INFLUENCE OF VARIOUS INTERFACE, TARTAN, AND IPRODIONE ON THE SUPPRESSION OF DOLLAR SPOT ON A CREEPING BENTGRASS FAIRWAY, 2010

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INTRODUCTION

Dollar spot (*Sclerotinia homoeocarpa*) is a common disease of golf course fairways throughout Pennsylvania and the entire United States. Although there are several cultural management practices that can assist in reducing disease severity, the use of protective chemicals usually is necessary to control the disease during periods favorable for growth of the pathogen. The objectives of this study were to evaluate the ability of various fungicides, rates, and application intervals for their ability to preventively control dollar spot.

MATERIALS & METHODS

This study was initiated at the Valentine Turfgrass Research Center located in University Park, PA. Soil was a sandy loam with a pH 7.3 and an OM of 3.2%. Turfgrass used for the fungicide evaluation is a mixed stand of creeping bentgrass (*Agrostis stolonifera*) and annual bluegrass (*Poa annua*). The area was maintained as a bentgrass fairway and mowed three times per week to a height of 0.5 in. All fungicide treatments were applied with a CO_2 pressurized (40 psi) sprayer equipped with an air-induction flat fan nozzle, and calibrated to deliver 1.0 gal water per 1000 ft^2. Disease symptoms were not present within the study area when treatments were initiated. Treatments were initially applied on 24 May and reapplied four times approximately every 21 days. All treatments and application dates are listed in the data tables.

Plots measured 3 ft x 6 ft and were arranged in a randomized complete block with four replications. Dollar spot severity was assessed by counting the number of infection centers within each plot or by estimating the disease severity on a 0 to 100% scale where 0 = no disease present and 100 = entire plot area affected by dollar spot.   Turfgrass quality and/or color were also visually rated on a 1 to 9 scale where 1 = entire plot brown or dead and 9 = optimum greenness and density. All data were subjected to analysis of variance and means were separated at $P \leq 0.05$ according to Fisher's Protected Least Significant Difference Test.

RESULTS AND DISCUSSION

Dollar spot. Active dollar spot symptoms began to appear shortly after treatments were initiated on 24 May. When plots were first rated on 31 May, < 2 infection centers (IC) were observed in any fungicide treated plot and all treatments were significantly lower in disease pressure when compared to the untreated control plots (5-7 IC) (Table 1). Disease activity began to increase rapidly in June and when plots were rated on 14 Jun, and average of 34 to 39 IC were present within the untreated control plots. No differences were observed among fungicide treated plots at this time, but trace levels of the disease were present in all plots (1-13 IC). Dollar spot was suppressed on most rating dates during periods in which treatments were applied and generally were very low (0-2 IC) within 7 days following application and low to moderate (1-14 IC or 0.1-2.9%) 2 to 3 weeks after the last application. On 13 Aug (17 days after the last application), dollar spot was completely suppressed in plots treated with Interface at rates ≥ 4.0 fl oz. Moderate suppression (2.0% disease) was observed within plots treated with Interface (3.0 fl oz) and Iprodione Pro. Although performing better than the untreated controls, plots treated with Tartan had unacceptable levels of dollar spot (6%). On the final rating date (44 days after the last application), all plots had unacceptable levels of dollar spot. Although there were no differences in disease ratings among Interface treatments, a general trend in disease pressure indicated a rate effect on disease severity. Among the fungicide treatments, Tartan continued to perform among the poorest.

Quality and color. Quality and color (which excluded the impact of disease within each plot) were rated periodically throughout the study and rating can be found in Table 2. Quality ratings were not significant on 2 of the 3 rating dates in June and July. Differences in quality, however, were observed when plots were rated on 28 Jun. On this rating date, plots treated with Tartan had the best overall quality and were statistically similar to those plots treated with Interface at rates≥ 4.0 fl oz. All remaining treatments had acceptable (≥ 7) quality and were not difference from the untreated control plots. Turfgrass color was rated on 27 Jul and all plots treated with Interface and Tartan had improved color when compared to the untreated plots and those treated with Iprodione Pro.

