

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

Bayer Protocol #: **FE16USARRUECN1** (Nursery green - Downriver GC) and
FE16USARU1ECN1 (Chipping green - Downriver GC)

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Snow mold control trials were conducted on 2 different greens at the Downriver Golf Course in Spokane, WA. Greens were a mixture of creeping bentgrass and annual bluegrass. Individual treatment plots were 6' x 6' with three (Chipping green) or four (Nursery green) replications in a randomized complete-block design. Treatments were applied 26 Oct 2015. 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 on the Nursery green: air temperature: 58°F, soil temperature 2": 55°F, relative humidity: 57% with light winds from the SW at 2 - 5 mph. Weather conditions when fungicides were applied on the Chipping green: air temperature: 62°F, soil temperature 2": 52°F, relative humidity: 66% with light winds from the SW at 1 - 3 mph. GPS coordinates Nursery green: 47° 41' 1.74" N, 117° 28' 10.08"W, Elevation: 1767'. GPS coordinates Chipping green: 47° 41' 4.55" N, 117° 27' 51.85"W, Elevation: 1800'. Downriver had snow cover for approximately 45 days from early/mid-December 2015 through the last week of January 2016. Disease severity, turfgrass quality and phytotoxicity were rated on 24 Feb 2016. 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. Phytotoxicity was rated 0 to 10; 0 = no phytotoxicity for protocol #: FE16USARU1ECN1 (Chipping green) only.

(Protocol #: **FE16USARRUECN1** (Nursery green - Downriver GC) Snow mold disease pressure was low, the untreated check had 13.5% of the plot area infected (Table 1). For the most part, pink snow mold predominated throughout the study area except in one check plot which appeared to have some gray snow mold (Fig. 2). All treatments resulted in significantly better snow mold control than the untreated check. Among the fungicide combinations, Exteris StressGard 3 fl oz + Daconil WeatherStik 5.5 fl oz and Syngenta's InStrata 9.3 fl oz + PAR 0.37 fl oz resulted in significantly better disease control and turfgrass quality compared to Exteris StressGard 4 fl oz + Tartan 1 fl oz. Exteris StressGard 3 fl oz + Daconil WeatherStik 5.5 fl oz resulted in similar disease control and turfgrass quality compared to treatments with higher Exteris StressGard rates (4, 5, or 6 fl oz) + Daconil WeatherStik 5.5 fl oz. Figs. 1-5 are photos of all fungicide treatments in replications 1 and 2.

Overall, increased rates of Exteris StressGard combined with Daconil WeatherStik did not result in better snow mold control. Therefore, the lowest rate, Exteris StressGard 3 fl oz, combined with Daconil WeatherStik 5.5 fl oz would be the most economical. Exteris StressGard combined with Tartan did not provide as good disease control compared to Exteris

StressGard combinations with Daconil WeatherStik. In addition, Exteris StressGard combined with Daconil WeatherStik performed as good as Syngenta's InStrata + PAR.

(Protocol #: **FE16USARU1ECN1 (Chipping green - Downriver GC)** Snow mold disease pressure was high, the untreated check had 57% of the plot area infected (Table 2). Snow mold disease present in the study was 100% pink snow mold. **It was noted that when the treatments were applied 26 Oct 2015 that there was active pink snow mold disease throughout the study area.** In any event, pink snow mold disease control by any fungicide treatment was inadequate (30% area infected or greater). BCS-CN88460 0.471 fl oz + ESTC100 (propiconazole) 2.197 fl oz or Compass 0.2 oz resulted in significantly better disease control compared to each alone. Close behind these 2 treatments in terms of disease control was BCS-CN88460 0.471 fl oz + Interface 3 fl oz even though not significantly different compared to BCS-CN88460 0.471 fl oz alone. However, combining BCS-CN88460 0.471 fl oz with ESTC101 0.6545 fl oz, Adjuvant, Mirage SC 1 fl oz, or USF2018A 0.157 fl oz resulted in disease control that was not significantly different compared to BCS-CN88460 0.471 fl oz alone. No phytotoxicity was observed with any fungicide treatment. Figs. 1-13 are photos of all fungicide treatments in replications 1 and 2. Fig. 14 is a photo of the entire study area.

Overall, no fungicide treatment provided acceptable pink snow mold control, however, combining BCS-CN88460 0.471 fl oz with ESTC100 2.197 fl oz or Compass 0.2 oz resulted in significantly better disease control compared to BCS-CN88460 0.471 fl oz alone. Several other fungicide combinations, in this study, with BCS-CN88460 0.471 fl oz, did not result in significantly different disease control compared to BCS-CN88460 0.471 fl oz alone. No phytotoxicity among any of the fungicide combinations was observed.

