2010-2011 Snow Mold Control Evaluation: Grant Park GC – Milwaukee, WI

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OBJECTIVE

To evaluate fungicides for the control of Typhula blight (caused by *Typhula incarnata*) and Microdochium patch (caused by *Microdochium nivale*).

MATERIALS AND METHODS

This evaluation was conducted at Grant Park Golf Course in Milwaukee, WI on a mixed stand of 'Penncross' creeping bentgrass (*Agrostis stolonifera*) and annual bluegrass (*Poa annua*) maintained under putting green conditions and mowed at a height of 0.125". Individual plots measured 3 ft x 8 ft (24 ft^2), and were arranged in a randomized complete block design with four replications. Individual treatments were applied at a nozzle pressure of 40 p.s.i using a CO_2 pressurized boom sprayer equipped with two XR Teejet 8004 VS nozzles. All fungicides were agitated by hand and applied in the equivalent of 2 gallons of water per 1000 ft^2, except for treatments 56-57 (3 gallons/1000 ft^2) and treatments 58-63 (2.5 gallons/1000 ft^2). Early applications were applied on November 9th and late applications were applied on December 3rd, 2010. The experimental area was not inoculated. There was continuous snow cover on the plots from December 4th until mid-March of 2011, a total of approximately 100 days. Disease severity, turf quality, and color were recorded on March 29th, 2011. Disease severity was visually assessed as percent disease, turfgrass quality was visually assessed on a 1-9 scale with 6 being acceptable, and turf color was visually assessed on a 1-9 scale with 6 being the color of unsprayed, non-diseased turfgrass. Data were subjected to an analysis of variance and means were separated using the Waller-Duncan test. Means for disease severity, turf quality and turf color are presented in the following table for individual treatments.

RESULTS AND DISCUSSION

Disease pressure was moderate at Grant Park in 2010-2011 with non-treated controls averaging 17.5% disease. The dominant pathogen observed was *Microdochium nivale*, the causal agent of Microdochium patch (aka pink snow mold). *Typhula incarnata*, the causal agent of gray snow mold, was also observed but occurred infrequently and sporadically throughout the experimental area. All treatments reduced disease severity when compared to the non-treated control. Yet treatments 38, 39, 53, 58, 61, and 62 failed to provide acceptable suppression (<5% disease) of Microdochium patch. A large proportion (59 out of 90) of treatments completely suppressed snow mold development. Differences in plot color and quality were also observed, though most products that provided excellent disease control provided statistically similar quality and color. One exception was treatments 62 and 63, different rates of the same product, which caused a deep purple discoloration of the turf. No thinning of the turf in these plots was observed.

Snow Mold, Quality, and Color Ratings Recorded on March 29th, 2011 at Grant Park GC

	Treatment	Rate	Timing[a]	Dis Severity[b]	Quality[c]	Color[d]
1	Non treated Control			17.5 a	4.5 h	6.0 hi
6	V-10190	0.7 FL OZ/M	Late	0.0 f	6.8 a-d	6.0 hi
7	Tourney	0.37 OZ/M	Late	0.5 ef	6.8 a-d	6.0 hi
	3336 Plus	4.0 FL OZ/M	Late			
8	Velista	0.7 OZ/M	Late	0.0 f	7 abc	6.0 hi
9	Velista	0.7 OZ/M	Late	0.0 f	7.0 abc	6.0 hi
	Daconil Ultrex	5.0 OZ/M	Late			
	Chipco 26GT	4.0 FL OZ/M	Late			
10	Velista	0.7 OZ/M	Late	0.0 f	7.0 abc	6.0 hi
	Daconil Ultrex	5.0 OZ/M	Late			
	Heritage	0.7 OZ/M	Late			
11	Velista	0.7 OZ/M	Late	0.0 f	7.0 abc	6.0 hi
	Daconil Ultrex	5.0 OZ/M	Late			
	Banner MAXX	2.0 FL OZ/M	Late			
12	Velista	0.7 OZ/M	Late	0.0 f	7.0 abc	6.0 hi
	Daconil Ultrex	5.0 OZ/M	Late			
	3336 Plus	2.0 FL OZ/M	Late			
13	Velista	0.7 OZ/M	Late	0.0 f	7.0 abc	6.0 hi
	Daconil Ultrex	5.0 OZ/M	Late			
14	Velista	0.7 OZ/M	Late	0.0 f	7 abc	6.0 hi
	Medallion	0.25 OZ/M	Late			
	Banner MAXX	2.0 FL OZ/M	Late			
15	Insignia SC	0.7 FL OZ/M	Late	0.0 f	7.0 abc	6.0 hi
	Trinity	1.5 FL OZ/M	Late			
	Daconil Ultrex	3.2 OZ/M	Late			
16	Insignia SC	0.54 FL OZ/M	Late	0.0 f	7.0 abc	6.0 hi
	Trinity	1.0 FL OZ/M	Late			
	Daconil Ultrex	3.2 OZ/M	Late			
17	Curalan EG	1.0 OZ/M	Early	0.0 f	7.0 abc	6.0 hi
	Daconil Ultrex	3.2 OZ/M	Early			
	Insignia SC	0.54 FL OZ/M	Late			
	Trinity	1.0 FL OZ/M	Late			
	Daconil Ultrex	3.2 OZ/M	Late			
18	Honor	0.84 OZ/M	Late	0.0 f	7.0 abc	6.0 hi
	Trinity	1.0 FL OZ/M	Late			
	Daconil Ultrex	3.2 OZ/M	Late			
19	Interface	5.0 FL OZ/M	Late	1.3 ef	6.8 a-d	6.0 hi
20	Interface	4.0 FL OZ/M	Late	1.3 ef	6.8 a-d	6.0 hi
	Daconil Ultrex	3.2 OZ/M	Late			
21	Interface	6.0 FL OZ/M	Late	0.0 f	7.0 abc	6.3 gh
	Triton FLO	0.85 FL OZ/M	Late			
22	Interface	5.0 FL OZ/M	Late	0.0 f	7.0 abc	6.5 fg
	Triton FLO	0.85 FL OZ/M	Late			
23	Interface	4.0 FL OZ/M	Late	0.0 f	7.0 abc	6.3 gh
	Triton FLO	0.85 FL OZ/M	Late			

