



**2020-2021 Snow Mold Timing Evaluation:
OJ Noer Research Facility – Madison, WI
Wausau Country Club – Wausau, WI
Timber Ridge Golf Club – Minocqua, WI**

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OBJECTIVE

To evaluate optimal timing of fungicide applications to control gray snow mold (*Typhula incarnata*), speckled snow mold (*T. ishikariensis*), and Microdochium patch (*Microdochium nivale*) on fairway height turfgrass.

MATERIALS AND METHODS

This evaluation was conducted at three locations: the OJ Noer Turfgrass Research and Education Facility in Madison, WI on an ‘Alpha’ creeping bentgrass (*Agrostis stolonifera*) fairway maintained at a height of 0.5 inches, at Wausau Country Club in Wausau, WI and at Timber Ridge Golf Club in Minocqua, WI on a creeping bentgrass 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 AI8004 Teejet air induction nozzles. All fungicides were agitated by hand and applied in the equivalent of 1.5 gallons of water per 1000 ft². Disease severity, turf quality, and turf color were evaluated on 12 Mar 2021 in Madison, on 15 Mar 2021 in Wausau, and on 25 Mar 2021 in Minocqua. Disease severity was visually rated as percent area affected and turfgrass quality was visually rated on a 1-9 scale with 6 being acceptable. Treatment means were analyzed using Fisher’s LSD method and are presented in the following tables.

RESULTS AND DISCUSSION

The Madison and Minocqua sites had very high disease pressure, with 87.5% and 91.0% disease in the non-treated controls, respectively. However, the Wausau site had minimal disease due to limited snow depth for the duration of the winter. The primary snow mold disease present in Madison was gray snow mold (*T. incarnata*), in Wausau it was pink snow mold (*M. nivale*), and in Minocqua it was speckled snow mold (*T. ishikariensis*). In Madison and Minocqua there was a sharp drop off in disease between successive applications in October. The sharp drop off occurred on 10/15/20 in both Minocqua and Wausau, and on 10/30/20 in Madison, which roughly correlated with HDD surpassing 100 at each site. Turf quality and turf color mostly mirrored disease severity. Phytotoxicity was not observed with any treatment.

Table 1. Mean snow mold severity and turf quality were assessed on March 12, 2021 at the OJ Noer Turfgrass Research and Education Facility in Madison, WI.

	Treatment	Rate	Application Timing	Disease Severity ^a	Turf Quality ^b	Turf Color ^c
1	Non-treated control			87.5a	1.5c	111.8c
2	Instrata	9.3 fl oz/1000 ft ²	10/1/20	83.8a	1.8c	109.5c
3	Instrata	9.3 fl oz/1000 ft ²	10/16/20	32.5b	4.5b	144.0b
4	Instrata	9.3 fl oz/1000 ft ²	10/30/20	5.0c	6.3a	174.8a
5	Instrata	9.3 fl oz/1000 ft ²	11/16/20	2.5c	6.5a	168.0a
6	Instrata	9.3 fl oz/1000 ft ²	12/1/20	0.0c	7.0a	182.5a
7	Instrata	9.3 fl oz/1000 ft ²	12/10/20	0.0c	7.0a	182.8a
			LSD P=.05	10.82	0.86	22.71

^a Mean percent diseased area assessed on March 12, 2021. Means followed by the same letter are not statistically different.

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

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

Table 2: Heating Degree Days and 2-inch soil temperature at the OJ Noer Turfgrass Research Facility in Madison, WI in 2020.

Trt #	Application Date(s)	HDD ^z	2" Soil Temp (F)
1	Non-treated	NA	NA
2	Oct 1	2	55.5
3	Oct 16	38	48.6
4	Oct 30	196	43.4
5	Nov 16	309	38.4
6	Dec 1	521	31.6
7	Dec 10	677	31.8

^zHeating Degree Days was calculated by taking the mean temperature for each day beginning on July 1st and subtracting that number from 50°F. Negative numbers (ie means temperatures above 50°F) were removed and the summation is presented here.

Table 3. Mean snow mold severity and turf quality were assessed on March 15, 2021 at Wausau Country Club in Wausau, WI.

	Treatment	Rate	Application Timing	Disease Severity ^a	Turf Quality ^b	Turf Color ^c
1	Non-treated control			12.5a	5.5b	164.0-
2	Instrata	9.3 fl oz/1000 ft ²	9/16/20	2.5b	6.5a	174.0-
3	Instrata	9.3 fl oz/1000 ft ²	9/30/20	0.0b	7.0a	188.0-
4	Instrata	9.3 fl oz/1000 ft ²	10/15/20	0.0b	7.0a	164.0-
5	Instrata	9.3 fl oz/1000 ft ²	10/30/20	0.0b	7.0a	164.5-
6	Instrata	9.3 fl oz/1000 ft ²	11/12/20	1.3b	6.8a	172.8-
7	Instrata	9.3 fl oz/1000 ft ²	11/20/20	1.3b	6.8a	164.0-
			LSD P=.05	3.07	0.61	21.43

^a Mean percent diseased area assessed on March 15, 2021. Means followed by the same letter are not statistically different.

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

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

Table 4: Heating Degree Days and 2-inch soil temperature at Wausau Country Club in Wausau, WI in 2020.

Trt #	Application Date(s)	HDD ^z	2" Soil Temp (°F)
1	Non-treated	NA	NA
2	Sep 16	10	62.6
3	Sep 30	16	54.3
4	Oct 15	60	44.7
5	Oct 30	317	33.8
6	Nov 12	399	37.4
7	Nov 20	546	36.7

^zHeating Degree Days was calculated by taking the mean temperature for each day beginning on July 1st and subtracting that number from 50°F. Negative numbers (ie means temperatures above 50°F) were removed and the summation is presented here.

Table 5. Mean snow mold severity and turf quality were assessed on March 25, 2021 at Timber Ridge Golf Club in Minocqua, WI.

	Treatment	Rate	Application Timing	Disease Severity ^a	Turf Quality ^b	Turf Color ^c
1	Non-treated control			91.0a	1.5c	94.0c
2	Instrata	9.3 fl oz/1000 ft ²	9/1/20	89.8a	1.5c	101.0c
3	Instrata	9.3 fl oz/1000 ft ²	9/16/20	89.8a	1.5c	106.3c
4	Instrata	9.3 fl oz/1000 ft ²	9/30/20	43.8b	4.5b	136.3b
5	Instrata	9.3 fl oz/1000 ft ²	10/15/20	3.0c	6.5a	163.8a
6	Instrata	9.3 fl oz/1000 ft ²	10/30/20	1.5c	7.0a	146.3ab
7	Instrata	9.3 fl oz/1000 ft ²	11/20/20	0.5c	7.0a	147.3ab
			LSD P=.05	16.79	1.21	25.08

^a Mean percent diseased area assessed on March 25, 2021. Means followed by the same letter are not statistically different.

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

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

Table 6: Heating Degree Days and 2-inch soil temperature at Timber Ridge GC in Minocqua, WI in 2020.

Trt #	Application Date(s)	HDD ^z	2" Soil Temp (°F)
1	Non-treated	NA	NA
2	Sep 1	0	60.6
3	Sep 16	15	62.2
4	Sep 30	35	51.9
5	Oct 15	111	42.8
6	Oct 30	425	33.4
7	Nov 20	681	33.3

^zHeating Degree Days was calculated by taking the mean temperature for each day beginning on July 1st and subtracting that number from 50°F. Negative numbers (ie means temperatures above 50°F) were removed and the summation is presented here.