2010-2011 Snow Mold Control Evaluation
Les Bolstad GC – St Paul, MN

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OBJECTIVES

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

MATERIALS AND METHODS

This evaluation was conducted at Les Bolstad GC in St Paul, MN on a creeping bentgrass (*Agrostis stolonifera*) and annual bluegrass (*Poa annua*) golf course fairway maintained at a height of 0.5 inch. Individual plots measured 3 ft x 10 ft (30 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. Early applications were applied on October 19th, 2010 and late applications were applied on November 9th, 2010. The experimental plot area was not inoculated. There was continuous snow cover on the plots from mid-November until early April of 2011, a total of approximately 120 days. Disease severity, turf quality, and color were recorded on April 5th, 2011. Disease severity was visually rated as percent disease, turfgrass color was visually assessed on a 1-9 scale with 6 being natural turf color, and Normalized Difference Vegetative Index (turfgrass color) was rated using a GreenSeeker NDVI Turf Color Meter® from NTech Industries (Ukiah, CA). Data were subjected to an analysis of variance and means were separated using the Waller-Duncan test. Means for disease severity, visual turf color, and NDVI color are presented in the following tables for individual treatments.

RESULTS AND DISCUSSION

Disease pressure was moderate at Les Bolstad in 2010-2011 with non-treated controls averaging 33.8% disease. The dominant pathogen observed was *Typhula ishikariensis*, the causal agent of gray snow mold (aka speckled snow mold). All treatments reduced disease severity when compared to the non-treated control except Segway. All but 6 treatments provided acceptable suppression (<5% disease) of gray snow mold, and most of those provided complete disease control. Differences in turf color were observed, though most products that provided excellent disease control provided statistically similar turf quality and color.

Snow Mold, Quality, and Color Ratings Recorded on April 5th, 2011 at Les Bolstad GC

	Treatment	Rate	Timing[a]	Dis Severity[b]	Color[c]	NDVI[d]
1	Non treated Control			33.8 a	6.0 def	0.656 c-n
2	Velista	0.7 OZ/M	Late	6.0 cde	6.3 cde	0.679 a-k
3	Velista	0.7 OZ/M	Late	0.0 e	6.0 def	0.644 g-p
	Daconil Ultrex	5.0 OZ/M	Late			
	Chipco 26GT	4.0 FL OZ/M	Late			
4	Velista	0.7 OZ/M	Late	0.0 e	6.0 def	0.656 c-n
	Daconil Ultrex	5.0 OZ/M	Late			
	Heritage	0.7 OZ/M	Late			
5	Velista	0.7 OZ/M	Late	0.5 e	6.0 def	0.661 b-n
	Daconil Ultrex	5.0 OZ/M	Late			
	Banner MAXX	2.0 FL OZ/M	Late			
6	Velista	0.7 OZ/M	Late	0.0 e	5.8 ef	0.660 b-n
	Daconil Ultrex	5.0 OZ/M	Late			
	3336 Plus	2.0 FL OZ/M	Late			
7	Velista	0.7 OZ/M	Late	0.5 e	6.5 bcd	0.687 a-k
	Daconil Ultrex	5.0 OZ/M	Late			
8	Velista	0.7 OZ/M	Late	0.0 e	6.3 cde	0.723 ab
	Medallion	0.25 OZ/M	Late			
	Banner MAXX	2.0 FL OZ/M	Late			
9	Insignia SC	0.7 FL OZ/M	Late	0.0 e	6.3 cde	0.6983 a-i
	Trinity	1.0 FL OZ/M	Late			
	Daconil Ultrex	3.2 OZ/M	Late			
10	Insignia SC	0.54 FL OZ/M	Late	1.3 e	6.0 def	0.699 a-i
	Trinity	1.0 FL OZ/M	Late			
	Daconil Ultrex	3.2 OZ/M	Late			
11	Curalan EG	1.0 OZ/M	Early	0.0 e	6.3 cde	0.722 ab
	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			
12	Honor	0.84 OZ/M	Late	0.0 e	6.5 bcd	0.691 a-j
	Trinity	1.0 FL OZ/M	Late			
	Daconil Ultrex	3.2 OZ/M	Late			
13	Interface	5.0 FL OZ/M	Late	0.0 e	7.3 a	0.700 a-i
14	Interface	4.0 FL OZ/M	Late	0.0 e	7.0 ab	0.699 a-i
	Daconil Ultrex	3.2 OZ/M	Late			
15	Interface	6.0 FL OZ/M	Late	0.0 e	7.0 ab	0.715 abc
	Triton FLO	0.85 FL OZ/M	Late			
16	Interface	5.0 FL OZ/M	Late	0.0 e	6.8 abc	0.701 a-i
	Triton FLO	0.85 FL OZ/M	Late			
17	Interface	4.0 FL OZ/M	Late	0.0 e	6.8 abc	0.703 a-h
	Triton FLO	0.85 FL OZ/M	Late			
18	Interface	3.0 FL OZ/M	Late	0.0 e	6.8 abc	0.686 a-k
	Triton FLO	0.5 FL OZ/M	Late			
19	Reserve	4.5 FL OZ/M	Late	2.5 e	6.5 bcd	0.701 a-f
	Compass	0.25 OZ/M	Late			
20	Reserve	4.5 FL OZ/M	Late	0.0 e	6.5 bcd	0.672 a-m
	Interface	4.0 FL OZ/M	Late			
21	Tartan	2.0 FL OZ/M	Late	0.0 e	6.0 def	0.717 abc
	Daconil Ultrex	5.0 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 Oct. 19th, 2010 and Nov. 9th, 2010, respectively