Table 1. The effect of various combinations of fungicide to control pink snow mold on a nursery green at Downriver Golf Course in Spokane, WA. Rated 24 Feb 2016.

Treatment	Identification Code	Form. Type	Rate (fl oz/M)	Snow mold (% area infected)	*Turfgrass quality
INSTRATA (propiconazole + fludioxonil + chlorothalonil) + PAR (proprietary colorant)	STANDARD - LOCAL STANDARD - LOCAL	SC	9.3 0.37	0.9 c**	5.9 a
EXTERIS STRESSGARD (fluopyram + trifloxystrobin) + DACONIL WEATHERSTICK (chlorothalonil)	SP102000028297 DAC WEATHERSTICK	SC SC	3 5.5	1.0 c	5.9 a
EXTERIS STRESSGARD (fluopyram + trifloxystrobin) + DACONIL WEATHERSTICK (chlorothalonil)	SP102000028297 DAC WEATHERSTICK	SC SC	4 5.5	1.5 bc	5.8 a
EXTERIS STRESSGARD (fluopyram + trifloxystrobin) + DACONIL WEATHERSTICK (chlorothalonil)	SP102000028297 DAC WEATHERSTICK	SC SC	5 5.5	1.8 bc	5.5 ab
EXTERIS STRESSGARD (fluopyram + trifloxystrobin) + DACONIL WEATHERSTICK (chlorothalonil)	SP102000028297 DAC WEATHERSTICK	SC SC	6 5.5	2.0 bc	5.4 ab
TARTAN (triadimefon + trifloxystrobin) + DACONIL WEATHERSTICK (chlorothalonil)	SP102000024368 DAC WEATHERSTICK	SC SC	2 5.5	2.3 bc	5.5 ab
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	2.3 bc	5.5 ab
INTERFACE (iprodione + trifloxystrobin)	SP102000021104	SC	6	3.4 bc	4.9 bc
EXTERIS STRESSGARD (fluopyram + trifloxystrobin) + TARTAN (triadimefon + trifloxystrobin)	SP102000028297 SP102000024368	SC SC	4 1	5.8 b	4.4 c
UNTREATED	UNTREATED	0	0	13.5 a	3.0 d

*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 nursery green at Downriver Golf Course in Spokane, WA. Rated 24 Feb 2016.

