



2020-2021 Snow Mold Control Evaluation: Giant's Ridge Golf Resort – Biwabik, MN



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OBJECTIVE

To evaluate fungicides for the control of gray snow mold (caused by *Typhula incarnata*), speckled snow mold (*T. ishikariensis*), and Microdochium patch (*Microdochium nivale*) on golf course turfgrass.

MATERIALS AND METHODS

This evaluation was conducted at the Giant's Ridge Golf Resort near Biwabik, MN on a creeping bentgrass (*Agrostis stolonifera*) and annual bluegrass (*Poa annua*) golf course fairway maintained at a height of 0.5 inches. Individual plots measured 3 ft x 10 ft and were arranged in a randomized complete block design with four replications. Individual treatments were applied at a nozzle pressure of 40 psi using a CO₂-pressurized boom sprayer equipped with two XR Teejet AI8008 VS nozzles. All fungicides were agitated by hand and applied in the equivalent of 1.5 gallons of water per 1000 ft². All applications were made on 21 Oct 2020. The experimental plot area was not inoculated. Snow cover was present from mid-November through late March, a total of approximately 140 days. Disease severity, turf quality, and turf color were measured on 5 Apr 2021. Disease severity was visually rated as percent area affected, turfgrass quality was visually rated on a 1-9 scale with 6 being acceptable, and chlorophyll content (turfgrass color) was rated using a FieldScout CM 1000 Chlorophyll Meter from Spectrum Technologies, Inc. (Aurora, IL). Treatment means were analyzed using Fisher's LSD method and are presented in Table 1.

RESULTS AND DISCUSSION

Disease pressure was moderate in Biwabik this year with non-treated controls averaging 52.5% disease. The predominant snow mold disease present was speckled snow mold. Most treatments were extremely effective, with 29 of the 36 treatments providing 95% or greater disease control. All of the effective treatments tested in this trial included three or more active ingredients. Turf quality and turf color largely mirrored disease severity, though slight increases in turf quality and turf color were observed in treatments that included pigments. Phytotoxicity was not observed with any treatment.

Table 1: Mean snow mold severity, turf quality, and turf color were assessed on April 5, 2021 at Giant's Ridge Golf Resort near Biwabik, MN.

	Treatment	Rate	Application Timing ^a	Disease Severity ^b	Turf Quality ^c	Turf Color ^d
1	Non-treated control			52.5a	3.8g	138.8i
2	Turficide	6.0 fl oz/1000 ft ²	Late	0.5e	7.5abc	191.3a-f
	Banner Maxx Foursome	2.0 fl oz/1000 ft ² 0.5 fl oz/1000 ft ²				
3	Turficide	8.0 fl oz/1000 ft ²	Late	3.8cde	7.0bcd	204.5a-d
	Banner Maxx Foursome	2.0 fl oz/1000 ft ² 0.5 fl oz/1000 ft ²				
4	Turficide	6.0 fl oz/1000 ft ²	Late	0.0e	8.0a	193.3a-e
	Torque Foursome	1.1 fl oz/1000 ft ² 0.5 fl oz/1000 ft ²				
5	Turficide	8.0 fl oz/1000 ft ²	Late	0.0e	8.0a	193.3a-e
	Torque Foursome	1.1 fl oz/1000 ft ² 0.5 fl oz/1000 ft ²				
6	Turficide	6.0 fl oz/1000 ft ²	Late	0.0e	8.0a	202.3a-e
	Mirage Foursome	2.0 fl oz/1000 ft ² 0.5 fl oz/1000 ft ²				
7	Turficide	8.0 fl oz/1000 ft ²	Late	0.0e	8.0a	186.8a-g
	Mirage Foursome	2.0 fl oz/1000 ft ² 0.5 fl oz/1000 ft ²				
8	Premion	10.0 fl oz/1000 ft ²	Late	0.0e	7.8ab	207.8abc
	Previa Foursome	4.0 fl oz/1000 ft ² 0.5 fl oz/1000 ft ²				
9	Premion	10.0 fl oz/1000 ft ²	Late	1.3e	7.5abc	214.3ab
	Secure Foursome	0.5 fl oz/1000 ft ² 0.5 fl oz/1000 ft ²				
10	Concert II	5.5 fl oz/1000 ft ²	Late	1.3e	7.3abc	188.5a-g
	Turficide Foursome	6.0 fl oz/1000 ft ² 0.5 fl oz/1000 ft ²				
11	Concert II	5.5 fl oz/1000 ft ²	Late	2.5de	7.5abc	188.5a-g
	Turficide Foursome	8.0 fl oz/1000 ft ² 0.5 fl oz/1000 ft ²				
12	Concert II	8.3 fl oz/1000 ft ²	Late	0.0e	7.5abc	197.5a-e
	Turficide Foursome	8.0 fl oz/1000 ft ² 0.5 fl oz/1000 ft ²				
13	Turficide	8.0 fl oz/1000 ft ²	Late	1.8e	7.3abc	203.0a-e
	Previa Foursome	5.5 fl oz/1000 ft ² 0.5 fl oz/1000 ft ²				
14	Turficide	3.33 fl oz/1000 ft ²	Late	2.5de	7.3abc	197.0a-e
	Previa Mirage	1.825 fl oz/1000 ft ² 0.67 fl oz/1000 ft ²				
15	Turficide	6.66 fl oz/1000 ft ²	Late	0.0e	7.5abc	187.0a-g
	Previa Mirage	3.65 fl oz/1000 ft ² 1.33 fl oz/1000 ft ²				
16	Turficide	8.0 fl oz/1000 ft ²	Late	0.0e	7.8ab	181.0c-g
	Previa Mirage	4.4 fl oz/1000 ft ² 1.6 fl oz/1000 ft ²				
LSD P=.05				9.06	0.98	31.8

^aAll treatments applied on Oct 21, 2020.