[b]Mean % diseased area

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

[d]NDVI was rated using a GreenSeeker NDVI Turf Color Meter from Ntech Industries®

Snow Mold, Quality, and Color Ratings Recorded on April 5th, 2011 at Les Bolstad GC

Treatment	Rate	Timing[a]	Dis severity[b]	Color[c]	NDVI[d]
22 QP TM/C	6.0 OZ/M	Late	0.0 e	6.0 def	0.624 k-q
QP Ipro	4.0 FL OZ/M	Late			
QP Propiconazole	2.0 FL OZ/M	Late			
23 QP 642	11.75 FL OZ/M	Late	0.0 e	5.8 ef	0.658 c-n
24 QP Chlorothalonil	2.66 FL OZ/M	Late	0.0 e	5.5 f	0.592 opq
QP Ipro	4.0 FL OZ/M	Late			
QP Tebuconazole	0.69 FL OZ/M	Late			
25 QP Chlorothalonil	4.76 FL OZ/M	Late	0.8 e	6.0 def	0.682 a-k
QP Ipro	2.23 FL OZ/M	Late			
QP Fludioxonil	0.36 FL OZ/M	Late			
26 NB37440	0.4 FL OZ/M	Late	4.5 de	6.3 cde	0.701 a-i
27 NB37440	0.82 FL OZ/M	Late	2.0 e	6.3 cde	0.713 a-d
28 NB36137	0.45 OZ/M	Late	13.8 bc	6.0 def	0.676 a-l
29 NB36137	0.9 OZ/M	Late	2.5 e	6.3 cde	0.682 a-k
30 NB36693	1.2 OZ/M	Late	13.0 bcd	6.0 def	0.731 a
31 NB36693	2.4 OZ/M	Late	0.5 e	6.0 def	0.696 a-i
32 Instrata	5.0 FL OZ/M	Late	0.0 e	5.8 ef	0.631 j-p
33 Instrata	7.0 FL OZ/M	Late	3.8 e	6.0 def	0.662 b-n
34 Instrata	9.0 FL OZ/M	Late	0.0 e	5.8 ef	0.646 f-p
35 Instrata	9.3 FL OZ/M	Late	0.0 e	5.8 ef	0.642 h-p
36 Instrata	5.5 FL OZ/M	Early/Late	0.0 e	5.5 f	0.631 j-p
37 Concert	5.0 FL OZ/M	Late	0.0 e	6.3 cde	0.699 a-i
Renown	2.5 FL OZ/M	Late			
38 Concert	8.5 FL OZ/M	Late	0.5 e	6.3 cde	0.687 a-k
Banner MAXX	1.0 FL OZ/M	Late			
39 Concert	8.5 FL OZ/M	Late	0.0 e	5.8 ef	0.660 b-n
Medallion	0.25 OZ/M	Late			
40 Concert	8.5 FL OZ/M	Late	0.0 e	5.8 ef	0.651 d-o
Chipco 26GT	4.0 FL OZ/M	Late			
41 Concert	8.5 FL OZ/M	Late	0.0 e	6.3 cde	0.685 a-k
42 Headway G	4.0 LB/M	Late	0.0 e	6.5 bcd	0.705 a-g
43 Monsoon	0.9 FL OZ/M	Late	0.5 e	6.5 bcd	0.710 a-e
44 Monsoon	0.9 FL OZ/M	Late	1.3 e	6.5 bcd	0.684 a-k
Daconil Ultrex	5.5 OZ/M	Late			
45 Monsoon	0.9 FL OZ/M	Late	0.0 e	6.3 cde	0.697 a-i
Compass	0.25 OZ/M	Late			
46 Banner MAXX	2.0 FL OZ/M	Late	0.0 e	5.5 f	0.565 q
Daconil Wstik	3.2 FL OZ/M	Late			
Chipco 26GT	4.0 FL OZ/M	Late			
47 Trinity	1.0 FL OZ/M	Late	0.5 e	6.0 def	0.614 l-q
Daconil Wstik	3.2 FL OZ/M	Late			
Chipco 26GT	4.0 FL OZ/M	Late			
48 Torque	0.6 FL OZ/M	Late	2.5 e	5.5 f	0.611 m-q
Daconil Wstik	5.5 FL OZ/M	Late			
Chipco 26GT	4.0 FL OZ/M	Late			

