



2004-05 Results of Snow Mold Control Trials Conducted in Wisconsin and Minnesota

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INTRODUCTION

This report is a summary of snow mold fungicide trials conducted in 2004-2005 on fairways of three golf courses, Sentryworld Golf Course in Stevens Point, WI, Gateway Golf Club in Land O' Lakes, WI and The Legend at Giants Ridge Golf Resort at Biwabik, MN. Disease pressure at the sites except the Sentryworld GC was very high this season, with untreated control plots averaging 96-98% disease damage. We noted phytotoxicity on the turfgrasses in response to the chemical applications. The objective of the experiments was to evaluate experimental and commercial fungicides for the control of Typhula blight (caused by *Typhula ishikariensis* and *T. incarnata*) and pink snow mold (caused by *Microdochium nivale*).

EXPERIMENTAL METHODS

These evaluations were conducted at Sentryworld GC in Stevens Point, WI, Gateway GC in Land O' Lakes, WI, and Giants Ridge GR in Biwabik, MN on creeping bentgrass (*Agrostis stolonifera*) maintained at fairway cutting heights. Individual plots measured 3 ft x 10 ft (30 ft²), and were arranged in a randomized complete block design with three replications. Individual treatments were applied at a nozzle pressure of 40 p.s.i using a CO₂ pressurized boom sprayer equipped with two XR Teejet 8005 VS nozzles. All fungicides were agitated by hand and applied in the equivalent of 2 gallons of water per 1000ft². Granular applications were applied using a shaker jar. Early applications were applied on October 14, 2004, and late applications were applied on November 11, 2004 at Sentryworld and different dates of other locations listed in Table 1. The experimental plot area was not inoculated. There was continuous snow cover on the plots from January 1, 2005 to March 25, 2005 (84 days) at Sentryworld GC, from November 27, 2004 to April 7, 2005 (132 days) at Gateway GC, and from November 27, 2004 to April 3, 2005 (128 days) at Giants Ridge GR. Percent Typhula blight and phytotoxicity ratings were recorded on April 6, 2005 at Sentryworld but only Typhula blight rating was recorded on April 12 and April 11 at Gateway and Giants Ridge, respectively. Data obtained was subjected to an analysis of variance to determine significant differences between treatments. The mean percent Typhula blight and mean phytotoxicity for each individual treatment are located in the table shown on page 23.

RESULTS and DISCUSSION

Disease pressure at Sentryworld was low to moderate this year with untreated checks averaging 18% disease. The dominant pathogens causing damage were *Typhula ishikariensis*, and to a lesser degree, *Typhula incarnata*. Multiple treatments listed in the table provided 100% control of the Typhula blight. There were very noticeable differences in the color of treated plots. Because of this, phytotoxicity of each treatment was recorded as well. On the other hand, disease pressure, mainly caused by *T. ishikariensis*, was extremely high at Gateway and at Giants Ridge. The untreated control plots had more than 96% disease damage. Moderate disease pressure of *Microdochium nivale* was also observed at Giant Ridge. In addition, localized symptoms of Microdochium patch were noticed at the time of late fungicide application treatment (November 4, 2004). This early disease incidence was observed mostly in the third replication of the plots and may have confound the statistical interpretation somewhat.

At Gateway, eight treatments (#25, 26, 30, 37, 61, 64, 65, and 70), mixtures of either two or three fungicides, had an average of 5% disease or less in this severe season (see Table). Some of the treatments (#30, 64, and 70) also provided excellent control (an average of 10% or less damage) over snow molds at Giants Ridge. However, the treatments, #37, 61, and 65 had 19%, 16.3%, and 13.3% damage, respectively. Also, two experimentals (treatments #25 and 26) had more than 16% damage at the Giants Ridge. These variations in the efficacy between the two sites might be due to the early disease occurrence seen before the late application or the variability caused by visual disease estimates. In addition, the application dates were different for each trial. Hope that some of treatments will give you more options to choose for this coming winter. For more information, please check our website, www.plantpath.wisc.edu/tddl where a copy of 2004-05 snow mold field day book and treatment pictures are stored. ♡

Table 1. Application dates, snow cover days, and rating dates for snow mold control trials at Sentryworld Golf Course in Stevens Point, WI, Gateway Golf Club in Land O' Lakes, WI, and Giants Ridge Golf Resort in Biwabik, MN.

City/State	Application date in 2004		Snow cover days	Rating date in 2005
	Early	Late		
Stevens Point, WI	Oct. 14	Nov. 11	84	April 6
Land O' Lakes, WI	Oct. 12	Nov. 3	132	April 12
Biwabik, MN	Oct. 11	Nov. 4	128	April 11

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Table 2. Snow mold and phytotoxicity ratings recorded on April 6, 2005 at Stevens Point, WI and snow mold rating on April 12, 2005 at Land O' Lakes, WI and on April 11, 2005 at Biwabik, MN.

