

laying eggs, as she has the perception she's never running out of space. She seems to prefer building her brood from the bottom up (don't we all?) so once the queen is laying eggs in the top deep (usually the third,) the Bee Squad will move that box to the bottom of the stack, and she'll re-start her upward ascent. Most importantly, a reversal allows workers to store honey in the new top deep (previously the bottom) which is where the colony will spend the winter eating and shivering together.

The bees have become a favorite topic of conversation amongst Somerset Golf Club members and guests, and that, says Brian, is the whole point of keeping them on the golf course property. The answer to the honey bee crisis is a very complex one involving multiple factors, from mites to management, but there are simple ways to work towards a solution: spreading interest and awareness about the importance of pollinators through gardens, hives, and conversations with neighbors, learning to keep bees, or sup-



porting research on honey bees and other at-risk pollinators.

Remember, planting food for bees and other pollinators on golf course properties can be as simple as selecting plants that provide good pollen and nectar sources throughout the growing season (Plants for Minnesota Bees). It's also imperative to care for all pollinators in ways that will ensure that their food is clean (<http://www.pollinator.org/golfcourse.htm>). For more information about the UMN Bee Squad, visit us at www.beesquad.umn.edu.



Top Golf Course Architect	\$35,000*
USGA Green Construction	\$50,000*
The Best Seed Money Can Buy	\$200*

* Estimated cost per hole

Significant time, money and effort will be invested into your golf course redesign, so why not rely on the very best seed money can buy? For just a small portion of the overall construction budget, you can entrust your seed needs to the number-one selling bentgrass: The Penn Bents from Tee-2-Green. Relied on by superintendents for more than 55 years, every Penn Bent variety is thoroughly tested for at least 10 years, resulting in seed you can use with certainty. Invest in the best and seed with confidence. Choose a premium Penn Bent from Tee-2-Green.

WHY USE ANYTHING ELSE? **TEE 2 GREEN**
 800-547-0255 • www.tee-2-green.com • bentinfo@tee-2-green.com



Thank You Season Long Sponsors



Platinum



Gold



Silver



Please consider your support of our strongest business allies as they contribute to the advancement of the Minnesota Golf Course Superintendents Association

Quality since 1971...

HARTMAN

Golf Course Construction & Renovation

Specializing in...

Bunkers • Tees • Laser Leveling • Green Drainage • Irrigation • Design • Pump Station Upgrades

8099 Bavaria Rd.
Victoria, MN 55386
952 443 2990

info@hartmancompanies.com
www.hartmancompanies.com

Superior Turf Services, Inc.

Superior Organic

DESIGNED FOR PERFORMANCE, HOMOGENEOUS PRILL.
THE FINEST IN COMBINED TECHNOLOGIES.

 Country Club	8-2-10 Plus Greens & Tees BEST PERFORMANCE	14-0-14 Fe Fairways & Tees TOURNAMENT FAIRWAYS	14-0-7 Greens, Tees & Fairways FAST RECOVERY	11-11-11 Starter & Divot Mix ORGANIC & MINERAL	 BIOPRO
	 Lebanon TURF PRODUCTS NX-PRO COMPOSITE TECHNOLOGY	 Primer Turf			

SEED RESEARCH

GENETICALLY SUPERIOR BENTGRASSES FROM THE WORLD'S MOST COMPLETE BENTGRASS PROGRAM

FOR SUPERIOR TURF SERVICES, CALL:

Larry Thornton
612-804-1692

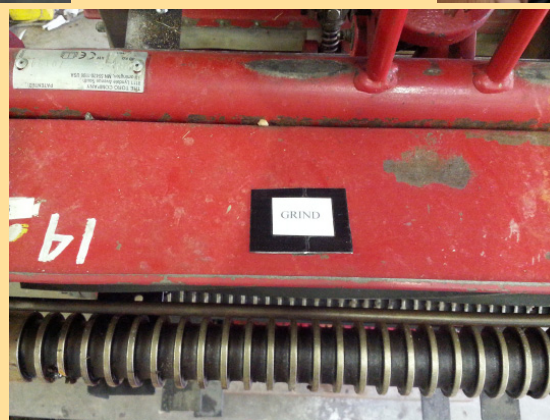
Matt Schmid
612-366-4128

Doug Zobel
952-201-9499

Fax: 952-949-3889

Equipment Manager's Insight

Justin Peuse, Equipment Manager at Wild Ridge/Mill Run Golf in Wisconsin, has a great way to keep track of any piece of steel equipment. Using a printed label and some old refrigerator magnets, he created easy to stick and remove tags for his equipment. In this case he uses “cutting” and “grind” to indicate which reels need work. Use your imagination and come up with your own magnetic ideas!



Winter Problems?

Get the IMPERMEABLE barrier!