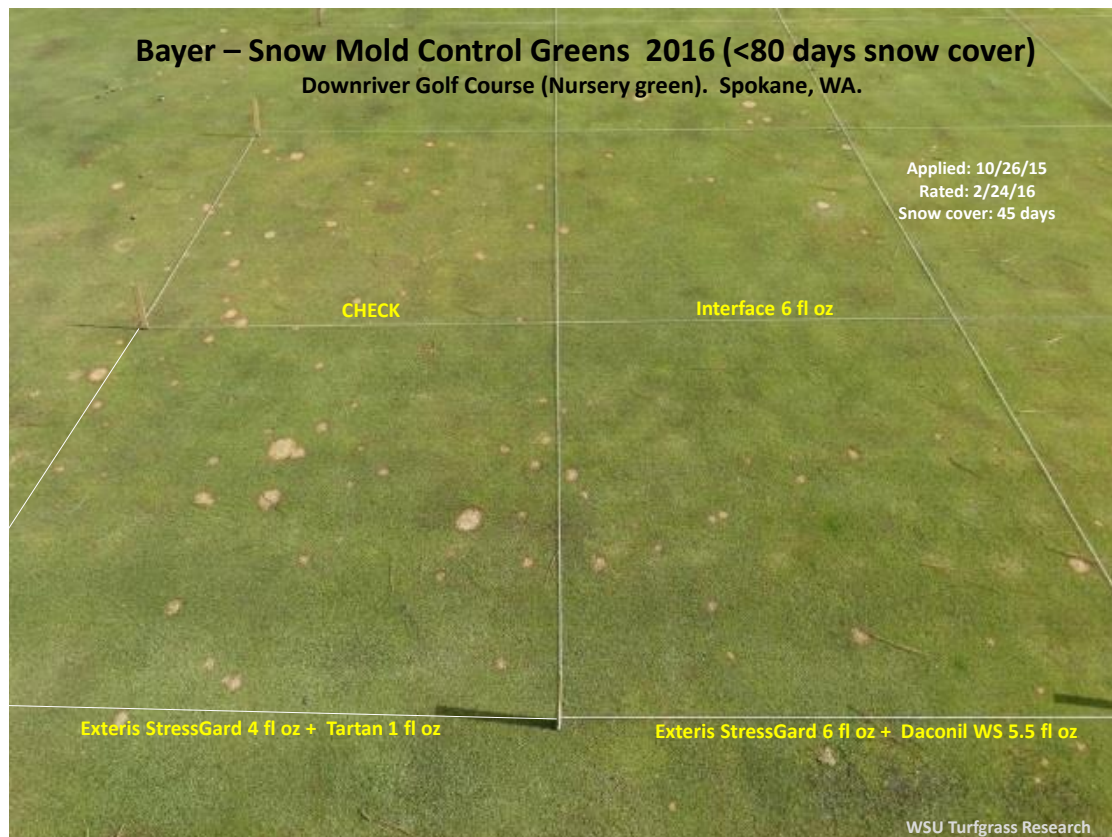


Fig. 2. Snow mold fungicide treatments on a nursery green at Downriver Golf Course in Spokane, WA. Rated 24 Feb 2016.

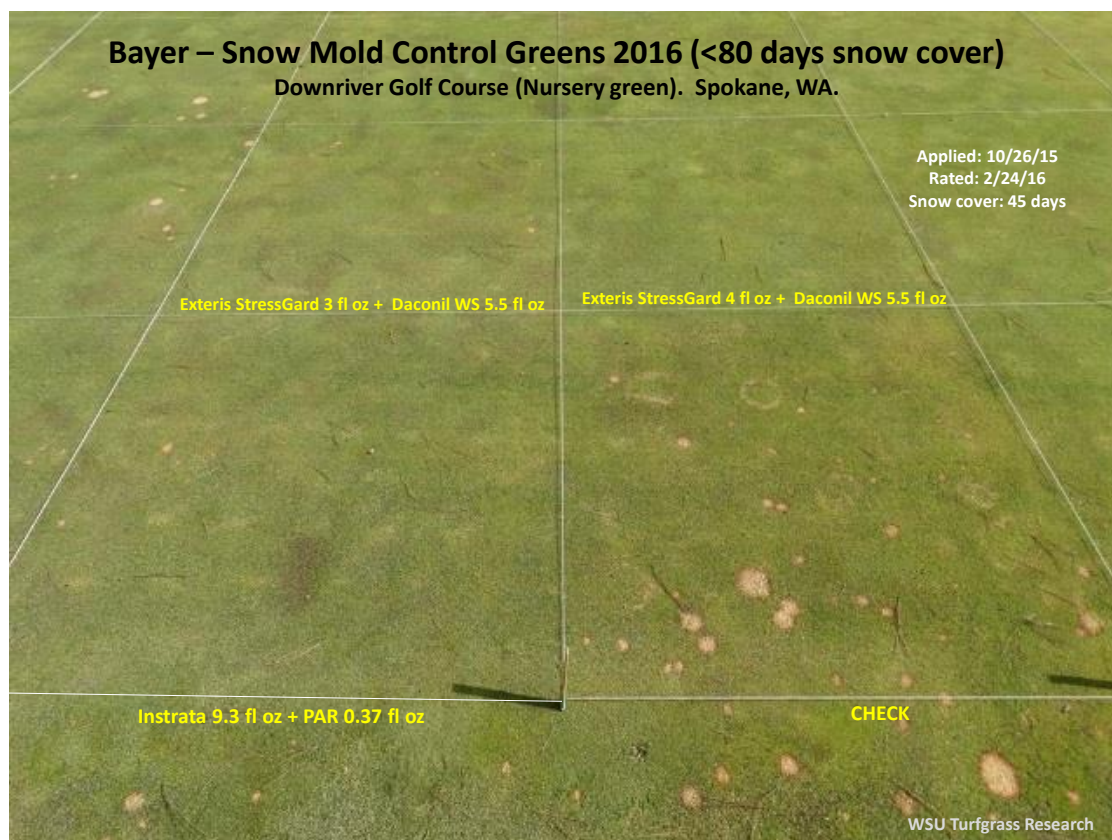


Fig. 3. Snow mold fungicide treatments on a nursery green at Downriver Golf Course in Spokane, WA. Rated 24 Feb 2016.



Fig. 4. Snow mold fungicide treatments on a nursery green at Downriver Golf Course in Spokane, WA. Rated 24 Feb 2016.



Fig. 5. Snow mold fungicide treatments on a nursery green at Downriver Golf Course in Spokane, WA. Rated 24 Feb 2016.



Table 2. The effect of various combinations of fungicide with BCS-CN88460 to control pink snow mold on a chipping green at Downriver Golf Course in Spokane, WA. Rated 24 Feb 2016.

