

2012 Snow Mold Research

By Dr. Paul Koch, Turfgrass Diagnostic Lab Manager, O.J. Noer Turfgrass Research and Education Facility &
By Dr. Jim Kerns, Department of Pathology, University of Wisconsin - Madison

It was not long after I submitted my last article to Dave for publication in *The Grass Roots* that I realized I should have been my snow mold preview article. We'll chalk it up to the long, hot summer. Alas, I realize that most of you have already made your snow mold fungicide selection and some may have even applied their first applications. Hopefully many of you consulted the 2012 Snow Mold Reports online at the TDL website (www.tdl.wisc.edu) when making your selection for this year.

Snow mold was pretty hard to come by in the incredibly warm winter of 2011-2012, and 4 of the 5 sites we tested at had very little snow mold present. We were fortunate that in the snow belt of Michigan's U.P., at Wawonowin Country Club, a thick cover of snow fell early in the season on relatively unfrozen ground and produced conditions conducive for snow mold development. After a few days of traveling to sites without any snow mold, it was quite a sigh of relief to finally see snow mold. This may seem odd, but it meant results for both the Midwestern turfgrass managers and the chemical cooperators who fund the studies and a portion of our program.

The Wawonowin Country Club evaluation was conducted on a creeping bentgrass and annual bluegrass golf course fairway maintained at a height of 0.5 inch. Early applications were applied on October 6th, 2011 and late applications


were applied on November 1st, 2011. There was continuous snow cover on the plots from mid-November until mid-March of 2012, a total of approximately 120 days. Disease severity, turf quality, and turf color were recorded on March 19th, 2012. Disease severity was visually rated as percent area affected, turfgrass quality was visually rated on a 1-9 scale with 6 being acceptable, and non-diseased turfgrass color was visually rated on a 1-9 scale with 6 being acceptable color. Data was subjected to an analysis of variance and means were separated using the Waller Duncan test. Means for disease severity, turf quality and color for individual treatments are presented in the following tables.

The 2011-2012 trial had a wide variety of both standard snow mold fungicides and new experimental products (Table 1). Disease pressure was high at Wawonowin with non-treated controls averaging 65% disease (Figure 1). The primary pathogen causing disease was *Typhula ishikariensis*. Neither *T. incarnata* nor *M. nivale* were observed. All treatments reduced disease compared to the non-treated control. Despite the fairly high disease pressure, 56 of 75 treatments provided acceptable snow mold control (<10% disease). Of these, 13 treatments provided complete control of snow mold. Most treatments that provided acceptable disease control contained 3 or more active ingredients in the applica-

tion. Turfgrass quality mirrored disease severity, with 53 treatments providing acceptable turfgrass quality. Products containing pigments provided the greenest color with the greatest increas-

es in color coming from those treatments including Civitas, Interface, Reserve, Tartan, and PAR. Finances always play a huge role when selecting snow mold fungicides, second only to efficacy. A lot of news has been made over the lifting of the stop sale order on PCNB, and it is available for sale this fall. The primary advantage of PCNB was that it was a solid snow mold product that was very affordable. But it appears the primary advantage of using PCNB, the low cost, is no longer available. To be blunt, if the cost is similar there are many more effective snow mold fungicides than PCNB, many of which are present in this study. Look over the results of these trials with your sales representatives to find a product that works for a price you can afford.

These trials are conducted to provide information to chemical companies on the efficacy of their products, but also for you as consumers for an unbiased comparison of the best products available under heavy snow mold pressure. The 2012 Snow Mold Reports for each site, with pictures of each treatment, are available at the Turfgrass Diagnostic Lab's website (<http://www.tdl.wisc.edu/research.php>). Fungicide reports for both summer and winter diseases from past years are also available at the same site. Please use these reports to create your fungicide programs, and if you have any questions please do not hesitate to email (plkoch@wisc.edu) or call (608-845-2535).

Special thanks to the five host superintendents in 2011-2012: Brent Belanger from Les Bolstad GC in St Paul, MN; Andy Hakkarinen from Wawonowin CC in Champion, MI; Jeff Jushka from Odana Hills GC in Madison, WI; Matt McKinnon from Craguns Resort in Brainerd, MN; and Gary Tanko from Sentryworld GC in Stevens Point, WI. Without their generous hospitality and support, these trials would not be successful. 



