

Bayer - Snow Mold Trials with >80 day Snow Cover (Greens)

Bayer Protocol #: **FE16USARRUECN3** (McCall Golf Course, McCall, ID) and
FE16USARRUECN2 (Meadowlake Golf Course, Columbia Falls, MT)

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Snow mold control trials were conducted on a practice green at the McCall Golf Course in McCall, ID and on an extra green at the Meadowlake Golf Course in Columbia Falls, MT. Greens were a mixture of creeping bentgrass and annual bluegrass. Individual treatment plots were 6' x 6' with four replications in a randomized complete-block design. Treatments were applied 22 Oct 2015 at McCall GC and 28 Oct 2015 at Meadowlake GC. Fungicides were applied at 80 GPA with a bicycle-wheeled CO₂ pressurized (40 psi) sprayer with 11008 flat fan TeeJet nozzles. Weather conditions when fungicides were applied at McCall GC: air temperature: 60°F, soil temperature 2": 54°F, relative humidity: 46% with light winds from the SW at 1 - 3 mph. Weather conditions when fungicides were applied at Meadowlake GC: air temperature: 47°F, soil temperature 2": 45°F, relative humidity: 67% with light winds from the SW at 0 - 1 mph. GPS coordinates McCall GC practice green: 44° 54' 56.88" N, 116° 04' 57.46"W, Elevation: 5042'. GPS coordinates extra green Meadowlake GC: 48° 23' 19.32" N, 114° 12' 12.17"W, Elevation: 3165'. McCall GC had snow cover for approximately 140 days from mid-November 2015 through the first week of April 2016. Meadowlake GC had snow cover for approximately 100 days from the first week of December 2015 through the first week of March 2016. Disease severity and turfgrass quality were rated on 18 Apr 2016 at the McCall GC and on 29 Mar 2016 on the Meadowlake GC. Individual plots were evaluated for pink (*Microdochium nivale*) and/or gray (*Typhula* spp.) snow mold disease severity (% plot area infected). Turfgrass quality was rated on a scale from 1 to 9; 9 = excellent and 6 = acceptable.

(Protocol #: **FE16USARRUECN3 (McCall Golf Course, McCall, ID)** Snow mold disease pressure was low, the untreated check had 13% of the plot area infected (Table 1). The ratio of pink to gray snow mold was roughly 10% pink to 90% gray. Although no sclerotia were found in the gray snow mold patches on the green, it appears that the gray snow mold was most probably *Typhula ishikarensis* since that was the type of gray snow mold sclerotia prevalent in the surrounding area. There were no significant difference among any of the fungicide combinations, however, all the fungicide combination were significantly better compared to the check. All fungicide combinations provided excellent (< 1%) snow mold control and very good turfgrass quality. Figures 1 - 5 are photos of the fungicide treatments in Reps 3 and 4.

Overall, all fungicide combinations resulted in excellent snow mold control and very good turfgrass quality (≥ 6.6).

(Protocol #: FE16USARRUECN2 (Meadowlake Golf Course, Columbia Falls, MT) Snow mold disease pressure was moderate, the untreated check had 32.5% of the plot area infected (Table 2). The snow mold disease present was pink snow mold (100%). All fungicide combinations resulted in significantly better snow mold control compared to the untreated check. Among the fungicide combinations, Interface 6 fl oz + Mirage SC 2 fl oz + Daconil WeatherStik 5.5 fl oz was significantly better than Exteris StressGard 4 fl oz + Mirage SC 2 fl oz + Daconil WeatherStik 5.5 fl oz in terms of disease control and turfgrass quality. In addition, Interface 3 fl oz + Tartan 1 fl oz + Mirage SC 2 fl oz + Daconil WeatherStik 5.5 fl oz with or without Proxy 5 fl oz, although not significantly different, resulted in slightly better disease control compared to Exteris StressGard 4, 5, or 6 fl oz + Mirage 2 fl oz + Daconil WeatherStik 5.5 fl oz. All fungicide combination with Interface + Mirage SC + Daconil WeatherStik with or without Tartan or Proxy resulted in significantly better turfgrass quality compared to Exteris StressGard 4, 5, or 6 fl oz + Mirage SC 2 fl oz + Daconil WeatherStik 5.5 fl oz or Instrata 9.3 fl oz + PAR 0.37 fl oz. Lowering of the Interface rate from 6 fl oz to 3 fl oz + Mirage SC 2 fl oz + Daconil WeatherStik 5.5 fl oz and adding Tartan 1 fl oz or Proxy 5 fl oz to the fungicide mix resulted in similar disease control and turfgrass quality compared to Interface 6 fl oz + Mirage SC 2 fl oz + Daconil WeatherStik 5.5 fl oz. Figures 6 - 9 are photos of the fungicide treatments in Reps 3 and 4. Figure 10 is a photo of the entire study. Figure 11 is a photo of the difference in the shape of the pink snow mold patches between the Exteris StressGard + Mirage + Daconil WeatherStik treatment and the untreated check.

