SNOW MOLD CONTROL IN A MIXED CREEPING BENTGRASS/ANNUAL BLUEGRASS FAIRWAY WITH VARIOUS FUNGICIDES, 2013-2014

J.E. Kaminski and T. Lulis

Department of Plant Science
The Pennsylvania State University, University Park

INTRODUCTION

Gray (*Typhula incarnata*) and Pink (*Microdochium nivale*) snow molds are common winter disease in Pennsylvania and the surrounding regions. Depending on snow cover, damage from these diseases may be apparent in the spring following snow melt. Since the length of snow cover is not predictable with any certainty prior to winter, golf course superintendents must rely on preventive applications of single or tank-mixed fungicides for the suppression of the disease. The objective of this field study was to determine the efficacy of various commercially available and experimental fungicides on snow mold.

MATERIALS & METHODS

The field trial was initiated at Yahnundasis Golf Club in New Hartford, NY. The trial site was located on the 17th fairway and consisted of a mixed stand of creeping bentgrass (*Agrostis stolonifera*) and annual bluegrass (*Poa annua*). The site was selected due to the potential prolonged period of snow cover from extensive shade provided by large plantings of pine trees (*Pinus* spp.) to the south of the area. The study area was not treated with any fungicide as part of the golf course's preventative fungicide applications for snow mold management. Soil was loamy clay with a pH of 5.8.

All treatments were applied with a CO_2 pressurized (40 psi) sprayer equipped with a flat-fan nozzle (AI9508E) that was calibrated to deliver 2.0 gal of water per 1000 ft^2. Treatments were applied once on 23 November 2013. At the time of application, air and soil temperatures were 41F and 40F, respectively. For the putting green trial air and soil temperatures were 42.5F and 42F, respectively. Soil moisture was adequate and precipitation occurred within 4hrs of the application. Cloud cover was at 100% and the wind speed was 5 mph out of the west.

Plots measured 3 x 6 ft and were arranged in a randomized complete block with four replications. Percent plot area blighted by *Microdochium nivale* and/or *Typhula incarnate* was visually assessed on a linear 0 to 100 scale where 0 = entire plot area green and healthy, and 100 = entire plot area blighted. Injury was rated on a on a 0 to 5 scale where 0 = no injury present and 5 = entire plot area brown or dead.

RESULTS & DISCUSSION

A total of 30 treatments were included in the study. Snow cover began in mid-December and lasted until mid-March with the exception of approximately 1 week of bare ground in January.

Disease pressure at the fairway site was minimal with only trace levels of Microdochium patch visible. No differences were observed and only a single treatment had visible snow mold. Injury was observed within plots (Table 1). The greatest injury was observed within plots treated

with the 12.0 fl oz rate of PCNB. Only plots treated with PCNB (both rates) resulted in unacceptable (>2.0) injury to the turf.

Unfortunately, the short lapse in snow cover in January resulted in little snow mold pressure. Only turf within plots treated with PCNB exhibited unacceptable injury in the trial.

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Table 1. Percent Microdochium patch on a golf course fairway following a single application of various fungicides on 23 November 2013.