O.J. Noer Turfgrass
Research
and Education Facility
2502 County Highway M
Verona, WI 53593

Phone: (608) 845-2535
Fax: (608) 845-8162
Email: plkoch@wisc.edu
Website: <http://tdl.wisc.edu>

TURFGRASS DIAGNOSTIC LAB

Snow Mold and Quality Ratings Recorded on March 19th, 2012 at Wawonowin CC

Treatment	Rate	Timing ^a	Dis Severity ^b	Quality ^c	Color ^d
1 Nontreated Control		Late	65.0 a	2.8 j	7.0 g
2 Tourney	0.37 OZ/M	Late	3.8 hij	6.3 a-e	7.0 g
3336 Plus	4.0 FL OZ/M	Late			
3 Velista	0.7 OZ/M	Late	10.0 f-j	5.8 c-g	7.3 fg
4 Velista	0.7 OZ/M	Late	0.5 ij	6.8 abc	7.0 g
Daconil Ultrex	5.0 OZ/M	Late			
Chipco 26GT	4.0 FL OZ/M	Late			
5 Velista	0.7 OZ/M	Late	0.5 ij	6.8 abc	7.0 g
Daconil Ultrex	5.0 OZ/M	Late			
Heritage	0.7 OZ/M	Late			
6 Velista	0.7 OZ/M	Late	1.3 ij	6.8 abc	7.0 g
Daconil Ultrex	5.0 OZ/M	Late			
Banner MAXX II	2.0 FL OZ/M	Late			
7 Velista	0.7 OZ/M	Late	2.5 hij	6.5 a-d	7.0 g
Daconil Ultrex	5.0 OZ/M	Late			
3336 Plus	2.0 FL OZ/M	Late			
8 Velista	0.7 OZ/M	Late	13.8 e-j	5.0 f-i	7.0 g
Daconil Ultrex	5.0 OZ/M	Late			
9 Velista	0.7 OZ/M	Late	2.5 hij	6.5 a-d	7.0 g
Medallion	0.25 OZ/M	Late			
Banner MAXX II	2.0 FL OZ/M	Late			
10 Pillar G	3.0 LB/M	Late	10 f-i	5.8 c-g	7.3 fg
11 Insignia SC	0.7 FL OZ/M	Late	3.8 hij	6.3 a-e	7.0 g
Trinity	1 FL OZ/M	Late			
Daconil Ultrex	3.2 OZ/M	Late			
12 Honor	0.84 OZ/M	Late	4.3 g-j	6.0 b-f	7.0 g
Trinity	1 FL OZ/M	Late			
Daconil Ultrex	3.2 OZ/M	Late			
13 Interface	3.0 FL OZ/M	Late	12.5 e-j	5.5 d-h	7.3 fg
Triton Flo	0.5 FL OZ/M	Late			
14 Interface	3.0 FL OZ/M	Late	2.5 hij	6.5 a-d	8.0 cd
Triton Flo	0.75 FL OZ/M	Late			
15 Interface	4.0 FL OZ/M	Late	3.8 hij	6.3 a-e	7.3 fg
Triton Flo	0.5 FL OZ/M	Late			
ES TC006A	3.0 GAL/A	Late			
16 Interface	4.0 FL OZ/M	Late	8.8 g-j	6.0 b-f	8.0 cd
Triton Flo	0.75 FL OZ/M	Late			
17 Interface	4.0 FL OZ/M	Late	6.3 g-j	6.0 b-f	7.8 de
Triton Flo	0.85 FL OZ/M	Late			
18 Interface	5.0 FL OZ/M	Late	2.5 hij	6.5 a-d	7.8 de
Triton Flo	0.85 FL OZ/M	Late			
19 Interface	6.00 FL OZ/M	Late	0.5 ij	6.8 abc	8.0 cd
Triton Flo	0.85 FL OZ/M	Late			
20 Reserve	4.50 FL OZ/M	Late	0.0 j	7.3 a	7.8 de
Interface	4.0 FL OZ/M	Late			
21 Reserve	4.5 FL OZ/M	Late	0.0 j	7.0 av	7.8 de
Tartan	1.5 FL OZ/M	Late			
22 Reserve	6.0 FL OZ/M	Late	0.0 j	7.0 ab	8.0 cd
Interface	5.4 FL OZ/M	Late			
23 Torque	0.6 FL OZ/M	Late	0.0 j	7.0 ab	7.0 g
26/36	4.0 FL OZ/M	Late			
Spectro	3.6 OZ/M	Late			

