



## **2019-2020 Snow Mold Control Evaluation: Wausau Country Club – Wausau, WI**

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### **OBJECTIVE**

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

### **MATERIALS AND METHODS**

This evaluation was conducted at Wausau Country Club near Wausau, WI 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 p.s.i. using a CO<sub>2</sub>-pressurized boom sprayer equipped with two XR Teejet AI8004 VS nozzles. All fungicides were agitated by hand and applied in the equivalent of 1.5 gallons of water per 1000 ft<sup>2</sup>. Early applications were made on 14 Oct 2019 and late applications were made on 7 Nov 2019. The experimental plot area was not inoculated. Snow cover was present from late November through late March, a total of approximately 120 days. Disease severity, turf quality, and turf color were measured on 2 Apr 2020. 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**

Snow mold pressure was high in Wausau during the winter of 2019-2020 as evidenced by the non-treated controls averaging 71% disease. The only snow mold pathogen observed on the experimental area was *M. nivale*. There were an impressive 45 treatments that averaged less than 5% disease and 28 of those averaged less than 1% diseases, which is an exceptional performance given the disease pressure. Turf quality and turf color mostly reflected disease severity and there were 48 treatments that had an average turf quality greater than 6. Phytotoxicity was not observed with any treatment.

**Table 1: Mean snow mold severity, turf quality, and turf color were assessed on April 2, 2020 at Wausau Country Club near Wausau, WI.**

	Treatment	Rate	Application Timing <sup>a</sup>	Disease Severity <sup>b</sup>	Turf Quality <sup>c</sup>	Turf Color <sup>d</sup>
1	Non-treated control			71.0ab	2.5lm	165.3r-u
2	Premion	6.0 fl oz/1000 ft <sup>2</sup>	Late	1.8hij	7.0a-e	223.5b-q
	Previa	4.0 fl oz/1000 ft <sup>2</sup>				
	Foursome	0.5 fl oz/1000 ft <sup>2</sup>				
3	Premion	6.0 fl oz/1000 ft <sup>2</sup>	Late	23.8efg	5.8e-i	203.0k-t
	Previa	5.5 fl oz/1000 ft <sup>2</sup>				
	Foursome	0.5 fl oz/1000 ft <sup>2</sup>				
4	Premion	8.0 fl oz/1000 ft <sup>2</sup>	Late	1.3ij	7.3a-d	219.0b-q
	Previa	4.0 fl oz/1000 ft <sup>2</sup>				
	Foursome	0.5 fl oz/1000 ft <sup>2</sup>				
5	Premion	10.0 fl oz/1000 ft <sup>2</sup>	Late	2.5hij	7.3a-d	202.0l-t
	Previa	4.0 fl oz/1000 ft <sup>2</sup>				
	Foursome	0.5 fl oz/1000 ft <sup>2</sup>				
6	Premion	10.0 fl oz/1000 ft <sup>2</sup>	Late	1.3ij	7.5abc	217.0c-r
	Previa	5.5 fl oz/1000 ft <sup>2</sup>				
	Foursome	0.5 fl oz/1000 ft <sup>2</sup>				
7	Premion	10.0 fl oz/1000 ft <sup>2</sup>	Late	1.3ij	7.0a-e	232.5a-p
	Secure	0.5 fl oz/1000 ft <sup>2</sup>				
	Foursome	0.5 fl oz/1000 ft <sup>2</sup>				
8	Concert II	5.5 fl oz/1000 ft <sup>2</sup>	Late	1.3ij	7.3a-d	207.3j-t
	Turfcide	8.0 fl oz/1000 ft <sup>2</sup>				
	Foursome	0.5 fl oz/1000 ft <sup>2</sup>				
9	Concert II	8.3 fl oz/1000 ft <sup>2</sup>	Late	0.5ij	7.0a-e	206.0k-t
	Turfcide	8.0 fl oz/1000 ft <sup>2</sup>				
	Foursome	0.5 fl oz/1000 ft <sup>2</sup>				
10	Turfcide	6.0 fl oz/1000 ft <sup>2</sup>	Late	1.3ij	7.3a-d	240.5a-o
	Previa	4.0 fl oz/1000 ft <sup>2</sup>				
	Foursome	0.5 fl oz/1000 ft <sup>2</sup>				
11	Turfcide	8.0 fl oz/1000 ft <sup>2</sup>	Late	1.8hij	7.0a-e	228.0a-q
	Previa	5.5 fl oz/1000 ft <sup>2</sup>				
	Foursome	0.5 fl oz/1000 ft <sup>2</sup>				
12	Enclave	8.0 fl oz/1000 ft <sup>2</sup>	Late	0.0j	7.0a-e	251.5a-n
	Foursome	0.4 fl oz/1000 ft <sup>2</sup>				
13	Enclave	4.0 fl oz/1000 ft <sup>2</sup>	Early/Late	0.0j	7.3a-d	227.8a-q
	Foursome	0.4 fl oz/1000 ft <sup>2</sup>				
14	Zio	0.9 oz/1000 ft <sup>2</sup>	Late	55.0bcd	4.0jk	161.8tu
	Torque	0.6 fl oz/1000 ft <sup>2</sup>				
15	Torque	1.1 fl oz/1000 ft <sup>2</sup>	Late	70.0abc	2.5lm	176.3q-u
16	Traction	1.3 fl oz/1000 ft <sup>2</sup>	Late	0.0j	7.0a-e	260.3a-j
	26/36	4.0 fl oz/1000 ft <sup>2</sup>				
17	Traction	1.3 fl oz/1000 ft <sup>2</sup>	Late	0.0j	7.0a-e	234.8a-p
	26/36	8.0 fl oz/1000 ft <sup>2</sup>				
18	Affirm	0.9 oz/1000 ft <sup>2</sup>	Late	0.0j	7.5abc	234.5a-p
	Civitas Pre-Mixed	17 fl oz/1000 ft <sup>2</sup>				

