2010-2011 Snow Mold Control Evaluation
Craguns Golf Resort – Brainerd, 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 on the Dutch course at the Legacy at Craguns Resort in Brainerd, MN on a creeping bentgrass (*Agrostis stolonifera*) and annual bluegrass (*Poa annua*) 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 12th, 2010 and late applications were applied on November 2nd, 2010. The experimental plot area was not inoculated. There was continuous snow cover on the plots from late November of 2010 until early April of 2011, a total of approximately 120 days. Disease severity, turf quality, and color were recorded on April 11th, 2011. Disease severity was visually rated as percent disease, turfgrass quality was visually assessed on a 1-9 scale with 6 being acceptable, 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 Craguns in 2010-2011 with non-treated controls averaging 25.0% 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 for NB36693 and Segway. All but 8 treatments provided acceptable suppression (<5% disease) of gray snow mold, and most of those provided complete disease control. Differences in turf color and quality 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 11th, 2011 at Craguns GC

	Treatment	Rate	Timing[a]	Dis Severity[b]	Quality[c]	Color[d]
1	Non treated Control			25.0 a	4.8 jk	0.576 r
2	Velista	0.7 OZ/M	Late	3.0 d	6.3 efg	0.704 abc
3	Velista	0.7 OZ/M	Late	0.0 d	7.0 bcd	0.667 g-n
	Daconil Ultrex	5.0 OZ/M	Late			
	Chipco 26GT	4.0 FL OZ/M	Late			
4	Velista	0.7 OZ/M	Late	0.0 d	7.0 bcd	0.661 h-o
	Daconil Ultrex	5.0 OZ/M	Late			
	Heritage	0.7 OZ/M	Late			
5	Velista	0.7 OZ/M	Late	0.5 d	6.8 cde	0.662 h-o
	Daconil Ultrex	5.0 OZ/M	Late			
	Banner MAXX	2.0 FL OZ/M	Late			
6	Velista	0.7 OZ/M	Late	1.3 d	6.8 cde	0.671 f-m
	Daconil Ultrex	5.0 OZ/M	Late			
	3336 Plus	2.0 FL OZ/M	Late			
7	Velista	0.7 OZ/M	Late	0.5 d	6.8 cde	0.662 h-o
	Daconil Ultrex	5.0 OZ/M	Late			
8	Velista	0.7 OZ/M	Late	0.0 d	7.0 bcd	0.689 a-g
	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 d	7.0 bcd	0.681 b-i
	Trinity	1.0 FL OZ/M	Late			
	Daconil Ultrex	3.2 OZ/M	Late			
10	Insignia SC	0.54 FL OZ/M	Late	0.0 d	7.0 bcd	0.687 a-h
	Trinity	1.0 FL OZ/M	Late			
	Daconil Ultrex	3.2 OZ/M	Late			
11	Curalan EG	1.0 OZ/M	Early	5.0 cd	6.5 def	0.663 h-o
	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 d	7.0 bcd	0.681 b-i
	Trinity	1.0 FL OZ/M	Late			
	Daconil Ultrex	3.2 OZ/M	Late			
13	Interface	5.0 FL OZ/M	Late	5.0 cd	6.0 fgh	0.641 n-q
14	Interface	4.0 FL OZ/M	Late	0.0 d	7.3 bc	0.664 g-o
	Daconil Ultrex	3.2 OZ/M	Late			
15	Interface	6.0 FL OZ/M	Late	1.3 d	7.5 ab	0.698 a-e
	Triton FLO	0.85 FL OZ/M	Late			
16	Interface	5.0 FL OZ/M	Late	0.0 d	7.5 ab	0.687 a-h
	Triton FLO	0.85 FL OZ/M	Late			
17	Interface	4.0 FL OZ/M	Late	0.0 d	8.0 a	0.705 abc
	Triton FLO	0.85 FL OZ/M	Late			
18	Interface	3.0 FL OZ/M	Late	1.3 d	7.3 bc	0.706 abc
	Triton FLO	0.5 FL OZ/M	Late			
19	Reserve	4.5 FL OZ/M	Late	0.0 d	8.0 a	0.699 a-e
	Compass	0.25 OZ/M	Late			
20	Reserve	4.5 FL OZ/M	Late	0.0 d	8.0 a	0.685 a-h
	Interface	4.0 FL OZ/M	Late			
21	Tartan	2.0 FL OZ/M	Late	0.0 d	7.0 bcd	0.670 g-m
	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. 12th, 2010 and Nov. 2nd, 2010, respectively