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

^aEarly and late fungicide treatments were applied on Oct, 6th and Nov. 1st 2012, respectively

^bMean % diseased area

^cQuality was visually rated on a scale of 1-9 where 1 = completely dead, 6 = acceptable, 9 = dark green

^dColor was visually rated on a scale of 1-9 where 1 = completely brown, 6 = acceptable, 9 = dark green

TURFGRASS DIAGNOSTIC LAB

Snow Mold and Quality Ratings Recorded on March 19th, 2012 at Wawonowin CC

Treatment	Rate	Timing ^a	Dis Severity ^b	Quality ^c	Color ^d
24 Torque	0.6 FL OZ/M	Late	5.0 g-j	6.5 a-d	7.0 g
Affirm	0.9 OZ/M	Late			
Spectro	3.60 OZ/M	Late			
25 Torque	0.9 FL OZ/M	Late	0.0 j	7.0 ab	7.3 fg
3336 Plus	4.0 FL OZ/M	Late			
26 FeDCON	12.0 FL OZ/M	Early/Late	13.0 e-j	5.5 d-h	5.0 h
Torque	0.4 FL OZ/M	Late			
27 FeDCON	12.0 FL OZ/M	Late	7.5 g-j	5.8 c-g	5.3 h
Torque	0.4 FL OZ/M	Late			
28 Instrata	7.0 FL OZ/M	Late	0.0 j	7.0 ab	7.0 g
29 Instrata	9.0 FL OZ/M	Late	1.8 hij	6.5 a-d	7.0 g
30 Concert II	8.5 FL OZ/M	Late	2.5 hij	6.5 a-d	7.0 g
31 Concert II	8.5 FL OZ/M	Late	5.0 g-j	6.0 b-f	7.5 ef
PAR	0.37 FL OZ/M	Late			
32 Concert II	8.5 FL OZ/M	Late	0.0 j	7.0 ab	7.3 fg
Medallion	0.25 OZ/M	Late			
PAR	0.37 FL OZ/M	Late			
33 Concert II	8.5 FL OZ/M	Late	1.8 hij	6.5 a-d	7.5 ef
A7087F	0.5 FL OZ/M	Late			
PAR	0.37 FL OZ/M	Late			
34 Interface	3.0 FL OZ/M	Late	1.0 ij	7.0 ab	7.3 fg
Torque	0.6 FL OZ/M	Late			
35 A9898A	1.3 FL OZ/M	Late	1.8 hij	6.5 a-d	7.0 g
Daconil Action	5.4 FL OZ/M	Late			
36 A9898A	1.3 FL OZ/M	Late	1.8 hij	6.5 a-d	7.0 g
Medallion TL	0.96 FL OZ/M	Late			
37 A9898A	1.3 FL OZ/M	Late	10.0 f-j	5.8 c-g	7.0 g
A70087F	0.5 FL OZ/M	Late			
38 A9898A	1.3 FL OZ/M	Late	0.5 oj	6.8 abc	7.0 g
A7087F	0.5 FL OZ/M	Late			
Medallion TL	0.96 FL OZ/M	Late			
39 Instrata	9.0 FL OZ/M	Late	1.3 ij	6.8 abc	7.5 ef
PAR	0.37 FL OZ/M	Late			
40 Instrata	5.5 FL OZ/M	Late	0.0 j	7.3 a	8.0 cd
A7087F	0.5 FL OZ/M	Late			
PAR	0.37 FL OZ/M	Late			
41 Banner MAXX II	2.0 FL OZ/M	Late	0.5 ij	6.8 abc	7.0 g
A7087F	0.5 FL OZ/M	Late			
Medallion TL	0.96 FL OZ/M	Late			
42 Banner MAXX II	2.0 FL OZ/M	Late	5.5 g-j	6.5 a-d	7.3 fg
Medallion TL	0.96 FL OZ/M	Late			
PAR	0.37 FL OZ/M	Late			
43 Banner MAXX II	2.0 FL OZ/M	Late	0.0 j	7.0 ab	7.0 g
Medallion TL	0.96 FL OZ/M	Late			
44 Interface	4.0 FL OZ/M	Late	2.5 hij	6.5 a-d	7.3 fg
Chipco Triton WDG	0.3 OZ/M	Late			
45 QP TM/C	6.0 OZ/M	Late	0.0 j	7.0 ab	7.0 g
QP Iprodione	4.0 FL OZ/M	Late			
QP Propiconazole	2.0 FL OZ/M	Late			