Treatment	Identification Code	Form. Type	Rate (fl oz or oz/M)	Snow Mold (% area infected)	*Turfgrass quality	**Phyto- toxicity
BCS-CN88460 + ESTC100 (propiconazole)	SP102000026855 BCOWCL_BANNER MAXX	SC SC	0.471 fl oz 2.197 fl oz	30.0 e***	1.8 a	0
BCS-CN88460 + COMPASS (trifloxystrobin)	SP102000026855 EXP10993A	SC WG	0.471 fl oz 0.2 oz	30.0 e	1.8 a	0
BCS-CN88460 + INTERFACE (iprodione + trifloxystrobin)	SP102000026855 SP102000021104	SC SC	0.471 fl oz 3 fl oz	31.7 de	1.8 a	0
BCS-CN88460 + ADJUVANT + USF2018A + SP102000014862 (seed colorant)	SP102000026855 ADJUVANT SP102000021469 SP102000014862	SC XL SC XL	0.471 fl oz 0.64 fl oz 0.157 fl oz 0.25 fl oz	33.3 cde	1.7 ab	0
BCS-CN88460 + COMPASS (trifloxystrobin) + MIRAGE SC (tebuconazole)	SP102000026855 EXP10993A SP102000014776	SC WDG SC	0.471 fl oz 0.2 oz 1 fl oz	33.3 cde	1.5 abc	0
EXTERIS STRESSGARD (fluopyram + trifloxystrobin)	SP102000028297	SC	6 fl oz	38.3 bcde	1.3 abc	0
BCS-CN88460 + ESTC101	SP102000026855 AEFDQM_F060844 00 SCA	SC SC	0.471 fl oz 0.6545 fl oz	38.3 bcde	1.2 bc	0
BCS-CN88460 + ADJUVANT	SP102000026855 ADJUVANT	SC XL	0.471 fl oz 0.64 fl oz	40.0 bcde	1.3 abc	0
BCS-CN88460	SP102000026855	SC	0.471 fl oz	41.7 bcd	1.0 c	0
BCS-CN88460 + MIRAGE SC (tebuconazole)	SP102000026855 SP102000014776	SC SC	0.471 fl oz 1 fl oz	43.3 bc	1.2 bc	0
COMPASS (trifloxystrobin)	EXP10993A	WDG	0.2 oz	43.4 bc	1.0 c	0
BCS-CN88460 + USF2018A	SP102000026855 SP102000021469	SC SC	0.471 fl oz 0.157 fl oz	45.0 b	1.2 bc	0
INTERFACE (iprodione + trifloxystrobin)	SP102000021104	SC	3 fl oz	46.7 ab	1.0 c	0
MIRAGE SC (tebuconazole)	SP102000014776	SC	1 fl oz	48.3 ab	1.0 c	0
UNTREATED	UNTREATED	0	0	56.7 a	1.0 c	0

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

**Phytotoxicity rated 0 to 10; 0 = no phytotoxicity.

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

Fig. 6. Various combinations of fungicide with BCS-CN88460 to control pink snow mold on a chipping green at Downriver Golf Course in Spokane, WA. Rated 24 Feb 2016.