Treatment	Rate	Timing ^a	% Typhula blight ^b			Phytotoxicity ^c
			Stevens Point	Land O' Lakes	Biwabik	
1 Untreated Control			18.3 abc	98.3 ab	96.3 ab	6.0a-e
2 CL-EXP-2	4.00 FL OZ/M	Late	7.7 c-h	88.3 a-d	-	5.7b-f
3 CL-EXP-2	4.00 FL OZ/M	Late	1.0 gh	63.3 c-i	-	6.3a-d
Daconil Ultrex	5.00 OZ/M	Late				
4 CL-EXP-2	4.00 FL OZ/M	Late	6.7 c-h	88.3 a-g	-	6.3a-d
Daconil Ultrex	5.00 OZ/M	Late				
Magnum	3.50 FL OZ/M	Late				
5 CL-EXP-2	4.00 FL OZ/M	Late	11.3 a-h	70.0 a-g	-	6.0a-e
Spotrete	8.00 OZ/M	Late				
6 CL-EXP-2	4.00 FL OZ/M	Late	7.7 c-h	73.3 a-e	-	5.7b-f
Spotrete	8.00 OZ/M	Late				
Magnum	3.50 FL OZ/M	Late				
7 Endorse	4.00 OZ/M	Late	6.7 c-h	71.7 a-f	60 a-k	6.3a-d
Spectro	5.75 OZ/M	Late				
8 Endorse	4.00 OZ/M	Late	6.0 d-h	80.0 a-d	-	5.0d-g
Spotrete	8.00 OZ/M	Late				
9 Spectro	4.00 OZ/M	Early	5.0 d-h	58.3 d-j	60 a-k	6.3a-d
Endorse	4.00 OZ/M	Late				
Spectro	4.00 OZ/M	Late				
10 CL-EXP-4	1.00 OZ/M	Late	0.0 h	86.7 a-d	38.3 g-q	6.0a-e
11 CL-EXP-4	1.00 OZ/M	Late	1.0 gh	7.3 m-p	24 j-q	6.3a-d
Spectro	5.75 OZ/M	Late				
12 CL-EXP-4	1.00 OZ/M	Late	0.3 h	66.7 a-h	-	6.0a-e
Spotrete	8.00 OZ/M	Late				
13 Spectro	4.00 OZ/M	Early	0.0 h	6.0 nop	7 opq	6.0a-e
CL-EXP-4	1.00 OZ/M	Late				
Spectro	4.00 OZ/M	Late				
14 Daconil Weather Stik	5.50 FL OZ/M	Late	10.0 a-h	71.7 a-f	86.7 a-f	5.7b-f
15 Spotrete	8.00 OZ/M	Late	5.7 d-h	88.3 a-d	90.7 a-e	6.0a-e
16 Endorse	4.00 OZ/M	Late	11.7 a-h	91.7 a-d	65.0 a-j	6.0a-e
17 Spectro	5.75 OZ/M	Late	4.0 e-h	75.0 a-e	90.7 a-e	6.0a-e
18 Spectro	4.00 OZ/M	Late	5.0 d-h	78.7 a-e	50.0 c-o	6.0a-e
19 Magnum	3.50 FL OZ/M	Late	16.7 a-d	100.0 a	-	6.0a-e
20 AND3224	6.36 LB/M	Late	3.0 e-h	73.3 a-e	86.7 a-j	7.3a
21 AND4333	9.00 LB/M	Late	0.0 h	26.7 j-p	48.3 c-p	5.3c-f
22 AND4334	9.00 LB/M	Late	0.0 h	15.0 k-p	76.7 a-i	5.3c-f
23 AND4335	9.00 LB/M	Late	6.7 c-h	12.0 m-p	36.7 g-q	5.3c-f
24 A14036	4.70 FL OZ/M	Late	0.0 h	21.7 k-p	35.0 h-q	5.7b-f
25 A14036	9.20 FL OZ/M	Late	0.0 h	4.0 op	25.0 j-q	5.3c-f
26 A14036	18.60 FL OZ/M	Late	0.0 h	1.7 p	16.7 k-q	4.7e-h
27 Medallion	0.14 OZ/M	Late	5.0 d-h	38.3 g-q	41.7 f-q	6.0a-e
Daconil WeatherStik	2.40 FL OZ/M	Late				
Banner MAXX	1.70 FL OZ/M	Late				
28 Signature	4.00 OZ/M	Early/Late	3.3 e-h	13.3 i-p	45.0 e-q	6.3a-d
Chipco 26GT	4.00 FL OZ/M	Early/Late				
Daconil WeatherStik	5.50 FL OZ/M	Early/Late				
29 Signature	4.00 OZ/M	Early/Late	0.0 h	19.0 k-p	10.3 n-q	6.3a-d
Armada	1.50 OZ/M	Early/Late				