Overall, combining Mirage SC 2 fl oz + Daconil 5.5 fl oz with Interface at 6 fl oz resulted in significantly better disease control and turfgrass quality than when combined with Exteris StressGard 4 fl oz. Lowering the Interface rate from 6 fl oz to 3 fl oz and adding Tartan 1 fl oz or Proxy 5 fl oz with Mirage SC 2 fl oz + Daconil 5.5 fl oz resulted in similar disease control and turfgrass quality. For the most part, all 3 fungicide combinations with Interface resulted in significantly better turfgrass quality compared to the fungicide combinations with Exteris StressGard or the Instrata + PAR treatment.

Table 1. The effect of various combinations of fungicide to control pink and/or gray snow mold on a practice green at the McCall Golf Course in McCall, ID. Rated 18 Apr 2016.

Treatment	Identification Code	Form. Type	Rate (fl oz/M)	Snow mold (% area infected)	*Turfgrass quality
UNTREATED	UNTREATED	0	0	13.0 a	4.0 b
INTERFACE (iprodione + trifloxystrobin) + MIRAGE SC (tebuconazole) + DACONIL WEATHERSTICK (chlorothalonil)	SP102000021104 SP102000014776 DAC WEATHERSTICK	SC SC SC	6 2 5.5	0.0 b	7.0 a
EXTERIS STRESSGARD (fluopyram + trifloxystrobin) + MIRAGE SC (tebuconazole) + DACONIL WEATHERSTICK (chlorothalonil)	SP102000028297 SP102000014776 DAC WEATHERSTICK	SC SC SC	4 2 5.5	0.5 b	6.6 a
EXTERIS STRESSGARD (fluopyram + trifloxystrobin) + MIRAGE SC (tebuconazole) + DACONIL WEATHERSTICK (chlorothalonil)	SP102000028297 SP102000014776 DAC WEATHERSTICK	SC SC SC	5 2 5.5	1.0 b	6.3 a
EXTERIS STRESSGARD (fluopyram + trifloxystrobin) + MIRAGE SC (tebuconazole) + DACONIL WEATHERSTICK (chlorothalonil)	SP102000028297 SP102000014776 DAC WEATHERSTICK	SC SC SC	6 2 5.5	0.4 b	6.6 a
TARTAN (triadimefon + trifloxystrobin) + DACONIL WEATHERSTICK (chlorothalonil) + INTERFACE (iprodione + trifloxystrobin) + MIRAGE SC (tebuconazole)	SP102000024368 DAC WEATHERSTICK SP102000021104 SP102000014776	SC SC SC SC	1 5.5 3 2	0.5 b	6.6 a
DACONIL WEATHERSTICK (chlorothalonil) + TARTAN (triadimefon + trifloxystrobin) + INTERFACE (iprodione + trifloxystrobin) + MIRAGE SC (tebuconazole) + PROXY (ethephon)	DAC WEATHERSTICK AE C642802 05 SC25 A1 SP102000021104 SP102000014776 AEFDQM_01040301	SC SC SC SC SL	5.5 1 3 2 5	0.5 b	6.6 a
INSTRATA (propiconazole + fludioxonil + chlorothalonil) + PAR (proprietary colorant)	STANDARD - LOCAL STANDARD - LOCAL	SC	11 0.37	0.0 b	7.0 a
Medallion (fludioxonil) + Daconil WeatherStik (chlorothalonil) + 26 GT (iprodione) + PAR (proprietary colorant)	STANDARD - LOCAL STANDARD - LOCAL STANDARD - LOCAL STANDARD - LOCAL	SC SC SC	1 5.5 4 0.37	0.0 b	7.0 a

*Turfgrass quality rated 1 to 9; 9=excellent.