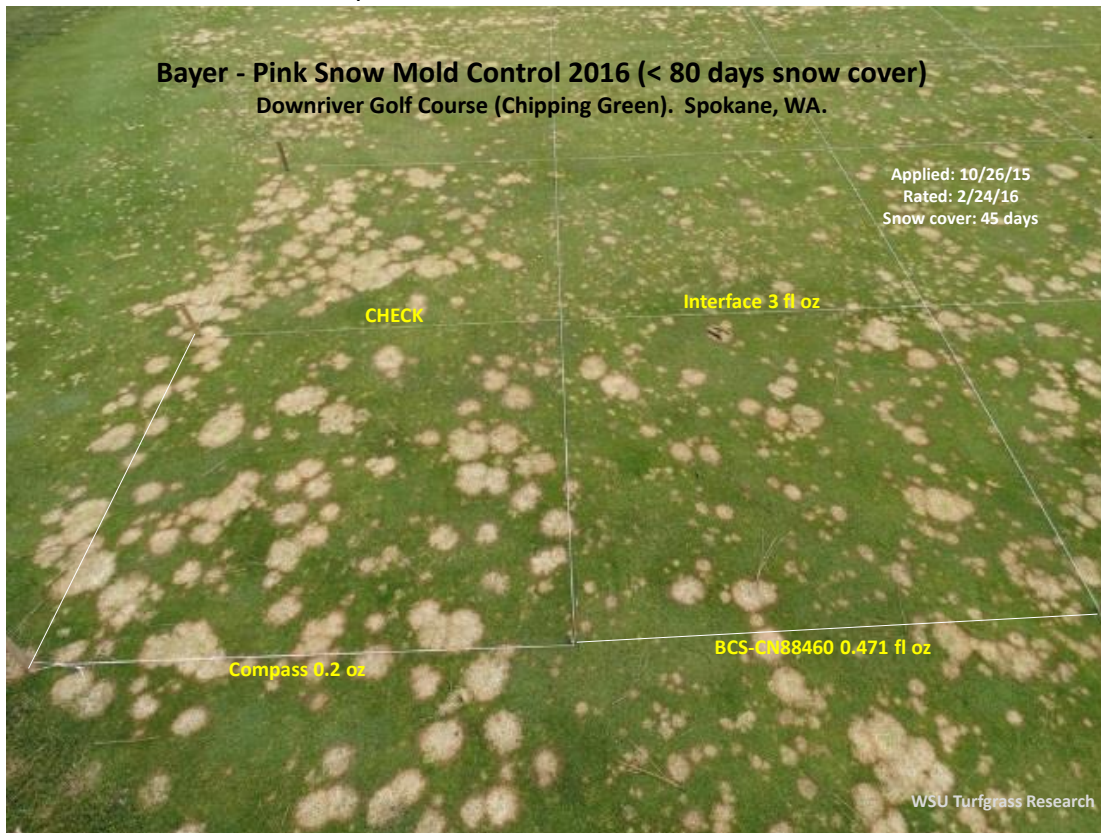


Fig. 7. Various combinations of fungicide with BCS-CN88460 to control pink snow mold on a chipping green at Downriver Golf Course in Spokane, WA. Rated 24 Feb 2016.



Fig. 8. Various combinations of fungicide with BCS-CN88460 to control pink snow mold on a chipping green at Downriver Golf Course in Spokane, WA. Rated 24 Feb 2016.