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

^aEarly and late fungicide treatments were applied on Oct, 6th and Nov. 1st 2012, respectively

^bMean % diseased area

^cQuality was visually rated on a scale of 1-9 where 1 = completely dead, 6 = acceptable, 9 = dark green

^dColor was visually rated on a scale of 1-9 where 1 = completely brown, 6 = acceptable, 9 = dark green

TURFGRASS DIAGNOSTIC LAB

Snow Mold and Quality Ratings Recorded on March 19th, 2012 at Wawonowin CC

Treatment	Rate	Timing ^a	Dis Severity ^b	Quality ^c	Color ^d
46 QP TM/C	6.0 OZ/M	Late	0.0 j	7.0 ab	7.3 fg
QP Iprodione	4.0 FL OZ/M	Late			
QP Tebuconazole	0.60 FL OZ/M	Late			
47 QP Enclave	8.0 FL OZ/M	Late	0.0 j	7.0 ab	7.0 g
48 QP Enclave	8.0 FL OZ/M	Late	0.0 j	7.3 a	8.0 cd
Foursome	0.5 FL OZ/M	Late			
49 Civitas	16.0 FL OZ/M	Late	15.0 e-i	5.0 f-i	7.0 g
Harmonizer	1.0 FL OZ/M	Late			
Concert	4.5 FL OZ/M	Late			
50 Civitas	16.0 FL OZ/M	Late	27.0 b-e	5.0 f-i	7.0 g
Harmonizer	1.0 FL OZ/M	Late			
Torque	0.6 FL OZ/M	Late			
51 Civitas	16 FL OZ/M	Late	3.8 hij	6.3 a-e	7.3 fg
Harmonizer	1.0 FL OZ/M	Late			
Torque	0.6 FL OZ/M	Late			
Daconil Wstik	1.5 FL OZ/M	Late			
52 Civitas	16 FL OZ/M	Late	2.5 hij	6.8 abc	7.8 de
Harmonizer	1.0 FL OZ/M	Late			
QP Iprodione	2.0 FL OZ/M	Late			
Torque	0.6 FL OZ/M	Late			
53 Civitas	16.0 FL OZ/M	Late	3.8 hij	6.3 a-e	8.0 cd
Harmonizer	1.0 FL OZ/M	Late			
Trinity	1.0 FL OZ/M	Late			
Daconil Wstik	1.5 FL OZ/M	Late			
54 Civitas	16.0 FL OZ/M	Late	23.8 b-f	5.3 e-i	7.3 fg
Harmonizer	1.0 FL OZ/M	Late			
QP Iprodione	3.0 FL OZ/M	Late			
Daconil Wstik	1.5 FL OZ/M	Late			
55 Civitas	8.0 FL OZ/M	Late	7.5 g-j	6.3 a-e	7.5 ef
Harmonizer	0.5 FL OZ/M	Late			
Torque	0.6 FL OZ/M	Late			
56 Civitas	8.0 FL OZ/M	Late	1.8 hij	6.5 a-d	7.5 ef
Harmonizer	0.5 FL OZ/M	Late			
Torque	0.6 FL OZ/M	Late			
Daconil Wstik	1.5 FL OZ/M	Late			
57 Civitas	8.0 FL OZ/M	Late	2.5 hij	6.5 a-d	7.0 g
Harmonizer	0.5 FL OZ/M	Late			
Torque	0.6 FL OZ/M	Late			
Daconil Wstik	5.5 FL OZ/M	Late			
58 Civitas	8.0 FL OZ/M	Early/Late	3.8 hij	6.3 a-e	7.8 de
Harmonizer	0.5 FL OZ/M	Early/Late			
Torque	0.6 FL OZ/M	Early/Late			
59 Civitas	8.0 FL OZ/M	Late	8.8 g-i	6.0 b-f	7.0 g
Harmonizer	0.5 FL OZ/M	Late			
Trinity	1.0 FL OZ/M	Late			
Daconil Wstik	1.5 FL OZ/M	Late			
60 Civitas	16.0 FL OZ/M	Late	32.5 b	4.5 hi	7.8 de
Harmonizer	1.0 FL OZ/M	Late			
Emerald	0.18 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. 6th and Nov. 1st 2012, respectively					
^b Mean % diseased area					
^c Quality was visually rated on a scale of 1-9 where 1 = completely dead, 6 = acceptable, 9 = dark green					
^d Color was visually rated on a scale of 1-9 where 1 = completely brown, 6 = acceptable, 9 = dark green					

