SPRING CLEANUP OF PUTTING GREEN DISEASES WITH SYNGENTA FUNGICIDES, 2010.

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INTRODUCTION

Various fungicides are often used on golf courses to clean up symptoms of winter diseases that may be present in the spring and prevent the onset of late-winter or early-spring diseases. Due the fact that numerous diseases may be present during this period, the application of multiple fungicides with varying modes of action may be warranted. The objective of this study was to assess the spring cleanup of turfgrass diseases with three pre-mix fungicide combinations.

MATERIALS & METHODS

A field study was initiated on a creeping bentgrass (*Agrostis Stolonifera*) research putting green located at the Valentine Turfgrass Research Facility in University Park, PA. Soil at the site was a modified sandy loam with a pH of 7.1 and 1.8% organic matter. The study site was mowed 4 to 6 days per week to a height of 0.125" with either a walk-behind or riding reel mower.

All fungicide treatments were applied with a CO_2 pressurized (40 psi) sprayer equipped with a flat-fan nozzle (AI9508E), and calibrated to deliver either 2.0 gal water per 1000 ft^2. Treatments were applied once on 2 April January 2010. All treatments are listed in the data tables.

Plots measured 6 ft x 6 ft, and were arranged in a randomized complete block with four replications. Percent plot area exhibiting disease symptoms was assessed visually on a linear 0 to 100% scale where 0 = entire plot area green and healthy, and 100 = entire plot area blighted. Disease severity was also determined on a 0 to 5 scale where 0 = no active disease symptoms were present and 5 = severe disease activity observed. Disease ratings included primarily pink (*Microdochium nivale*) and gray (*Typhula incarnata*) snow mold as well as cool temperature brown patch (*Rhizoctonia cerealis*). In addition to disease data, turfgrass quality was determined on a 1 to 9 scale where 0 = entire plot area brown or dead; 7 = minimum acceptable quality for a golf course putting green; and 9 = optimum greenness and density. All data was subjected to analysis of variance and means separated at $P \leq 0.05$ using Fisher's protected LSD test.

RESULTS & DISCUSSION

Disease. Disease activity was present when the study was initiated on 2 Apr and plots had an average of 4 to 5% disease (Table 1). Disease symptoms decreased throughout the study site within two weeks of treatment application. No differences were observed on any rating date among the treatments and the untreated control. Although differences were not significant, disease activity and percent plot area affected by disease increased in early May when turfgrass growth began to increase (Table 2). On 7 May, only plots treated with Headway had < 1% disease.

Quality. Turfgrass quality was unacceptable (~5) within all plots when treatments were initiated (Table 3). Following the initial rating, quality increased throughout the entire study site and no treatment effect was observed. With the exception of plots treated with Instrata, turfgrass quality in all plots was considered acceptable by late April or early May. Although considered unacceptable (<7.0), plots treated with Instrata were not statistically different from other treatments on any rating date.

No differences in disease or quality were observed within this study on any rating date. The relatively low severity of disease activity within the study site at its initiation as well as the lack of disease

onset early in the spring may have resulted in limited separation of the treatments. Future work should focus on sites with a history of spring Microdochium patch, brown ring patch, and/or cool temperature brown patch. Although some of these diseases were present in the study, they were relatively minor and recovery occurred regardless of fungicide application. Additional studies should also investigate the importance of spring fertilizer applications in conjunction with fungicides to aid in the quick recover from biotic pests and potential rapid improvement in turfgrass quality afforded by nitrogen.

Table 1. Percent disease on a creeping bentgrass putting green following a single spring cleanup application of three fungicides, 2010.

	Disease (%) [z]				
Treatment and rate per 1000 sq ft[y]	2 Apr	23 Apr	30 Apr	7 May	14 May
Concert II 4.35 fl oz	5.13 a[x]	1.80 a	1.25 a	2.25 a	1.78 a
Headway 1.5 fl oz	4.00 a	0.88 a	0.63 a	0.75 a	0.88 a
Instrata 3.5 fl oz	4.50 a	1.50 a	1.25 a	2.00 a	1.75 a
Untreated	4.63 a	1.00 a	0.63 a	1.88 a	1.25 a

[z] Percent plot area affected by turf diseases was rated on a 0 to 100% scale where 0 = entire plot void of disease symptoms and 100 = entire plot area cover with disease symptoms. Diseases present in the study site included gray snow mold, pink snow mold and cool-temperature brown patch.
[y] Treatments were applied on 2 Apr 2010.
[w] Means in a column followed by the same letter are not significantly different at P ≤ 0.05 level according to the Fisher's protected least significant difference t-test.

Table 2. Disease severity on a creeping bentgrass putting green following a single spring cleanup application of three fungicides, 2010.

	Disease severity (0-5) [z]			
Treatment and rate per 1000 sq ft[y]	23 Apr	30 Apr	7 May	14 May
Concert II 4.35 fl oz	1.8 a[x]	1.25 a	2.0 a	1.8 a
Headway 1.5 fl oz	1.0 a	0.63 a	1.0 a	0.8 a
Instrata 3.5 fl oz	1.3 a	1.25 a	1.8 a	1.5 a
Untreated	1.3 a	0.63 a	1.5 a	1.0 a

[z] Disease severity was rated on a 0 to 5 scale where 0 = no active disease present and 5 = disease activity present in the form of pathogen signs (mycelium) and typical color for active diseases. Diseases present in the study site included gray snow mold, pink snow mold and cool-temperature brown patch.
[y] Treatments were applied on 2 Apr 2010.
[w] Means in a column followed by the same letter are not significantly different at P ≤ 0.05 level according to the Fisher's protected least significant difference t-test.

Table 3. Creeping bentgrass quality on a golf course putting green following the application of three fungicides for spring cleanup of winter diseases, 2010.

	Quality (1-9) [z]				
Treatment and rate per 1000 sq ft[y]	2 Apr	23 Apr	30 Apr	7 May	14 May
Concert II 4.35 fl oz	5.0 a[x]	7.0 a	6.8 a	7.0 a	7.5 a
Headway 1.5 fl oz	5.3 a	7.0 a	7.3 a	7.5 a	7.8 a
Instrata 3.5 fl oz	5.0 a	6.8 a	6.5 a	6.3 a	6.8 a
Untreated	5.0 a	6.8 a	7.3 a	7.3 a	7.5 a

[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 putting green; and 9 = optimum density.
[y] Treatments were applied on 2 Apr 2010.
[w] Means in a column followed by the same letter are not significantly different at P ≤ 0.05 level according to the Fisher's protected least significant difference t-test.