Minimizes temperature fluctuations • Protects from ice damage, crown hydration and desiccation
 Lightweight and durable for years of easy installation & storage
www.GreenJacket.com/mgs 888-786-2683



Superior Tech Products
 Leading Edge Turfgrass Solutions

952-546-3678
 stp@stproots.com
 www.stproots.com

 www.stproots.blogspot.com
 SuperiorTechProducts



smooth
 healthy
 consistent
 greens

Vibratory Greens Roller
 & Greens Care Collection

True-Surface®

MICHIGAN STATE
 RESEARCH SUMMARY
 3 Years in a Row



Floratine Nutrition



Low dose contact fungicides

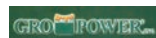
= Superior Control

of **Crown Rot Anthracnose**
 than other fungicides

GOLF COURSES | SPORTS FIELDS | PARKS



Turf Health
 Liquid & Granular
 Fertilizers



Northern Exposure Hospitality at The Wilderness Thank you Superintendent Vince Dodge, CGCS

Thank You
Event Sponsors





2013-2014 Snow Mold Control Evaluation Craguns Golf Resort – Brainerd, MN



Paul Koch, Ph.D.; P.J. Liesch; Sam Soper; and Bruce Schweiger
Department of Plant Pathology
University of Wisconsin-Madison

Andrew Hollman and Dr. Brian Horgan
Department of Horticultural Science, University of Minnesota

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 The Legacy at Craguns GC in Brainerd, MN on a creeping bentgrass (*Agrostis stolonifera*) 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. All applications were made on October 24th, 2013. The experimental plot area was not inoculated. There was consistent snow cover on the experimental area from late November until mid-April, a total of over 120 days. Disease severity, turf quality, and color were recorded on May 7th, 2014. Disease severity was visually rated as percent area affected, turfgrass quality was visually rated on a 1-9 scale with 6 being acceptable, Normalized Difference Vegetative Index (turfgrass color) was rated using a GreenSeeker NDVI Turf Color Meter® from NTech Industries (Ukiah, CA). Treatment means were analyzed using the Waller Duncan method and are presented in Table 1.

RESULTS AND DISCUSSION

Disease pressure was high at Craguns in 2013-2014, with non-treated controls averaging 75% disease. Speckled snow mold (*T. ishikariensis*) was the primary disease observed in the experimental area, though minor amounts of snow scald (*Myriosclerotinia borealis*) were also observed. Despite this intense pressure, all 29 treatments suppressed snow mold relative to the non-treated control. Of these 29 treatments, 20 provided outstanding suppression (< 5.5% disease). Nearly all of these treatments contained at least three active ingredients, with some treatments containing four or even five active ingredients. Turf quality closely mirrored disease severity, with the same 20 treatments providing acceptable quality (6 or higher). No differences in turf color were observed using the NDVI meter amongst products providing adequate disease suppression.

Table 1: Mean snow mold severity, turf quality, and turf color assessed on May 7th, 2014 at The Legacy at Craguns GC in Brainerd, MN.