**Means within columns followed by the same letter are not significantly different. LSD ($P = 0.05$).

Fig. 1. Snow mold fungicide treatments on a practice green at the McCall Golf Course in McCall, ID. Rated 18 Apr 2016.



Fig. 2. Snow mold fungicide treatments on a practice green at the McCall Golf Course in McCall, ID. Rated 18 Apr 2016.



Fig. 3. Snow mold fungicide treatments on a practice green at the McCall Golf Course in McCall, ID. Rated 18 Apr 2016.



Fig. 4. Snow mold fungicide treatments on a practice green at the McCall Golf Course in McCall, ID. Rated 18 Apr 2016.



Fig. 5. Snow mold fungicide treatments on a practice green at the McCall Golf Course in McCall, ID. Rated 18 Apr 2016.



Table 2. The effect of various combinations of fungicide to control pink and/or gray snow mold on an extra green at the Meadowlake Golf Course in Columbia Falls, MT. Rated 29 Mar 2016.

Treatment	Identification Code	Form. Type	Rate (fl oz/M)	Snow mold	
				(% area infected)	*Turfgrass quality
INTERFACE (iprodione + trifloxystrobin) + MIRAGE SC (tebuconazole) + DACONIL WEATHERSTICK (chlorothalonil)	SP102000021104	SC	6	1.0 c**	5.9 a
	SP102000014776	SC	2		
	BCOBPE_DAC WEATHERSTICK	SC	5.5		
DACONIL WEATHERSTICK (chlorothalonil) + TARTAN (triadimefon + trifloxystrobin) + INTERFACE (iprodione + trifloxystrobin) + MIRAGE SC (tebuconazole) + PROXY (ethephon)	BCOBPE_DAC WEATHERSTICK	SC	5.5	1.5 bc	5.8 ab
	AE C642802 05 SC25 A1	SC	1		
	SP102000021104	SC	3		
	SP102000014776	SC	2		
TARTAN (triadimefon + trifloxystrobin) + DACONIL WEATHERSTICK (chlorothalonil) + INTERFACE (iprodione + trifloxystrobin) + MIRAGE SC (tebuconazole)	AEFDQM_01040301	SL	5	1.6 bc	5.6 ab
	SP102000024368	SC	1		
	BCOBPE_DAC WEATHERSTICK	SC	5.5		
Medallion (fludioxonil) + Daconil WeatherStik (chlorothalonil) + 26 GT (iprodione) + PAR (proprietary colorant)	SP102000021104	SC	3	2.0 bc	5.5 abc
	SP102000014776	SC	2		
	STANDARD - LOCAL	SC	1		
	STANDARD - LOCAL	SC	5.5		
INSTRATA (propiconazole + fludioxonil + chlorothalonil) + PAR (proprietary colorant)	STANDARD - LOCAL	SC	4	3.5 bc	4.8 cd
	STANDARD - LOCAL	SC	0.37		
EXTERIS STRESSGARD (fluopyram + trifloxystrobin) + MIRAGE SC (tebuconazole) + DACONIL WEATHERSTICK (chlorothalonil)	STANDARD - LOCAL	SC	9.3	4.0 bc	5.0 bcd
	SP102000028297	SC	6		
	SP102000014776	SC	2		
EXTERIS STRESSGARD (fluopyram + trifloxystrobin) + MIRAGE SC (tebuconazole) + DACONIL WEATHERSTICK (chlorothalonil)	BCOBPE_DAC WEATHERSTICK	SC	5.5	4.3 bc	4.8 cd
	SP102000028297	SC	5		
	SP102000014776	SC	2		
EXTERIS STRESSGARD (fluopyram + trifloxystrobin) + MIRAGE SC (tebuconazole) + DACONIL WEATHERSTICK (chlorothalonil)	BCOBPE_DAC WEATHERSTICK	SC	5.5	5.0 b	4.6 d
	SP102000028297	SC	4		
	SP102000014776	SC	2		
UNTREATED	BCOBPE_DAC WEATHERSTICK	SC	5.5	32.5 a	1.6 e

*Turfgrass quality rated 1 to 9; 9=excellent.

