



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.