

What's Creeping You Out Now

Ideas In Pest Management SNOWMOLD TRIALS 2011

Paul Koch
Turfgrass Diagnostic Lab Manager

Dr. Jim Kerns
University of Wisconsin – Madison

There are many traits unique to golf course superintendents and individuals in the turfgrass industry in general. In my opinion, one of the most interesting is that as a group we are as excited as anyone for summer to arrive, and within weeks it seems just as excited as anyone for summer to end. The point where we look forward to fall is different for each person and depends on the weather and a range of factors specific to each course. The early arrival of spring meant early openings and early revenue sources, but stressed scarce labor resources. The constant heat present this summer has stressed just about every resource, both financial

and mental, and has everyone looking forward to the first hints of fall.

What better way to look forward to fall than to begin planning for managing snow molds in 2012-2013? 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. But as they say when free agent athletes are looking for a huge contract, 'you only need one.' We were fortunate that in the snow belt of Michigan's U.P., at Wawonowin Country Club, a thick cover of snow fell on relatively unfrozen ground and produced





conditions conducive for snow mold development. It was quite a sigh of relief to finally see snow mold, which meant results for both the Midwestern turfgrass managers and the chemical cooperators who funded the study.

The Wawonowin Country Club evaluation was conducted 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 ft²), 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 CO₂ 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 ft². Exceptions were the granular Pillar G (Trt 10) and FeDCON, which was applied in 2.5 gallons of water per 1000 ft².



Early applications were applied on October 6th, 2011 and late applications were applied on November 1st, 2011. The experimental plot area was not inoculated. There was continuous snow cover on the plots from mid-November until mid-March of 2010, 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 application. Turfgrass quality mirrored disease severity, with 53 treatments providing acceptable turfgrass quality. Products containing pigments provided the greenest color with the greatest increases in color coming from those treatments including Civitas, Interface, Reserve, Tartan, and PAR.

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, is 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.



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

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

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)

^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

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

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

Contact Information

Paul Koch

O.J. Noer Turfgrass Research and Education

Facility

2502 Highway M

Verona, WI 53593

(608) 845-2535

FAX (608) 845-8162