[b]Mean % diseased area

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

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

Snow Mold, Quality, and Color Ratings Recorded on April 11th, 2011 at Craguns GC

	Treatment	Rate	Timing[a]	Dis severity[b]	Quality[c]	Color[d]
22	QP TM/C	6.0 OZ/M	Late	0.0 d	7.0 bcd	0.650 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 d	7.0 bcd	0.674 e-l
24	QP Chlorothalonil	2.66 FL OZ/M	Late	0.0 d	7.0 bcd	0.656 i-p
	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	1.8 d	6.5 def	0.647 m-q
	QP Ipro	2.23 FL OZ/M	Late			
	QP Fludioxonil	0.36 FL OZ/M	Late			
26	NB37440	0.4 FL OZ/M	Late	12.5 b	5.3 ij	0.699 a-e
27	NB37440	0.82 FL OZ/M	Late	2.5 d	6.5 def	0.709 a
28	NB36137	0.45 OZ/M	Late	6.8 bcd	5.5 hi	0.686 a-h
29	NB36137	0.9 OZ/M	Late	10.0 bcd	5.5 hi	0.689 a-g
30	NB36693	1.2 OZ/M	Late	23.8 a	4.8 jk	0.649 k-q
31	NB36693	2.4 OZ/M	Late	5.5 cd	5.8 ghi	0.681 b-i
32	Instrata	5.0 FL OZ/M	Late	1.3 d	6.8 cde	0.676 d-j
33	Instrata	7.0 FL OZ/M	Late	0.0 d	7.0 bcd	0.665 g-n
34	Instrata	9.0 FL OZ/M	Late	1.3 d	6.8 cde	0.663 h-o
35	Instrata	9.3 FL OZ/M	Late	0.0 d	7.0 bcd	0.660 h-o
36	Instrata	5.5 FL OZ/M	Early/Late	0.0 d	7.0 bcd	0.676 d-k
37	Concert	5.0 FL OZ/M	Late	0.0 d	7.0 bcd	0.667 g-n
	Renown	2.5 FL OZ/M	Late			
38	Concert	8.5 FL OZ/M	Late	0.5 d	6.8 cde	0.663 g-o
	Banner MAXX	1.0 FL OZ/M	Late			
39	Concert	0.5 FL OZ/M	Late	0.0 d	7.0 bcd	0.656 i-p
	Medallion	0.25 FL OZ/M	Late			
40	Concert	8.5 FL OZ/M	Late	0.5 d	6.8 cde	0.652 j-q
	Chipco 26GT	4.0 FL OZ/M	Late			
41	Concert	8.5 FL OZ/M	Late	0.0 d	7.0 bcd	0.670 f-m
42	Headway G	4.0 LB/M	Late	1.3 d	6.8 cde	0.698 a-e
43	Monsoon	0.9 FL OZ/M	Late	0.0 d	7.0 bcd	0.705 abc
44	Monsoon	0.9 FL OZ/M	Late	0.0 d	7.0 bcd	0.657 i-p
	Daconil Ultrex	5.5 OZ/M	Late			
45	Monsoon	0.9 FL OZ/M	Late	0.0 d	7.0 bcd	0.704 abc
	Compass	0.25 OZ/M	Late			
46	Banner MAXX	2.0 FL OZ/M	Late	0.0 d	7.0 bcd	0.649 l-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	0.0 d	7.0 bcd	0.650 k-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	0.0 d	7.0 bcd	0.638 opq
	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 d	7.0 bcd	0.707 ab
26/36	4.0 FL OZ/M	Late			
50 Torque	0.9 FL OZ/M	Late	0.0 d	7.0 bcd	0.702 a-d
26/36	4.0 FL OZ/M	Late			
51 Torque	0.6 FL OZ/M	Late	0.0 d	7.0 bcd	0.680 c-i
26/36	4.0 FL OZ/M	Late			
Spectro	3.67 OZ/M	Late			
52 Torque	0.9 FL OZ/M	Late	0.0 d	7.0 bcd	0.677 d-j
26/36	4.0 FL OZ/M	Late			
Spectro	3.7 OZ/M	Late			
53 Torque	0.6 FL OZ/M	Late	0.0 d	7.0 bcd	0.697 a-f
Affirm	0.9 OZ/M	Late			
54 Torque	0.6 FL OZ/M	Late	0.0 d	7.0 bcd	0.686 a-h
Affirm	0.9 OZ/M	Late			
Spectro	3.7 OZ/M	Late			
55 3336 Plus	2.0 FL OZ/M	Late	4.3 cd	6.0 fgh	0.627 q
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	5.5 cd	5.8 ghi	0.633 pq
Daconil Wstik	5.5 FL OZ/M	Late			
57 Chipco 26GT	4.0 FL OZ/M	Late	3.8 cd	6.3 efg	0.627 q
Daconil Wstik	5.5 FL OZ/M	Late			
58 Endorse	4.0 OZ/M	Late	3.8 cd	6.5 def	0.643 n-q
59 Segway	0.75 FL OZ/M	Late	28.8 a	4.5 k	0.599 r
60 Endorse	3.0 OZ/M	Late	10.0 bc	5.5 hi	0.600 r
Segway	0.45 FL OZ/M	Late			

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

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