<sup>a</sup>Early treatments applied on Oct 14, 2019 and late treatments applied on Nov 7, 2019

<sup>b</sup>Mean percent diseased area assessed on Apr 2 2020.

<sup>c</sup>Quality was visually assessed where 1 = dead, 6 = acceptable, 9 = dark green.

<sup>d</sup>Color 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 2, 2020 at Wausau Country Club near Wausau, WI.**

	Treatment	Rate	Applicatio Timing <sup>a</sup>	Disease Severity <sup>b</sup>	Turf Quality <sup>c</sup>	Turf Color <sup>d</sup>
19	Tourney Affirm	0.44 oz/1000 ft2 0.9 oz/1000 ft2	Late	4.3hij	7.0a-e	255.8a-k
20	NUP-19022	9.28 fl oz/a	Late	52.5cd	3.5kl	212.0g-t
21	NUP-19022 Traction	9.28 fl oz/a 1.3 fl oz/1000 ft2	Late	46.3d	4.0jk	184.3p-u
22	Insignia Trinity	0.7 fl oz/1000 ft2 1.0 fl oz/1000 ft2	Late	11.3e-j	6.3c-h	215.8e-s
23	Insignia Trinity 3336F	0.7 fl oz/1000 ft2 1.0 fl oz/1000 ft2 2.0 fl oz/1000 ft2	Late	1.3ij	7.0a-e	270.8ab
24	PS1	8.0 fl oz/1000 ft2	Late	0.5ij	7.0a-e	234.8a-p
25	PS2	8.0 fl oz/1000 ft2	Late	0.0j	7.5abc	261.8a-i
26	PS1 BSK-101	8.0 fl oz/1000 ft2 32.0 fl oz/1000 ft2	Late	0.0j	7.0a-e	240.5a-o
27	PS2 BSK-101	8.0 fl oz/1000 ft2 32.0 fl oz/1000 ft2	Late	0.0j	7.3a-d	279.8a
28	Bayleton Flo 26/36	1.9 fl oz/1000 ft2 4.0 fl oz/1000 ft2	Late	0.5ij	7.3a-d	254.8a-l
29	C. rosea (88-710)	50.0 g/a	Early	47.5d	4.0jk	163.0stu
30	C. rosea (ACM 941)	50.0 g/a	Early	76.3a	2.0m	184.3p-u
31	Instrata	7.0 fl oz/1000 ft2	Late	20.0e-h	5.3g-j	207.5j-t
32	Turfcide	8.0 fl oz/1000 ft2	Late	6.3g-j	6.5b-g	210.3i-t
33	C. rosea (88-710) Instrata	50.0 g/a 7.0 fl oz/1000 ft2	Early Late	13.8e-j	5.8e-i	231.5a-p
34	C. rosea (ACM 941) Instrata	50.0 g/a 7.0 fl oz/1000 ft2	Early Late	15.0e-j	5.5f-i	226.0b-q
35	C. rosea (88-710) Turfcide	50.0 g/a 8.0 fl oz/1000 ft2	Early Late	5.5g-j	6.5b-g	188.0o-u
36	C. rosea (ACM 941) Turfcide	50.0 g/a 8.0 fl oz/1000 ft2	Early Late	5.0hij	6.5b-g	201.5m-t
37	A13705V A19188B Turfcide Ambient Plus	2.6 fl oz/1000 ft2 1.0 fl oz/1000 ft2 6.0 fl oz/1000 ft2 0.37 fl oz/1000 ft2	Late	0.5ij	7.3a-d	233.8a-p
38	Instrata Turfcide Ambient Plus	11.0 fl oz/1000 ft2 6.0 fl oz/1000 ft2 0.37 fl oz/1000 ft2	Late	0.0j	7.3a-d	225.8b-q
39	A15457R A17856B Turfcide Ambient Plus	0.24 fl oz/1000 ft2 1.88 fl oz/1000 ft2 6.0 fl oz/1000 ft2 0.37 fl oz/1000 ft2	Late	0.0j	7.3a-d	255.8a-k

<sup>a</sup>Early treatments applied on Oct 14, 2019 and late treatments applied on Nov 7, 2019