30 Armada	1.50 OZ/M	Early/Late	0.0 h	4.0 op	1.0 q	4.3fgh
Turfide 400	6.00 FL OZ/M	Early/Late				
31 Armada	1.50 OZ/M	Early/Late	0.7 h	45.0 e-i	17.7 k-q	4.3fgh
32 Signature	4.00 OZ/M	Early/Late	9.0 b-h	91.7 a-d	96.7 ab	6.7abc
33 Chipco 26GT	4.00 FL OZ/M	Early/Late	8.3 b-h	88.3 a-d	80.0 a-h	5.7b-f
34 Daconil WeatherStik	5.50 FL OZ/M	Early/Late	2.3 fgh	71.7 a-f	73.3 a-i	5.3c-f
35 Turfide 400	6.00 FL OZ/M	Early/Late	0.0 h	85.0 a-d	53.3 a-n	4.7e-h
36 LESCO 18 Plus	4.00 FL OZ/M	Early	0.0 h	33.3 i-p	40.7 g-q	4.3fgh
LESCO Manicure Ultrex	5.00 OZ/M	Early				
LESCO Revere 4000	8.00 FL OZ/M	Late				
37 LESCO 18 Plus	4.00 FL OZ/M	Late	0.0 h	3.0 op	19.0 k-q	5.3c-f
LESCO Manicure Ultrex	5.00 OZ/M	Late				
LESCO Revere 4000	8.00 FL OZ/M	Late				
38 LESCO Spectator	1.25 FL OZ/M	Early	0.0 h	40.0 i-m	40.0 g-q	4.3fgh
LESCO Revere 4000	8.00 FL OZ/M	Late				
39 LESCO Spectator	1.25 FL OZ/M	Late	0.0 h	7.0 m-p	13.3 i-q	5.3c-f
Medallion	0.50 OZ/M	Late				
40 LESCO Revere 4000	12.00 FL OZ/M	Late	0.0 h	76.7 a-e	51.7 b-o	2.3j
41 Insignia	0.70 OZ/M	Early	4.3 d-h	28.3 j-p	40.0 g-q	6.3a-d
LESCO 18 Plus	4.00 FL OZ/M	Late				
LESCO Manicure Ultrex	5.00 OZ/M	Late				
42 LESCO Spectator	1.00 FL OZ/M	Early	0.3 h	18.7 k-p	55.0 a-n	5.7b-f
Insignia	0.70 OZ/M	Late				
LESCO Manicure Ultrex	5.00 OZ/M	Late				
43 Insignia	0.70 OZ/M	Early	0.0 h	10.0 m-p	45.0 e-q	3.7ghi
LESCO Manicure Ultrex	5.00 OZ/M	Early				
LESCO Revere 4000	8.00 FL OZ/M	Late				
44 Compass	0.50 OZ/M	Late	0.3 h	16.7 k-p	24.3 j-q	5.0d-g
LESCO Revere 4000	8.00 FL OZ/M	Late				
45 Insignia	0.90 OZ/M	Late	0.0 h	16.7 k-p	23.3 j-q	3.7ghi
Iprodione Pro	4.00 FL OZ/M	Late				
LESCO Revere 4000	8.00 FL OZ/M	Late				
46 Insignia	0.90 OZ/M	Late	0.7 h	12.3 m-p	32.3 i-q	5.0d-g
Iprodione Pro	4.00 FL OZ/M	Late				
LESCO Manicure Ultrex	3.20 OZ/M	Late				
47 LESCO 18 Plus	4.00 FL OZ/M	Late	20.0 ab	86.7 a-d	68.3 a-j	5.7b-f
48 LESCO Manicure Ultrex	5.00 OZ/M	Late	13.3 a-g	76.7 a-e	97.7 a	6.3a-d
49 LESCO Revere 4000	8.00 FL OZ/M	Late	4.3 d-h	81.7 a-d	60.0 a-k	3.3hij
50 LESCO Spectator	1.25 FL OZ/M	Late	0.0 h	10.0 m-p	56.7 a-m	5.0d-g
51 LESCO Spectator	1.00 FL OZ/M	Early	4.7 d-h	62.0 c-l	91.7 a-d	6.3a-d
52 Insignia	0.70 OZ/M	Late	21.7 a	93.3 abc	87.3 a-f	6.0a-e
53 Compass	0.50 OZ/M	Late	2.7 e-h	88.3 a-d	65.0 a-j	5.7b-f
54 Iprodione Pro	4.00 FL OZ/M	Late	15.0 a-e	90.0 a-d	75.0 a-l	6.0a-e
55 EXP01	0.47 FL OZ/M	Early/Late	5.0 d-h	58.3 d-j	-	6.3a-d