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49 Torque	0.6 FL OZ/M	Late	0.0 e	5.8 ef	0.669 a-m
26/36	4.0 FL OZ/M	Late			
50 Torque	0.9 FL OZ/M	Late	0.0 e	5.8 ef	0.647 e-p
26/36	4.0 FL OZ/M	Late			
51 Torque	0.6 FL OZ/M	Late	0.0 e	5.8 ef	0.639 i-p
26/36	4.0 FL OZ/M	Late			
Spectro	3.67 OZ/M	Late			
52 Torque	0.9 FL OZ/M	Late	0.0 e	6.0 def	0.671 a-m
26/36	4.0 FL OZ/M	Late			
Spectro	3.7 OZ/M	Late			
53 Torque	0.6 FL OZ/M	Late	0.8 e	6.0 def	0.676 a-k
Affirm	0.9 OZ/M	Late			
54 Torque	0.6 FL OZ/M	Late	0.0 e	6.0 def	0.655 c-o
Affirm	0.9 OZ/M	Late			
Spectro	3.7 OZ/M	Late			
55 3336 Plus	2.0 FL OZ/M	Late	0.0 e	5.5 f	0.587 pq
Chipco 26GT	4.0 FL OZ/M	Late			
Daconil Wstik	5.5 FL OZ/M	Late			
56 3336 Plus	4.0 FL OZ/M	Late	6.3 cde	6.0 def	0.610 m-q
Daconil Wstik	5.5 FL OZ/M	Late			
57 Chipco 26GT	4.0 FL OZ/M	Late	3.8 e	6.0 def	0.604 n-q
Daconil Wstik	5.5 FL OZ/M	Late			
58 Endorse	4.0 OZ/M	Late	2.0 e	6.0 def	0.683 a-k
59 Segway	0.75 FL OZ/M	Late	30.0 a	6.0 def	0.610 m-q
60 Endorse	3.0 OZ/M	Late	17.5 b	6.3 cde	0.681 a-k
Segway	0.45 FL OZ/M	Late			

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

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