**Means within columns followed by the same letter are not significantly different. LSD ($P = 0.05$).

Fig. 6. Snow mold fungicide treatments on a practice green at the Meadowlake Golf Course in Columbia Falls, MT. Rated 29 Mar 2016.



Fig. 7. Snow mold fungicide treatments on a practice green at the Meadowlake Golf Course in Columbia Falls, MT. Rated 29 Mar 2016.



Fig. 8. Snow mold fungicide treatments on a practice green at the Meadowlake Golf Course in Columbia Falls, MT. Rated 29 Mar 2016.



Fig. 9. Snow mold fungicide treatments on a practice green at the Meadowlake Golf Course in Columbia Falls, MT. Rated 29 Mar 2016.

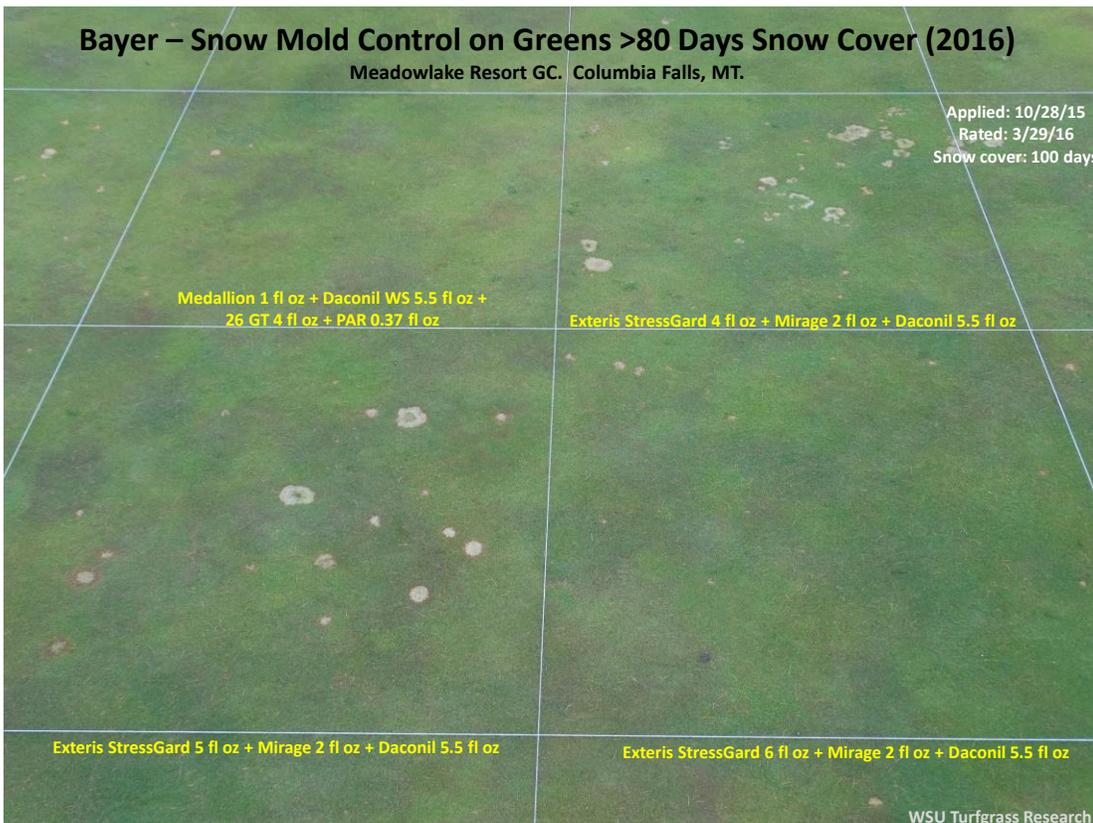


Fig. 10. Snow mold fungicide treatments on a practice green at the Meadowlake Golf Course in Columbia Falls, MT. Rated 29 Mar 2016.



Fig. 11. Snow mold fungicide treatments on a practice green at the Meadowlake Golf Course in Columbia Falls, MT. Rated 29 Mar 2016.