Overall, dollar spot suppression within this trial was good to excellent with products containing Iprodione. A slight rate effect with Interface treatments was observed. Moderate suppression of dollar spot was achieved within plots treated with Tartan. This is likely due to a known reduced sensitivity to fungicides within the DMI chemistry at this site. The active ingredient responsible for dollar spot suppression in Tartan is the DMI fungicide triadimefon. In previous research where insensitive populations of Sclerotinia homoeocarpa are not present, Tartan has provided excellent disease suppression. Despite the reduced efficacy of Tartan, overall quality and color of the turfgrass within these plots was excellent (>8.0). All treatments containing the green pigment StressGard appeared to improve turfgrass color and quality throughout the study.

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Table 1. Dollar spot incidence and severity in a creeping bentgrass/annual bluegrass fairway following the application of various fungicides.

Treatment and rate per 1000 sq ft[y]	Dollar spot[z]						
	31 May	14 Jun	28 Jun	13 Jul	27 Jul	13 Aug	9 Sept
	No. infection centers				%		
Interface 3.0 fl oz..............................	0 b[x]	6 b	5 bc	0 b	1.5 b	2 c	16 bc
Interface 4.0 fl oz..............................	0 b	1 b	1 c	0 b	0.6 b	0 c	9 bc
Interface 5.0 fl oz..............................	2 b	10 b	3 c	0 b	0.2 b	0 c	7 c
Interface 6.0 fl oz..............................	0 b	1 b	0 c	0 b	0.1 b	0 c	5 c
Tartan 1.5 fl oz	0 b	13 b	14 b	0 b	2.9 b	6 b	21 b
Iprodione Pro S2E 4.0 fl oz	0 b	4 b	1 c	0 b	0.8 b	2 c	11 bc
Untreated..	5 a	39 a	43 a	53 a	13.0 a	19 a	40 a
Untreated..	7 a	34 a	43 a	48 a	13.0 a	20 a	39 a

[z] Dollar spot was rated by counting the number of infection centers per plot or by visually assessing the percent disease on a 0 to 100 scale where 0 = no disease symptoms present and 100 = entire plot area affected by dollar spot.

[y] Treatments were applied on 24 May; 15 Jun; and 6 and 27 Jul.

[x] Means in a column followed by the same letter are not significantly different at $P \leq 0.05$ level according to the Fisher's protected least significant difference t-test.

Table 2. Turfgrass quality and color in a creeping bentgrass/annual bluegrass fairway following the application of various fungicides.

Treatment and rate per 1000 sq ft[x]	Quality[z]			Color[y]
	14 Jun	28 Jun	13 Jul	27 Jul
Interface 3.0 fl oz.....................................	8.0 a[w]	7.8 bc	8.5 a	8.0 a
Interface 4.0 fl oz.....................................	8.3 a	8.0 ab	8.5 a	8.3 a
Interface 5.0 fl oz.....................................	8.3 a	8.3 ab	8.8 a	8.8 a
Interface 6.0 fl oz.....................................	8.5 a	8.3 ab	8.8 a	8.5 a
Tartan 1.5 fl oz...	8.3 a	8.5 a	8.3 a	8.3 a
Iprodione Pro S2E 4.0 fl oz	8.3 a	7.8 bc	8.0 a	7.0 b
Untreated..	8.0 a	7.3 c	8.0 a	7.0 b
Untreated..	7.8 a	7.3 c	8.0 a	6.5 b

[z] Turfgrass quality was rated visually on a 1 to 9 scale where 1 = brown or dead turf; 7 = minimum acceptable quality for a golf course fairway; and 9 = optimum density.

[y] Turfgrass color was rated visually on a 1 to 9 scale where 1 = brown or dead turf; 7 = minimum acceptable color for a golf course fairway; and 9 dark green turf.

[x] Treatments were applied on 24 May; 15 Jun; and 6 and 27 Jul.

[w] Means in a column followed by the same letter are not significantly different at $P \leq 0.05$ level according to the Fisher's protected least significant difference t-test.