Means followed by same letter do not significantly differ (P=.05, Waller Duncan)

[a]Early and late fungicide treatments were applied on Nov. 9th, 2010 and Dec. 3rd, 2010, respectively

[b]Disease severity was visually assessed as percent diseased area

[c]Quality was visually rated on a scale of 1-9 where 1 = completely dead, 6 = acceptable, 9 = highest quality

[d]Color was visually assessed on a scale of 1-9 where 1 = brown, 6 = natural color, 9 = dark green

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24 Interface	3.0 FL OZ/M	Late	0.0 f	7.3 abc	6.3 gh
Triton FLO	0.5 FL OZ/M	Late			
25 Reserve	4.5 FL OZ/M	Late	0.0 f	7.0 abc	6.0 hi
Compass	0.25 OZ/M	Late			
26 Reserve	4.5 FL OZ/M	Late	0.0 f	7.0 abc	6.0 hi
Interface	4.0 FL OZ/M	Late			
27 Tartan	2.0 FL OZ/M	Late	0.0 f	7.0 abc	6.0 hi
Daconil Ultrex	5.0 OZ/M	Late			
28 QP TM/C	6.0 OZ/M	Late	0.0 f	7.0 abc	6.0 hi
QP Ipro	4.0 FL OZ/M	Late			
QP Propiconazole	2.0 FL OZ/M	Late			
29 QP 642	11.75 FL OZ/M	Late	0.0 f	7.0 abc	6.0 hi
30 QP Chlorothalonil	2.66 FL OZ/M	Late	0.0 f	7.0 abc	6.0 hi
QP Ipro	4.0 FL OZ/M	Late			
QP Tebuconazole	0.69 FL OZ/M	Late			
31 QP Chlorothalonil	4.76 FL OZ/M	Late	0.0 f	7.0 abc	6.0 hi
QP Ipro	2.23 FL OZ/M	Late			
QP Fludioxonil	0.36 FL OZ/M	Late			
32 GWN-9803	0.5 FL OZ/M	Early/Late	0.5 ef	6.8 a-d	6.0 hi
GWN-6526	0.25% v/v	Early/Late			
33 GWN-9803	1.0 FL OZ/M	Early/Late	1.3 ef	6.8 a-d	6.0 hi
GWN-6526	0.25% v/v	Early/Late			
34 GWN-9803	2.0 OZ/M	Early/Late	1.8 def	6.5 b-e	6.0 hi
GWN-6526	0.25% v/v	Early/Late			
35 NB37440	0.4 FL OZ/M	Late	0.0 f	7.0 abc	6.0 hi
36 NB37440	0.82 FL OZ/M	Late	0.0 f	7.0 abc	6.0 hi
37 NB36137	0.45 OZ/M	Late	3.8 c-f	6.5 b-e	6.0 hi
38 NB36137	0.9 OZ/M	Late	10.0 b	5.8 efg	6.0 hi
39 NB36693	1.2 OZ/M	Late	7.5 bcd	6.3 c-f	6.0 hi
40 NB36693	2.4 OZ/M	Late	0.5 ef	6.8 a-d	6.0 hi
41 Civitas Mix 1			0.0 f	7.0 abc	7.3 cd
42 Civitas Mix 2			0.0 f	7.0 abc	7.8 ab
43 Civitas Mix 3			0.0 f	7.0 abc	7.0 de
44 Civitas Mix 4			0.0 f	7.3 ab	6.5 fg