No.	Treatment and rate per 1000 sq ft [z]	Percent Microdochium patch [y]	Injury [x]
		%	0-5
1	PCNB 6.0 fl oz	0.0 a [w]	2.2 ab
2	PCNB 12.0 fl oz	1.5 a	2.7 a
3	A15457B 0.236 fl oz A17856B 1.09 fl oz A7087F 0.5 fl oz PAR 0.36 fl oz	0.0 a	0.4 bc
4	A15457B 0.236 fl oz A17856B 1.09 fl oz HERTITAGE TL 1.01 fl oz PAR 0.36 fl oz	0.0 a	0.7 abc
5	A15457B 0.236 fl oz A17856B 1.09 fl oz BANNER MAXX 2.0 fl oz PAR 0.36 fl oz	0.0 a	0.1 c
6	A19188A 1.0 fl oz A17856B 1.09 fl oz PAR 0.36 fl oz	0.0 a	0.1 c
7	INSTRATA 9.4 fl oz PAR 0.36 fl oz	0.0 a	0.0 c
8	A20744A 0.5 oz A17856B 1.09 fl oz A7087F 0.5 fl oz PAR 0.36 fl oz	0.0 a	0.1 c
9	A20744A 0.5 oz A17856B 1.09 fl oz HERTITAGE TL 1.01 fl oz PAR 0.36 fl oz	0.0 a	0.0 c
10	A20744A 0.5 oz A17856B 1.09 fl oz BANNER MAXX 2.0 fl oz PAR 0.36 fl oz	0.0 a	0.1 c
11	A20581A 0.47 fl oz PAR 0.36 fl oz	0.0 a	0.3 bc
12	INTERFACE 6.0 fl oz TRITON FLO 0.85 fl oz	0.0 a	0.0 c
13	A20744A 0.7 oz PAR 0.36 fl oz	0.0 a	0.3 bc
14	INSTRATA 7.0 fl oz PAR 0.36 fl oz	0.0 a	0.3 bc

[z] Treatments were applied on 23 November 2013.

[y] Percent of plot area blighted by *Microdochium nivale* was assessed visually on a linear 0 to 100% scale where 0 = entire plot area green and healthy, and 100 = entire plot area blighted.

[2] Putting green color was rated on a 1 to 9 scale were 1 = entire blot area brown or dead, 6 = minimum acceptable turfgrass color for a golf course putting green and 9 = dark green color.

[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 1 (con't). Percent Microdochium patch on a golf course fairway following a single application of various fungicides on 23 November 2013.

15	SECURE 0.5 fl oz PAR 0.36 fl oz	0.0 a [w]	0.0 c
16	A13705 2.6 fl oz PAR 0.36 fl oz	0.0 a	0.0 c
17	A13705 2.6 fl oz SECURE 0.5 fl oz PAR 0.36 fl oz	0.0 a	0.6 abc
18	A20744A 0.5 fl oz SECURE 0.5 fl oz PAR 0.36 fl oz	0.0 a	0.3 bc
19	QP TM/C 6.0 oz QP IPRO 2 SE 4.0 fl oz QP PROPICONIZOL 14.3 2.0 fl oz FOURSOME 0.5 fl oz	0.0 a	0.3 bc
20	QP TM/C 6.0 oz QP IPRO 2 SE 4.0 fl oz QP TEBUCONAZOLE 0.6 fl oz FOURSOME 0.5 fl oz	0.0 a	0.1 c
21	QP IPRO 2 SE 4.0 fl oz QP TEBUCONAZOLE 1.1 fl oz FOURSOME 0.5 fl oz 0.5 fl oz	0.0 a	0.1 c
22	QP ENCLAVE 8.0 fl oz FOURSOME 0.5 fl oz	0.0 a	0.6 abc
23	INTERFACE 3.0 fl oz MIRAGE 1.5 fl oz	0.0 a	0.0 c
24	INTERFACE 4.0 fl oz MIRAGE 1.5 fl oz	0.0 a	0.1 c
25	TARTAN 1.0 fl oz INTERFACE 3.0 fl oz	0.0 a	0.0 c
26	INSTRATA 7.0 fl oz	0.0 a	1.1 abc
27	INTERFACE 4.0 fl oz MIRAGE 2.0 fl oz	0.0 a	0.0 c
28	INTERFACE 5.0 fl oz MIRAGE 2.0 fl oz	0.0 a	0.0 c
29	UNTREATED	0.0 a	0.3 bc
30	UNTREATED	0.0 a	0.4 bc

[z] Treatments were applied on 23 November 2013.

[y] Percent of plot area blighted by *Microdochium nivale* was assessed visually on a linear 0 to 100% scale where 0 = entire plot area green and healthy, and 100 = entire plot area blighted.

[x] Turfgrass injury was rated on a 0 to 5 scale were 0 = no injury, 2 = maximum acceptable injury for a golf course putting green and 5 = turf brown or dead.

[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.