



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



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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	4.0 fl oz/1000 ft2	Late	2.3fgh	6.8ab	0.710a-d
	Mirage	2.0 fl oz/1000 ft2	Late			
6	Interface	5.0 fl oz/1000 ft2	Late	2.3fgh	6.8ab	0.717abc
	Mirage	1.5 fl oz/1000 ft2	Late			
7	Interface	5.0 fl oz/1000 ft2	Late	2.8e-h	6.8ab	0.720abc
	Mirage	2.0 fl oz/1000 ft2	Late			
8	Mirage	0.63 fl oz/1000 ft2	Late	5.0e-h	6.3abc	0.715abc
	Compass	0.2 oz/1000 ft2	1 HR PRE			
9	Mirage	0.94 fl oz/1000 ft2	Late	4.8e-h	6.3abc	0.700a-e
	Compass	0.2 oz/1000 ft2	1 HR PRE			
10	Mirage	1.57 fl oz/1000ft2	Late	4.3e-h	6.3abc	0.712abc
	Compass	0.2 oz/1000 ft2	1 HR PRE			
11	Mirage	1.89 fl oz/1000ft2	Late	2.5e-h	6.5ab	0.705a-e
	Compass	0.2 oz/1000ft2	1 HR PRE			
12	SP28296	5.0 fl oz/1000 ft2	Late	2.0fgh	7.0a	0.730a
	Mirage	1.5 fl oz/1000 ft2	Late			
13	SP28296	6.0 fl oz/1000 ft2	Late	1.0h	7.0a	0.722abc
	Mirage	1.5 fl oz/1000 ft2	Late			
14	SP28296	8.0 fl oz/1000 ft2	Late	1.0h	7.0a	0.727ab
	Mirage	1.5 fl oz/1000 ft2	Late			
15	SP28297	3.816 fl oz/1000 ft2	Late	1.8fgh	6.8ab	0.715abc
	Mirage	1.5 fl oz/1000 ft2	Late			
16	SP28297	4.77 fl oz/1000 ft2	Late	0.0h	7.0a	0.727ab
	Mirage	1.5 fl oz/1000 ft2	Late			
17	SP28297	5.724 fl oz/1000 ft2	Late	1.3gh	6.8ab	0.722abc
	Mirage	1.5 fl oz/1000 ft2	Late			
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	3.0 fl oz/1000 ft2	Late			
	Triton FLO	0.55 fl oz/1000 ft2	Late	15.0d	5.0ef	0.672ef
	Droplex	10.0 fl oz/a	Late			
21	Instrata	5.5 fl oz/1000 ft2	Late	13.8d	5.3de	0.690c-f
	Droplex	10.0 fl oz/a	Late			
22	Banner MAXX II	1.0 fl oz/1000 ft2	Late			
	Civitas	8.0 fl oz/1000 ft2	Late	32.5c	4.3f	0.655f
	Harmonizer	0.5 fl oz/1000 ft2	Late			
	Droplex	10.0 fl oz/a	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®.

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 QP Iprodione QP Propiconazole Foursome	6.0 oz/1000 ft ² 4.0 fl oz/1000 ft ² 2.0 fl oz/1000 ft ² 0.5 fl oz/1000 ft ²	Late Late Late Late	16.3d	5.3de 0.675def
24	QP TM/C QP Iprodione QP Tebuconazole Foursome	6.0 oz/1000 ft ² 4.0 fl oz/1000 ft ² 0.6 fl oz/1000 ft ² 0.5 fl oz/1000 ft ²	Late Late Late Late	3.0e-h	6.5ab 0.697a-e
25	QP Iprodione QP Tebuconazole Foursome	4.0 fl oz/1000 ft ² 1.1 fl oz/1000 ft ² 0.5 fl oz/1000 ft ²	Late Late Late	0.5h	7.0a 0.727ab
26	QP Enclave Foursome	8.0 fl oz/1000 ft ² 0.5 fl oz/1000 ft ²	Late Late	2.5e-h	6.5ab 0.710a-d
27	Torque 26/36	0.75 fl oz/1000 ft ² 4.0 fl oz/1000 ft ²	Late Late	5.5e-h	6.0bcd 0.687c-f
28	Torque 26/36 Legend	0.75 fl oz/1000 ft ² 4.0 fl oz/1000 ft ² 5.0 fl oz/1000 ft ²	Late Late Late	2.3fgh	6.8ab 0.727ab
29	Torque 26/36 Heritage TL	0.6 fl oz/1000 ft ² 4.0 fl oz/1000 ft ² 1.0 fl oz/1000 ft ²	Late Late Late	3.0e-h	6.5ab 0.715abc
30	Chipco 26GT Daconil Weatherstik	4.0 fl oz/1000 ft ² 5.5 fl oz/1000 ft ²	Late Late	25.0c	4.8ef 0.687c-f

^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®.