TURFGRASS DIAGNOSTIC LAB

Snow Mold and Quality Ratings Recorded on March 19th, 2012 at Wawonowin CC

Treatment	Rate	Timing ^a	Dis Severity ^b	Quality ^c	Color ^d
61 Civitas	8.0 FL OZ/M	Late	31.3 bc	4.5 hij	7.0 g
Harmonizer	0.5 FL OZ/M	Late			
Emerald	0.18 OZ/M	Late			
62 Civitas	8.0 FL OZ/M	Late	35.0 b-h	4.3 ij	8.3 bc
Harmonizer	4.0 FL OZ/M	Late			
Emerald	0.18 OZ/M	Late			
63 Civitas	16.0 FL OZ/M	Late	10.0 f-j	5.8 c-g	7.5 ef
Harmonizer	1.0 FL OZ/M	Late			
Instrata	2.5 FL OZ/M	Late			
64 Civitas	16.0 FL OZ/M	Late	6.3 g-j	5.8 c-g	8.8 ab
Harmonizer	4.0 FL OZ/M	Late			
Torque	0.6 FL OZ/M	Late			
65 Civitas	8.0 FL OZ/M	Late	7.5 g-j	5.5 d-h	8.5 ab
Harmonizer	4.0 FL OZ/M	Late			
Torque	0.6 FL OZ/M	Late			
66 Civitas	8.0 FL OZ/M	Late	33.8 b-h	4.5 hij	8.3 bc
Harmonizer	4.0 FL OZ/M	Late			
Concert	4.5 FL OZ/M	Late			
67 651-0350	17.0 FL OZ/M	Late	18.8 c-g	4.8 ghi	7.5 ef
Concert	4.5 FL OZ/M	Late			
68 651-0350	17.0 FL OZ/M	Late	1.3 ij	6.8 abc	8.0 cd
Torque	0.6 FL OZ/M	Late			
69 Chipco 26GT	4.0 FL OZ/M	Late	3.8 hij	6.3 a-e	7.0 g
Daconil Ultrex	5.0 OZ/M	Late			
70 Affirm	0.9 OZ/M	Late	16.3 d-h	5.0 f-i	7.0 g
3336 Plus	4.0 FL OZ/M	Late			
71 Chipco 26GT	4.0 FL OZ/M	Late	5.0 g-j	6.5 a-d	7.0 g
Trinity	1.0 FL OZ/M	Late			

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

^aEarly and late fungicide treatments were applied on Oct. 6th and Nov. 1st 2012, respectively

^bMean % diseased area

^cQuality was visually rated on a scale of 1-9 where 1 = completely dead, 6 = acceptable, 9 = dark green

^dColor was visually rated on a scale of 1-9 where 1 = completely dead, 6 = acceptable, 9 = dark green



Winter Service Work
Tune-Ups
Oil & Filter Changes
General Maintenance
 (Call for other repairs)

1306 W B-R Townline Rd
 Beloit WI 53511-9002
800-443-1840
sales@wisconsinturf.com

REEL SHARPENING
 Spin & Relief Ground

Deep Solid Tine Aeration Services

Reserve your date today!

10 Greens\$1,250.00

19 Greens\$1,750.00

CORE AERIFICATION AVAILABLE TOO!



Figure 1. Heavy snow mold pressure at Wawonowin CC in Champion, MI showed the benefits of a strong fungicide program to manage snow molds.

Fertilizers • Plant Protection Products • Seed

 **Agrium**
Advanced
Technologies®

DIRECT SOLUTIONS

Shawn Hilliard
Cell: 608-516-4006
email: shilliard@agriumat.com

N125 Co. Hwy. C, DeForest, WI 53532
Toll Free: 800-362-8049 • Fax: 608-846-1115

© Agrium Inc. 2011. All Rights Reserved.