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45 Civitas Mix 5			0.0 f	7.0 abc	7.5 bc
46 Civitas Mix 6			0.0 f	7.0 abc	7.0 de
47 Civitas Mix 7			1.3 ef	6.8 a-d	7.0 de
48 Civitas Mix 8			0.0 f	7.0 abc	7.5 bc
49 Civitas Mix 9			0.0 f	7.0 abc	8.0 a
50 Civitas Mix 10			0.0 f	7.0 abc	7.5 bc
51 Civitas Mix 11			4.3 b-f	6.5 b-e	7.0 de
52 Civitas Mix 12			1.3 ef	7.5 a	6.8 ef
53 Civitas Mix 13			7.5 bcd	6.0 d-g	6.0 hi
54 Civitas Mix 14			0.0 f	7.3 abc	7.3 cd
55 Civitas Mix 15			0.0 f	7.5 a	6.5 fg
56 1367-A	12.0 FL OZ/M	Early/Late	0.0 f	6.0 d-g	4.5 l
57 1367-A	24.0 FL OZ/M	Early/Late	0.0 f	6.0 d-g	4.8 kl
58 1367-B	6.0 FL OZ/M	Early/Late	6.3 b-e	6.0 d-g	5.8 i
59 1367-B	12.0 FL OZ/M	Early/Late	0.0 f	6.0 d-g	5.0 jk
60 1367-C	6.0 FL OZ/M	Early/Late	0.5 ef	6.8 a-d	6.0 hi
61 1367-C	12.0 FL OZ/M	Early/Late	5.0 b-f	6.0 d-g	6.0 hi
62 1367-D	6.0 FL OZ/M	Early/Late	8.8 bcd	5.3 gh	5.3 j
63 1367-D	12.0 FL OZ/M	Early/Late	3.8 c-f	5.5 fg	4.5 l

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64 Instrata	5.0 FL OZ/M	Late	0.0 f	7.0 abc	6.0 hi
65 Instrata	7.0 FL OZ/M	Late	1.0 ef	6.5 b-e	6.0 hi
66 Instrata	9.0 FL OZ/M	Late	0.0 f	6.5 b-e	6.0 hi
67 Instrata	9.3 FL OZ/M	Late	0.0 f	6.5 a-d	6.0 hi
68 Instrata	5.5 FL OZ/M	Early/Late	0.0 f	6.8 a-d	6.0 hi
69 Concert	5.0 FL OZ/M	Late	0.5 ef	6.8 a-d	6.0 hi
Renown	2.5 FL OZ/M	Late			
70 Concert	8.5 FL OZ/M	Late	1.3 ef	6.8 a-d	6.0 hi
Banner MAXX	1.0 FL OZ/M	Late			
71 Concert	8.5 FL OZ/M	Late	3.8 c-f	6.5 b-e	6.0 hi
Medallion	0.25 OZ/M	Late			
72 Concert	8.5 FL OZ/M	Late	0.5 ef	7.0 abc	6.0 hi
Chipco 26GT	4.0 FL OZ/M	Late			
73 Concert	8.5 FL OZ/M	Late	0.5 ef	7.0 abc	6.0 hi
74 Headway G	4.0 LB/M	Late	1.0 ef	6.8 a-d	6.0 hi
81 Torque	0.6 FL OZ/M	Late	0.0 f	7.0 abc	6.0 hi
26/36	4.0 FL OZ/M	Late			
82 Torque	0.9 FL OZ/M	Late	0.0 f	6.5 b-e	6.0 hi
26/36	4.0 FL OZ/M	Late			
83 Torque	0.6 FL OZ/M	Late	0.0 f	7.0 abc	6.0 hi
26/36	4.0 FL OZ/M	Late			
Spectro	3.67 OZ/M	Late			
84 Torque	0.9 FL OZ/M	Late	0.0 f	7.0 abc	6.0 hi
26/36	4.0 FL OZ/M	Late			
Spectro	3.67 OZ/M	Late			
85 Torque	0.6 FL OZ/M	Late	0.0 f	7.0 abc	6.0 hi
Affirm	0.9 OZ/M	Late			
86 Torque	0.6 FL OZ/M	Late	0.0 f	7 abc	6.0 hi
Affirm	0.9 OZ/M	Late			
Spectro	3.7 OZ/M	Late			
87 Chipco 26GT	4.0 FL OZ/M	Late	0.0 f	7.0 abc	6.0 hi
Daconil Wstik	5.5 FL OZ/M	Late			
88 Endorse	4.0 OZ/M	Late	1.3 ef	6.8 a-d	6.0 hi
89 Segway	0.75 FL OZ/M	Late	0.0 f	7.0 abc	6.0 hi
90 Endorse	3.0 OZ/M	Late	0.0 f	7.0 abc	6.0 hi
Segway	0.45 FL OZ/M	Late			

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