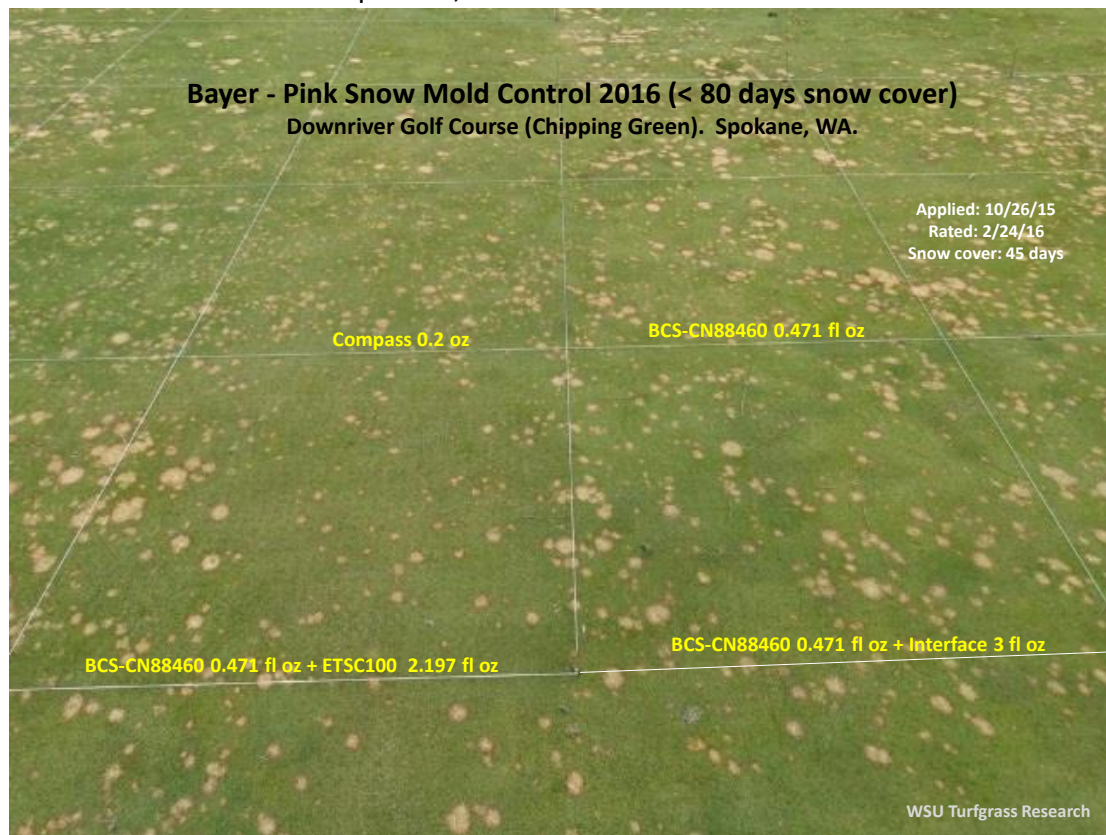


Fig. 9. Various combinations of fungicide with BCS-CN88460 to control pink snow mold on a chipping green at Downriver Golf Course in Spokane, WA. Rated 24 Feb 2016.

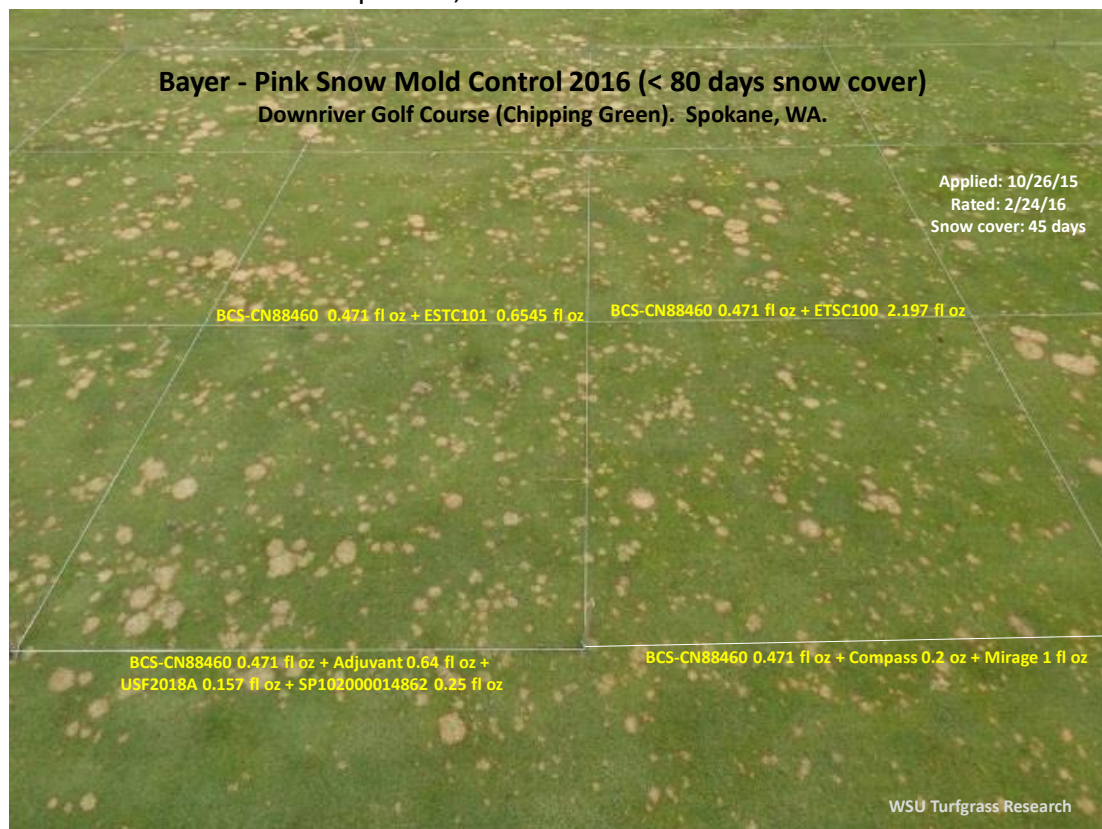


Fig. 10. Various combinations of fungicide with BCS-CN88460 to control pink snow mold on a chipping green at Downriver Golf Course in Spokane, WA. Rated 24 Feb 2016.

