentgrass at putting green height. During the course of the experiment, nitrogen fertilizer (18-4-10) was applied at a rate of 0.4 lb N/1000 ft² on 18 May, 20 June, and 18 July. The stand was core-aerified and topdressed on 5 May and 5 June. Topdressing only was applied on 8 July and 2 Aug. Individual treatment plots measured 3.3 ft by 6.6 ft and were randomized within each of four replications. Disease was allowed to develop from natural inoculum. Fungicide applications were made using a custom-built bicycle wheel boom sprayer. Three nozzles (Tee-Jet 8004 EVS, flat fan) were mounted approximately 12 in. apart on a boom positioned 12 in. from the ground. The sprayer was calibrated to deliver 2 gal/1000 ft² at 40 psi. Treatments with 14-day spray intervals were applied 24 May, 7 June, 21 June, 5 July, and 19 July. The treatments with 21-day spray intervals were applied 24 May, 14 June, 5 July, and 26 July. Treatments with 28-day application intervals were sprayed on 24 May, 21 June, and 19 July. The plots were evaluated for dollar spot visually at 4-7 day intervals from 3 May to 14 Aug by counting the number of infection centers per plot.

Results

Weather conditions throughout the spring and summer favored dollar spot activity, except in the latter part of July. Weather during late July was generally cool and dry and favored turf growth and recovery over dollar spot development. Initial dollar spot symptoms were observed in the untreated plots on 12 June. All of the 14-day treatments provided good control through 1 Aug with the exception of the mancozeb treatments (Fore 80WSP and Fore Rainshield 80WSP). Several of the 14-day treatments no longer suppressed disease by 11 Aug but BAS50503F 50WG (0.4 oz), Eagle 40WSP (0.5 oz), Manhandle (RH-0611 62.2W) (8.0 oz) and the Eagle 40WSP/Daconil Ultrex 82.5WDG prepack (3.5 oz) maintained excellent control through 14 Aug. Excellent control was achieved by all of the 21-day treatments throughout the course of the experiment. Several of the 28-day treatments provided excellent control throughout the trial. Turf quality was evaluated visually using a 0-9 scale (less than 5 is unacceptable) on 31 July. Mancozeb fungicides (Fore 80WSP and Fore Rainshield 80WSP) did not result in acceptable quality turf, although they resulted in significantly less dollar spot than the untreated control plots at all evaluation dates. No phytotoxicity was associated with any of the treatments.

Table 1. Dollar spot and turf quality of creeping bentgrass treated with various fungicides.

Fungicide, rate/1000 ft ² , and application interval	Dollar spot infection centers/plot						Turf quality ^b
	12 June	26 June	6 July	20 July	1 Aug	14 Aug	
No fungicide	1.5 a ^a	80.0 a	150.3 a	124.5 a	283.8 a	256.3 a	1.8 g
Banner MAXX 1.24ME 1.0 fl oz 21 day	0.0 b	0.0 d	2.0 d	0.0 d	0.0 c	0.0 e	7.5 a-d
Chipco Triton 1.67SC 0.5 fl oz 21 day	0.0 b	4.5 d	2.5 d	2.0 d	0.0 c	1.0 e	7.8 abc
Chipco Triton 1.67SC 1.0 fl oz 21 da.	0.0 b	0.3 d	2.3 d	0.5 d	0.0 c	0.3 e	8.0 ab
Chipco Triton 1.67SC 0.5 fl oz 28 day	0.0 b	0.3 b	2.3 b	0.5 bc	0.0 c	58.3 c	6.3 e
Chipco Triton 1.67SC 1.0 fl oz 28 day	0.0 b	7.0 d	2.8 d	10.0 d	0.0 c	1.3 e	7.5 a-d
TADS 12529 70WG 0.15 oz 28 day	0.0 b	36.3 bc	40.5 b	41.0 c	1.5 c	33.8 cde	6.8 de
TADS 12529 70WG 0.3 oz 28 day	0.0 b	6.5 d	3.3 d	8.3 d	0.0 c	4.0 de	7.5 a-d
Chipco 26GT 2.0SC 4.0 fl oz 14 day	0.0 b	0.0 d	0.5 d	0.3 d	0.0 c	45.3 c	8.0 ab
BAS50503F 50WG 0.4 oz 14 day	0.0 b	0.3 d	0.3 d	0.0 d	0.0 c	0.0 e	8.1 a
BAS50503F 50WG 0.4 oz 28 day	0.0 b	0.5 d	0.0 d	0.0 d	0.0 c	0.0 e	8.0 ab
Eagle 40WSP 0.5 oz 14 day	0.0 b	0.3d	0.0 d	0.8 d	0.0 c	0.0 e	7.5 a-d
Eagle 40WSP 1.0 oz 14 day	0.0 b	53.3 b	7.0 cd	7.3 d	0.0 c	0.3 e	7.3 bcd
Fore Rainshield 80WSP 8.0 oz 14 day	0.0 b	7.3 d	38.0 b	55.8 bc	76.8 b	135.0 b	4.3 f
Fore 80WSP 8.0 oz 14 day	0.0 b	14.8 cd	29.8 bc	61.5 b	90.8 b	154.3 b	4.0 f
RH-611 62.2W 8.0 oz 14 day	0.0 b	0.0 d	1.8 d	0.0 d	0.0 c	0.8 e	7.3 bcd
Eagle 40WSP 0.5 oz/Daconil Ultrex 82.5WDG 3.2 oz (prepack), 14 day	0.0 b	0.0 d	0.0 d	0.3 d	0.0 c	0.0 e	7.8 abc
Daconil Ultrex 82.5WDG 3.2 oz 14 day	0.0 b	2.0 d	11.8 cd	10.5 d	0.8 c	47.5 c	7.8 abc

^a Values within columns followed by the same letter are not significantly different according to Fisher's LSD (P=0.05).

^b Turf quality ratings are based on a 0-9 scale where 9 is excellent. Values less than 5.0 represent plots with unacceptable turf quality.