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40	A15457R	0.24 fl oz/1000 ft <sup>2</sup>				
	A17856B	1.88 fl oz/1000 ft <sup>2</sup>	Late	0.5ij	7.5abc	254.0a-m
	Banner Maxx	1.0 fl oz/1000 ft <sup>2</sup>				
	Ambient Plus	0.37 fl oz/1000 ft <sup>2</sup>				
A15457R	0.24 fl oz/1000 ft <sup>2</sup>					
41	A17856B	1.88 fl oz/1000 ft <sup>2</sup>	Late	0.0j	7.3a-d	264.8a-g
	Banner Maxx	2.0 fl oz/1000 ft <sup>2</sup>				
	Ambient Plus	0.37 fl oz/1000 ft <sup>2</sup>				
	A15457R	0.24 fl oz/1000 ft <sup>2</sup>				
42	A17856B	1.88 fl oz/1000 ft <sup>2</sup>	Late	1.3ij	7.8ab	253.5a-n
	Banner Maxx	3.0 fl oz/1000 ft <sup>2</sup>				
	Ambient Plus	0.37 fl oz/1000 ft <sup>2</sup>				
	Banner Maxx	2.0 fl oz/1000 ft <sup>2</sup>				
43	A15457R	0.24 fl oz/1000 ft <sup>2</sup>	Early	0.0j	6.0d-i	225.0b-q
	A17856B	1.88 fl oz/1000 ft <sup>2</sup>	Late			
	Ambient Plus	0.37 fl oz/1000 ft <sup>2</sup>	Late			
	A22835C	2.87 fl oz/1000 ft <sup>2</sup>	Late			
44	Ambient Plus	0.37 fl oz/1000 ft <sup>2</sup>	Late	3.0hij	7.3a-d	218.3b-r
	A22835C	2.16 fl oz/1000 ft <sup>2</sup>	Late	3.0hij	6.8a-f	243.3a-n
45	Ambient Plus	0.37 fl oz/1000 ft <sup>2</sup>				
	Banner Maxx	4.0 fl oz/1000 ft <sup>2</sup>	Early	0.5ij	7.5abc	228.5a-q
	A22835C	2.87 fl oz/1000 ft <sup>2</sup>	Late			
Ambient Plus	0.37 fl oz/1000 ft <sup>2</sup>	Late				
46	Banner Maxx	4.0 fl oz/1000 ft <sup>2</sup>	Late	0.5ij	7.8ab	252.8a-n
	A22835C	2.87 fl oz/1000 ft <sup>2</sup>				
	Ambient Plus	0.37 fl oz/1000 ft <sup>2</sup>				
47	A15457R	0.236 fl oz/1000 ft <sup>2</sup>	Late	0.5ij	7.3a-d	238.0a-o
	A17856B	1.88 fl oz/1000 ft <sup>2</sup>				
	Ambient Plus	0.37 fl oz/1000 ft <sup>2</sup>				
48	A19188B	1.0 fl oz/1000 ft <sup>2</sup>	Late	0.5ij	7.5abc	217.8b-r
	A13705V	2.61 fl oz/1000 ft <sup>2</sup>				
	Ambient Plus	0.37 fl oz/1000 ft <sup>2</sup>				