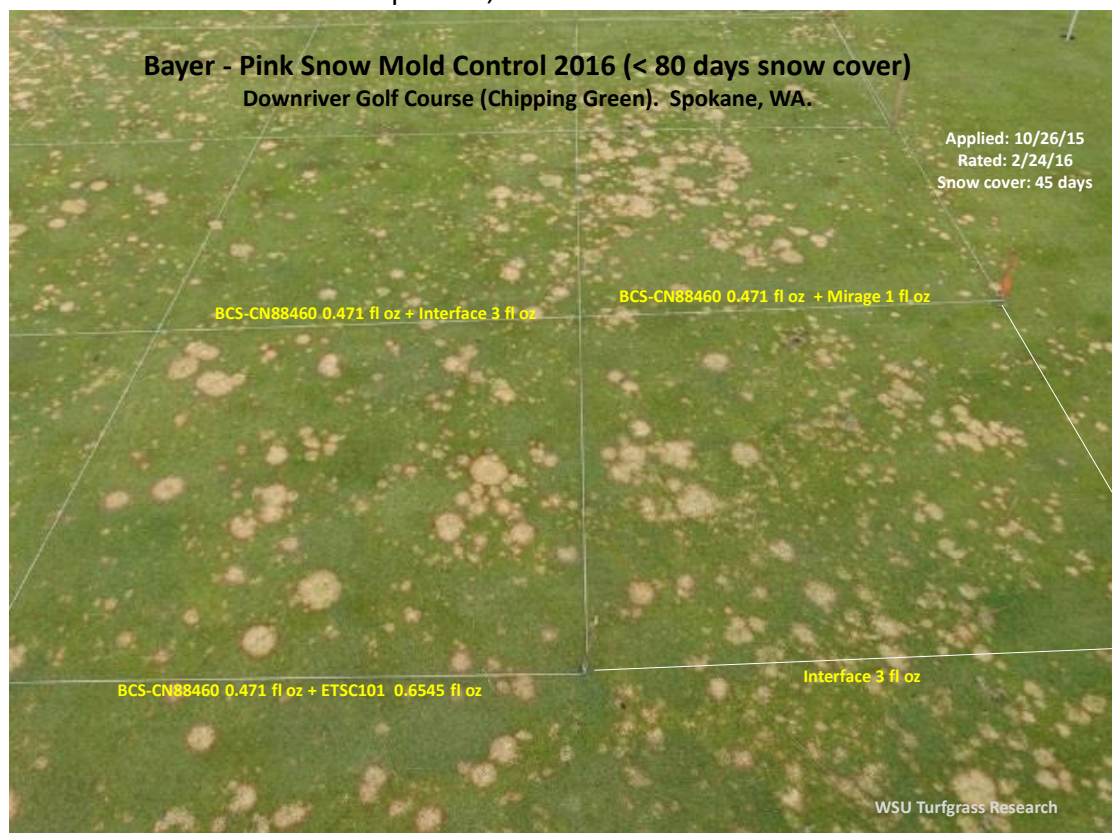


Fig. 11. Various combinations of fungicide with BCS-CN88460 to control pink snow mold on a chipping green at Downriver Golf Course in Spokane, WA. Rated 24 Feb 2016.

