

Evaluation of Fungicides for Control of Dollar Spot on Creeping Bentgrass

Philip Harmon and Richard Latin

Objective

The objective of this research was to evaluate fungicides for control of dollar spot on creeping bentgrass putting greens.

Rationale

Dollar spot of creeping bentgrass, caused by *Sclerotinia homeocarpa*, is a common disease of golf course turf throughout the midwestern United States. Although the etiology and epidemiology of the disease are well understood, and numerous effective chemical control options 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 may occur from May through October of each year, the 25 - 30 acres of bentgrass greens, tees, and fairways must be managed during most of the growing season. As a result, more golf course fungicide applications currently are targeted toward dollar spot than any other disease. This research is part of an ongoing project to evaluate commercial products so that our advisories remain the most accurate and objective sources of information regarding turf disease management.

How It Was Done

The research was conducted at the Purdue University 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 1 lb N per 1000 sq. ft. on 28 May, 15 June, and 20 July. Individual treatment plots measured 3.3 ft by 6.6 ft and were randomized within each of the 4 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 located 12 in. from the ground. The sprayer was calibrated to deliver 2 gal per 1000 sq. ft. at 40 psi. Treatments with 14-day spray intervals were applied 9 June, 23 June, 7 Jul, 21 July, and 04 Aug. The treatment with 21-day spray intervals was applied 9 June, 30 June, 21 July, and 11 Aug. The treatment with the 7-day application interval was applied weekly from 9 June through 4 Aug. The plots were evaluated for dollar spot visually at 4-7 day intervals from 11 June to 13 Aug. The dollar spot infection centers were counted through July. The August evaluations were recorded using the Horsfall Barratt (HB) scale to estimate the proportion of symptomatic plot area. The HB values were converted to disease percentages and transformed to arc sin square root. Analysis of variance and mean separation procedures were performed on the transformed data.

Results

Dollar spot disease pressure remained unusually high throughout the entire time of this trial. Prior to fungicide application, the number of disease centers per plot

ranged from 993 to 395. Within 2 weeks of the initial fungicide sprays, dollar spots were reduced to zero in several plots. Two of the treatments (Chipco Signature 80WG and Turfcide 400 F) resulted in unacceptable levels of control. Turf quality was evaluated visually using a 0-9 scale (less than 5 is unacceptable). Because of the severe early season dollar spot damage, contact fungicides such as Fore 80W and Daconil Ultrex 82.5WDG did not result in acceptable quality turf as expected, although they resulted in significantly less dollar spot than the untreated control plots at all evaluation dates except the first. No phytotoxicity was associated with any of the treatments.

Fungicides, rate per 1000 sq. ft. and application interval	Dollar Spot Severity							Turf quality ^y
	Infection centers per plot				Disease percentage		13 Aug	
	11 June	25 June	9 July	22 July	3 Aug	13 Aug		
No fungicide	852.7ab ^z	576.4a	886.0a	444.4a	60.6a	49.4a	1.0g	
Daconil Ultrex 82.5WDG, 3.8 oz, 14 day	993.0a	33.4d	170.8c	162.5c	49.4b	23.8b	4.8e	
Daconil Ultrex 82.5WDG, 3.8 oz (tankmix) +Heritage 50WDG, 0.2 oz, 14 day	698.5abc	0.0d	15.3d	8.4d	9.1c	3.9c	6.0d	
Eagle 40W, 0.6 oz, 14 day	823.5abc	33.4d	5.6d	0.0d	2.0cde	1.6cde	7.0c	
Chipco Triton 1.67SC, 0.5 fl oz, 14 day	629.1abc	52.8d	0.0d	0.0d	1.6de	1.3de	7.0c	
Chipco Triton 1.67SC, 1.0 fl oz, 14 day	773.5abc	62.5d	5.5d	1.4d	2.0de	1.3de	7.1bc	
Chipco 26GT 2.0SC, 4.0 fl oz, 14 day	723.5abc	0.0d	2.8d	1.4d	1.6cde	1.6cde	7.0c	
Chipco Signature 80WG, 4.0 oz, 14 day	624.9abc	408.3b	644.4b	297.2b	55.0ab	38.2ab	1.8f	
Chipco 26GT 2.0SC, 4.0 fl oz (tankmix) +Chipco Signature 80WG, 4.0 fl oz, 14 day.	680.2abc	0.0d	95.8d	26.4d	9.1cde	3.1cde	6.0d	
Banner Maxx 2EC, 2.0 fl oz, 21 day	527.7bc	0.0d	0.0d	0.0d	2.0cde	2.5cde	7.6ab	
Cleary's 3336WP, 2.0 oz, 14 day.	395.8c	0.0d	0.0d	0.0d	1.6e	0.8e	8.0ab	
Fore 80W, 4.0 oz, 7 day	452.7bc	248.6b	70.8d	40.3d	13.6cde	3.1cde	4.5e	
Turfcide 400 F, 6.0 fl oz, 14 day	594.5abc	331.9bc	594.3b	332.0b	65.9ab	43.7ab	1.5fg	

^y 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.

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