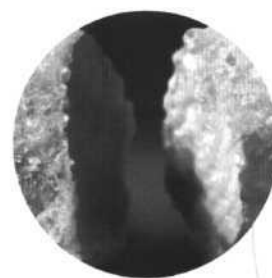
56 EXP01	0.63 FL OZ/M	Early/Late	5.0 d-h	65.0 b-l	-	6.0a-e
57 EXP01	0.79 FL OZ/M	Early/Late	1.0 gh	61.7 c-l	-	6.0a-e
58 EXP02	0.55 OZ/M	Early/Late	11.7 a-h	81.7 a-d	-	6.3a-d
59 EXP02	0.83 OZ/M	Early/Late	3.3 e-h	71.7 a-f	-	5.7b-f
60 EXP02	1.10 OZ/M	Early/Late	4.3 d-h	70.0 a-g	-	5.7b-f
61 Chipco 26GT	4.00 FL OZ/M	Late	1.7 fgh	5.0 nop	16.3 k-q	3.0ij
Daconil Ultrex	5.00 OZ/M	Late				
LESCO Revere 4000	8.00 FL OZ/M	Late				
62 Chipco 26GT	4.00 FL OZ/M	Late	15.0 a-e	91.7 a-d	87.7 a-e	5.3c-f
63 Daconil Ultrex	5.00 OZ/M	Late	6.7 c-h	91.7 a-d	93.3 abc	6.0a-e
64 Chipco 26GT	4.00 FL OZ/M	Late	0.0 h	4.0 op	3.7 pq	3.3hij
Bayleton	1.00 OZ/M	Late				
Turfide 400	6.00 FL OZ/M	Late				
65 Bayleton	2.00 OZ/M	Late	0.0 h	5.0 nop	13.3 i-q	4.3fgh
Turfide 400	6.00 FL OZ/M	Late				
66 Bayleton	1.00 OZ/M	Late	1.7 fgh	81.7 a-d	81.3 a-g	6.0a-e
67 Bayleton	2.00 OZ/M	Late	0.3 h	73.3 a-e	81.7 a-g	5.0d-g
68 Turfide 400	6.00 FL OZ/M	Late	2.3 fgh	85.0 a-d	51.7 b-o	5.0d-g
69 Banner MAXX	3.00 FL OZ/M	Late	1.7 fgh	6.7 nop	7.3 opq	4.7e-h
Medallion	0.50 OZ/M	Late				
70 Banner MAXX	4.00 FL OZ/M	Late	0.7 h	1.7 p	10.0 n-q	6.3a-d
Medallion	0.50 OZ/M	Late				
71 Banner MAXX	3.00 FL OZ/M	Late	2.7 e-h	45.0 e-l	58.3 a-l	5.0d-g
72 Banner MAXX	4.00 FL OZ/M	Late	3.3 e-h	26.7 j-p	46.7 d-q	5.0d-g
73 Medallion	0.50 OZ/M	Late	10.0 a-h	73.3 a-e	16.7 k-q	5.7b-f
74 Daconil Weather Stik	5.50 FL OZ/M	Late	5.7 d-h	11.7 m-p	36.0 g-q	6.0a-e
Medallion	0.50 OZ/M	Late				
75 Prostar	4.50 OZ/M	Late	0.0 h	35.7 h-o	12.0 m-q	5.0d-g
Turfide 400	6.00 FL OZ/M	Late				
76 Prostar	3.00 OZ/M	Late	0.0 h	7.0 m-p	12.3 m-q	4.7e-h
Turfide 400	6.00 FL OZ/M	Late				
77 Prostar	4.50 OZ/M	Late	0.0 h	83.3 a-d	55.0 a-n	6.0a-e
78 Prostar	3.00 OZ/M	Late	0.7 h	86.7 a-d	68.0 a-j	6.3a-d
79 Heritage	0.70 OZ/M	Late	0.7 h	46.7 e-k	31.0 i-q	5.7b-f
Turfide 400	6.00 FL OZ/M	Late				
80 Heritage	0.70 OZ/M	Late	20.0 ab	93.3 abc	86.7 a-f	5.3c-f
81 Ecoguard	20.00 FL OZ/M	Late	13.7 a-f	100.0 a	93.0 abc	7.0ab

^a Early and late fungicide treatments were applied on Oct. 14 and Nov. 11, 2004, respectively at Stevens Point, WI; Oct. 12 and Nov. 3, 2004 at Land O' Lakes, WI; and Oct. 11 and Nov. 4, 2004 at Biwabik, MN.

^b Means (percent diseased area) followed by same letter do not significantly differ (P=0.05, Duncan's New MRT).

^c "-" means that those treatments were not evaluated at Biwabik site.

^d Phytotoxicity was rated on a scale of 1-9 where 1 = straw colored, 6 = acceptable, 9 = dark green.



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