^bMean percent diseased area assessed on Apr 5, 2021.

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

^dColor was assessed using a FieldScout CM1000 Chlorophyll Meter from Spectrum Technologies, Inc.

Table 1(cont): Mean snow mold severity, turf quality, and turf color were assessed on April 5, 2021 at Giant's Ridge Golf Resort near Biwabik, MN.

	Treatment	Rate	Application Timing ^a	Disease Severity ^b	Turf Quality ^c	Turf Color ^d
17	Turfcide	10.0 fl oz/1000 ft ²	Late	0.0e	7.8ab	182.8b-g
	Previa	5.5 fl oz/1000 ft ²				
	Mirage	2.0 fl oz/1000 ft ²				
18	Turfcide	3.0 fl oz/1000 ft ²	Late	1.3e	6.8cde	188.3a-g
	26GT	2.0 fl oz/1000 ft ²				
	3336F	1.0 fl oz/1000 ft ²				
19	Turfcide	6.0 fl oz/1000 ft ²	Late	0.0e	7.8ab	202.8a-e
	26GT	4.0 fl oz/1000 ft ²				
	Mirage	1.2 fl oz/1000 ft ²				
20	Turfcide	8.0 fl oz/1000 ft ²	Late	0.0e	7.8ab	202.0a-e
	26GT	5.33 fl oz/1000 ft ²				
	Mirage	1.6 fl oz/1000 ft ²				
21	Turfcide	9.0 fl oz/1000 ft ²	Late	0.0e	7.5abc	172.5e-h
	26GT	6.0 fl oz/1000 ft ²				
	Mirage	1.8 fl oz/1000 ft ²				
22	Turfcide	3.0 fl oz/1000 ft ²	Late	0.5e	7.5abc	190.3a-f
	26GT	1.0 fl oz/1000 ft ²				
	Banner Maxx	0.5 fl oz/1000 ft ²				
23	Turfcide	6.0 fl oz/1000 ft ²	Late	0.0e	7.0bcd	175.8d-g
	26GT	2.0 fl oz/1000 ft ²				
	Banner Maxx	1.0 fl oz/1000 ft ²				
24	Turfcide	9.0 fl oz/1000 ft ²	Late	0.0e	7.0bcd	160.8f-i
	26GT	3.0 fl oz/1000 ft ²				
	Banner Maxx	1.5 fl oz/1000 ft ²				
25	Turfcide	8.0 fl oz/1000 ft ²	Late	0.0e	7.0bcd	141.3hi
	Torque	0.6 fl oz/1000 ft ²				
	Banner Maxx	1.0 fl oz/1000 ft ²				
26	Turfcide	8.0 fl oz/1000 ft ²	Late	1.3e	6.8cde	158.3ghi
	26GT	2.0 fl oz/1000 ft ²				
	Banner Maxx	1.0 fl oz/1000 ft ²				
27	Enclave	8.0 fl oz/1000 ft ²	Late	1.3e	7.3abc	199.8a-e
28	Insignia	0.65 fl oz/1000 ft ²	Late	7.5b-e	6.0ef	182.0c-g
	Trinity	1.0 fl oz/1000 ft ²				
LSD P=.05				9.06	0.98	31.8

^aAll treatments applied on Oct 21, 2020.

^bMean percent diseased area assessed on Apr 5, 2021.

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^dColor was assessed using a FieldScout CM1000 Chlorophyll Meter from Spectrum Technologies, Inc.

Table 1(cont): Mean snow mold severity, turf quality, and turf color were assessed on April 5, 2021 at Giant's Ridge Golf Resort near Biwabik, MN.

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29	Insignia	0.65 fl oz/1000 ft ²	Late	3.8cde	6.3def	188.5a-g
	Trinity	1.0 fl oz/1000 ft ²				
	26GT	4.0 fl oz/1000 ft ²				
30	Insignia	0.65 fl oz/1000 ft ²	Late	1.3e	7.3abc	210.0abc
	Trinity	1.0 fl oz/1000 ft ²				
	Daconil Weatherstik	4.4 fl oz/1000 ft ²				
31	Insignia	0.65 fl oz/1000 ft ²	Late	5.0cde	6.3def	200.3a-e
	Trinity	1.0 fl oz/1000 ft ²				
	Medallion	0.94 fl oz/1000 ft ²				
32	Enclave	8.0 fl oz/1000 ft ²	Late	2.5de	7.5abc	212.8abc
	Foursome Plus	0.4 fl oz/1000 ft ²				
33	Intaglio	11.0 fl oz/1000 ft ²	Late	16.3b	5.5f	215.8a
	Foursome Plus	0.4 fl oz/1000 ft ²				
34	BCP1803	1.7 fl oz/1000 ft ²	Late	11.3bcd	5.8f	205.0a-d
	Fame	0.36 fl oz/1000 ft ²				
35	BCP1803	1.7 fl oz/1000 ft ²	Late	12.5bc	5.8f	197.5a-e
	Fame	0.36 fl oz/1000 ft ²				
	3336F	5.75 fl oz/1000 ft ²				
36	BCP1803	1.7 fl oz/1000 ft ²	Late	7.5b-e	6.0ef	209.8abc
	Fame	0.36 fl oz/1000 ft ²				
	Daconil Weatherstik	4.0 fl oz/1000 ft ²				
LSD P=.05				9.06	0.98	31.8

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