Treatment	Rate	Application Timing ^a	Disease Severity ^b	Turf Quality ^c	Turf Color ^d	
1	Non-treated control		75.0a	2.8g	0.465h	
2	Instrata	7.0 fl oz/1000 ft2	Late	8.8d-g	5.5cde	0.690c-f
3	Instrata	9.3 fl oz/1000 ft2	Late	5.5e-h	6.0bcd	0.692b-e
4	Compass	0.2 oz/1000 ft2	Late	62.5b	3.3g	0.550g
5	Interface Mirage	4.0 fl oz/1000 ft2 2.0 fl oz/1000 ft2	Late Late	2.3fgh	6.8ab	0.710a-d
6	Interface Mirage	5.0 fl oz/1000 ft2 1.5 fl oz/1000 ft2	Late Late	2.3fgh	6.8ab	0.717abc
7	Interface Mirage	5.0 fl oz/1000 ft2 2.0 fl oz/1000 ft2	Late Late	2.8e-h	6.8ab	0.720abc
8	Mirage Compass	0.63 fl oz/1000 ft2 0.2 oz/1000 ft2	Late 1 HR PRE	5.0e-h	6.3abc	0.715abc
9	Mirage Compass	0.94 fl oz/1000 ft2 0.2 oz/1000 ft2	Late 1 HR PRE	4.8e-h	6.3abc	0.700a-e
10	Mirage Compass	1.57 fl oz/1000ft2 0.2 oz/1000 ft2	Late 1 HR PRE	4.3e-h	6.3abc	0.712abc
11	Mirage Compass	1.89 fl oz/1000ft2 0.2 oz/1000ft2	Late 1 HR PRE	2.5e-h	6.5ab	0.705a-e
12	SP28296 Mirage	5.0 fl oz/1000 ft2 1.5 fl oz/1000 ft2	Late Late	2.0fgh	7.0a	0.730a
13	SP28296 Mirage	6.0 fl oz/1000 ft2 1.5 fl oz/1000 ft2	Late Late	1.0h	7.0a	0.722abc
14	SP28296 Mirage	8.0 fl oz/1000 ft2 1.5 fl oz/1000 ft2	Late Late	1.0h	7.0a	0.727ab
15	SP28297 Mirage	3.816 fl oz/1000 ft2 1.5 fl oz/1000 ft2	Late Late	1.8fgh	6.8ab	0.715abc
16	SP28297 Mirage	4.77 fl oz/1000 ft2 1.5 fl oz/1000 ft2	Late Late	0.0h	7.0a	0.727ab
17	SP28297 Mirage	5.724 fl oz/1000 ft2 1.5 fl oz/1000 ft2	Late Late	1.3gh	6.8ab	0.722abc
18	Trilogy	3.14 fl oz/1000 ft2	Late	10.0de	6.0bcd	0.697a-e
19	Trilogy	5.56 fl oz/1000 ft2	Late	9.3def	5.5cde	0.687c-f
20	Interface Triton FLO Droplex	3.0 fl oz/1000 ft2 0.55 fl oz/1000 ft2 10.0 fl oz/a	Late Late Late	15.0d	5.0ef	0.672ef
21	Instrata Droplex	5.5 fl oz/1000 ft2 10.0 fl oz/a	Late Late	13.8d	5.3de	0.690c-f
22	Banner MAXX II Civitas Harmonizer Droplex	1.0 fl oz/1000 ft2 8.0 fl oz/1000 ft2 0.5 fl oz/1000 ft2 10.0 fl oz/a	Late Late Late Late	32.5c	4.3f	0.655f

^aFungicide treatments were applied on Oct. 24th, 2013.

^bMean percent diseased area assessed on May 7th, 2014.

^cQuality was visually assessed where 1 = dead, 6 = acceptable, 9 = dark green.

^dColor was assessed using a Greenseeker NDVI Turf Color Meter from NTech Industries®.

Table 1 (cont): Mean snow mold severity, turf quality, and turf color assessed on May 7th, 2013 at The Legacy at Craguns GC in Brainerd, MN.

Treatment	Rate	Application Timing ^a	Disease Severity ^b	Turf Quality ^c	Turf Color ^d	
23	QP TM/C	6.0 oz/1000 ft2	Late	16.3d	5.3de	0.675def
	QP Iprodione	4.0 fl oz/1000 ft2	Late			
	QP Propiconazole	2.0 fl oz/1000 ft2	Late			
	Foursome	0.5 fl oz/1000 ft2	Late			
24	QP TM/C	6.0 oz/1000 ft2	Late	3.0e-h	6.5ab	0.697a-e
	QP Iprodione	4.0 fl oz/1000 ft2	Late			
	QP Tebuconazole	0.6 fl oz/1000 ft2	Late			
	Foursome	0.5 fl oz/1000 ft2	Late			
25	QP Iprodione	4.0 fl oz/1000 ft2	Late	0.5h	7.0a	0.727ab
	QP Tebuconazole	1.1 fl oz/1000 ft2	Late			
	Foursome	0.5 fl oz/1000 ft2	Late			
26	QP Enclave	8.0 fl oz/1000 ft2	Late	2.5e-h	6.5ab	0.710a-d
	Foursome	0.5 fl oz/1000 ft2	Late			
27	Torque	0.75 fl oz/1000 ft2	Late	5.5e-h	6.0bcd	0.687c-f
	26/36	4.0 fl oz/1000 ft2	Late			
28	Torque	0.75 fl oz/1000 ft2	Late	2.3fgh	6.8ab	0.727ab
	26/36	4.0 fl oz/1000 ft2	Late			
	Legend	5.0 fl oz/1000 ft2	Late			
29	Torque	0.6 fl oz/1000 ft2	Late	3.0e-h	6.5ab	0.715abc
	26/36	4.0 fl oz/1000 ft2	Late			
	Heritage TL	1.0 fl oz/1000 ft2	Late			
30	Chipco 26GT	4.0 fl oz/1000 ft2	Late	25.0c	4.8ef	0.687c-f
	Daconil Weatherstik	5.5 fl oz/1000 ft2	Late			

^aFungicide treatments were applied on Oct. 24th, 2013.

^bMean percent diseased area assessed on May 7th, 2014.

^cQuality was visually assessed where 1 = dead, 6 = acceptable, 9 = dark green.

^dColor was assessed using a Greenseeker NDVI Turf Color Meter from NTech Industries®.



Disease pressure was very high at Cragun's and provided some excellent results for northern mid-west golf courses.