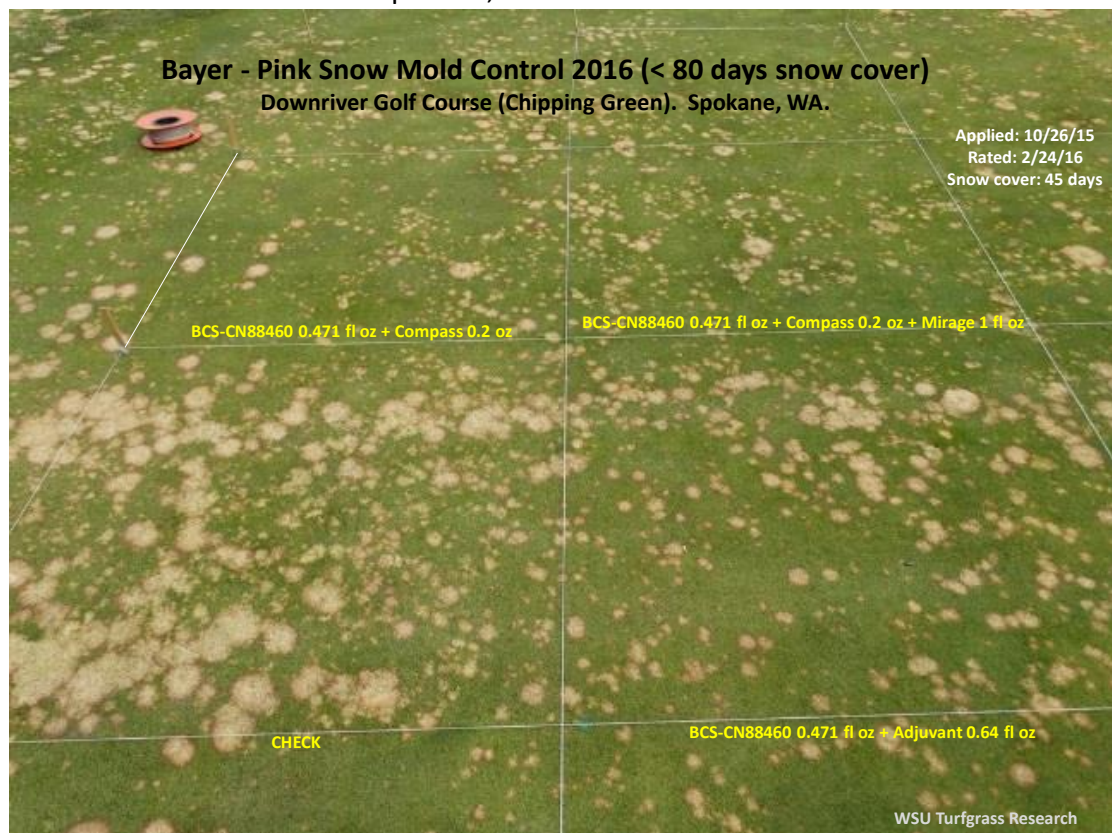


Fig. 12. Various combinations of fungicide with BCS-CN88460 to control pink snow mold on a chipping green at Downriver Golf Course in Spokane, WA. Rated 24 Feb 2016.



Fig. 13. Various combinations of fungicide with BCS-CN88460 to control pink snow mold on a chipping green at Downriver Golf Course in Spokane, WA. Rated 24 Feb 2016.

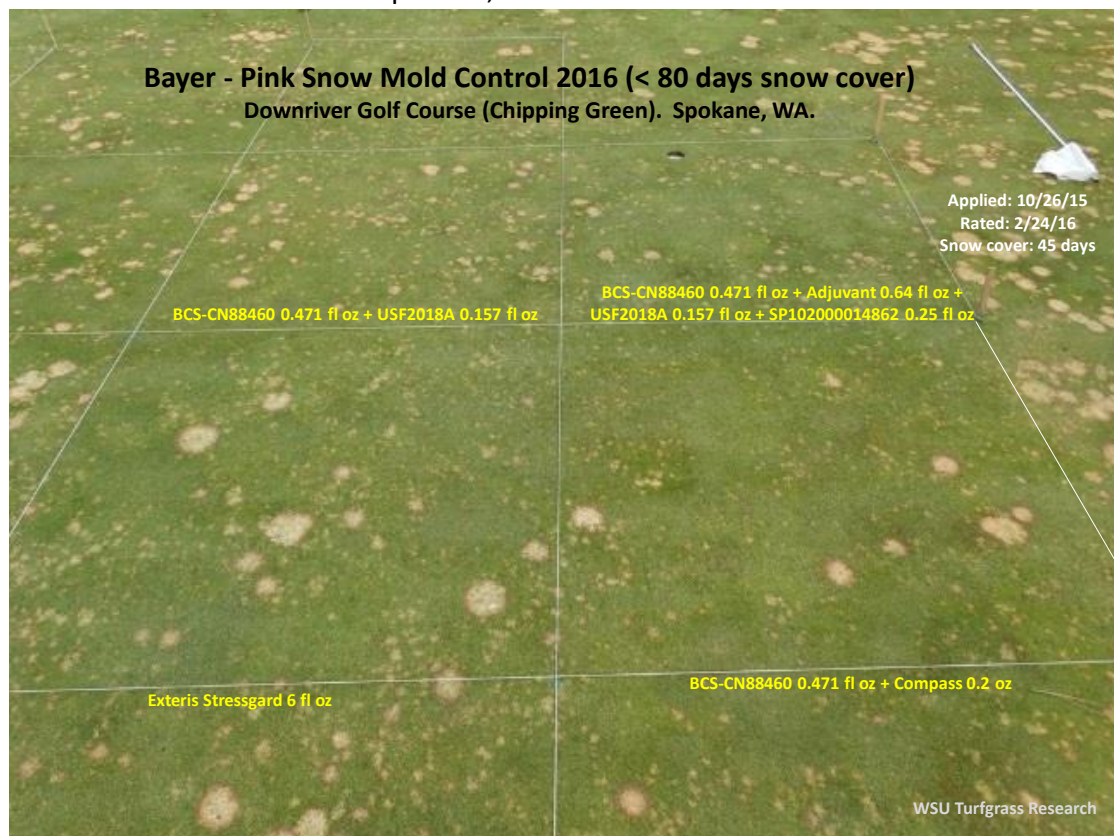


Fig. 14. Various combinations of fungicide with BCS-CN88460 to control pink snow mold on a chipping green at Downriver Golf Course in Spokane, WA. Rated 24 Feb 2016.