49	Instrata	11.0 fl oz/1000 ft <sup>2</sup>	Late	1.3ij	7.3a-d	228.0a-q
	Ambient Plus	0.37 fl oz/1000 ft <sup>2</sup>				
50	BCP1803	1.7 fl oz/1000 ft <sup>2</sup>	Late	0.0j	7.3a-d	240.8a-o
	Fame	0.36 fl oz/1000 ft <sup>2</sup>				
51	BCP1803	1.7 fl oz/1000 ft <sup>2</sup>	Late	0.0j	7.0a-e	227.3a-q
	Fame	0.36 fl oz/1000 ft <sup>2</sup>				
	3336F	6.0 fl oz/1000 ft <sup>2</sup>				
52	BCP1803	1.7 fl oz/1000 ft <sup>2</sup>	Late	3.8hij	5.8e-i	219.0b-q
	Fame	0.36 fl oz/1000 ft <sup>2</sup>				
	QP Chlorothalonil	5.25 fl oz/1000 ft <sup>2</sup>				
53	BCP1803	1.7 fl oz/1000 ft <sup>2</sup>	Late	0.0j	7.0a-e	205.0k-t
	3336F	6.0 fl oz/1000 ft <sup>2</sup>				

<sup>a</sup>Early treatments applied on Oct 14, 2019 and late treatments applied on Nov 7, 2019

<sup>b</sup>Mean percent diseased area assessed on Apr 2 2020.

<sup>c</sup>Quality was visually assessed where 1 = dead, 6 = acceptable, 9 = dark green.

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55	BCP1803	1.7 fl oz/1000 ft <sup>2</sup>	Late	0.0j	7.0a-e	254.3a-m
	3336F	8.0 fl oz/1000 ft <sup>2</sup>				
56	Interface	6.0 fl oz/1000 ft <sup>2</sup>	Late	0.0j	7.3a-d	265.0a-g
57	Daconil Wthrstk	5.5 fl oz/1000 ft <sup>2</sup>	Late	8.8e-j	6.0d-i	268.8a-e
	Interface	6.0 fl oz/1000 ft <sup>2</sup>				
	Mirage	2.0 fl oz/1000 ft <sup>2</sup>				
58	Interface	6.0 fl oz/1000 ft <sup>2</sup>	Late	0.0j	7.3a-d	267.0a-f
	Mirage	2.0 fl oz/1000 ft <sup>2</sup>				
	Turfcide	6.0 fl oz/1000 ft <sup>2</sup>				
61	Interface	6.0 fl oz/1000 ft <sup>2</sup>	Late	0.0j	7.5abc	264.3a-h
	Mirage	2.0 fl oz/1000 ft <sup>2</sup>				
63	Instrata	11.0 fl oz/1000 ft <sup>2</sup>	Late	1.8hij	7.0a-e	211.5h-t
LSD P=.05				18.38	1.3	53.14

<sup>a</sup>Early treatments applied on Oct 14, 2019 and late treatments applied on Nov 7, 2019

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