Evaluation of Fungicides from Bayer to Control Pink and Gray Snow Mold on Putting Greens in Idaho and Washington 2006-07.

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Snow mold control trials were conducted at 3 different locations in the Intermountain Region of the PNW, on a practice green at the Whitetail Golf Club in McCall, ID, a nursery green at the Chewelah Golf and Country Club in Chewelah, WA, and on a research green at the WSU Turfgrass and Agronomy Research Center (TARC) in Pullman, WA. The practice green at McCall is an USGA green of 'Providence' creeping bentgrass, the nursery green at Chewelah is a push-up green covered with 3" to 4" of sand with a mixed stand of 'Penncross' creeping bentgrass and annual bluegrass, and the research green is a pure stand of 'T-1' creeping bentgrass grown on an USGA green at Pullman. Individual treatment plots were 6' x 7' at McCall, Chewelah, and Pullman with three replications in a randomized complete-block design. Treatments were applied 27 Oct 06, 9 Nov 06, and 20 Nov 06 at McCall, Chewelah, and Pullman, respectively. Fungicides were applied at 70 GPA with a bicycle-wheeled CO_2 pressurized (40 psi) sprayer with 11008 flat fan TeeJet nozzles. At McCall, immediately following the application of the fungicide treatments, a heavy sand topdressing was applied over the entire research area (Figure 7). At Pullman snow cover was intermittent throughout the winter from the end of November through the first of March (approx. 50 days). Continuous snow cover was from 22 Nov 06 to 19 Mar 07 (approx. 120 days) at Chewelah and from mid Nov 06 to 10 Apr 07 at McCall (approx. 150 days). Individual plots were evaluated for pink (*Microdochium nivale*) and/or gray (*Typhula spp.*) snow mold disease severity (% area infected) and turfgrass quality (rated on a scale of 1-9; 9 = excellent) on 6 Mar 07 at Pullman, 23 Mar 07 at Chewelah, and 17 Apr 07 at McCall.

Even though the Pullman sites experienced normal snow mold pressure, the non-treated control had only 18% area infected with pink snow mold (*M. nivale*) (Table 1). However, all treatments resulted in very good to excellent snow mold control. Even though, not significantly different then the other treatments, the Lynx 1 fl oz + Chipco 26GT 4 fl oz had the highest amount of disease. All Bayer fungicide treatments, except Compass 0.25 oz + Chipco 26GT 4 fl oz, had significantly better turf quality then Instrata 9 fl oz/M. In Figure 1, which is an overview of Rep 2, one can see the lower turf quality of Instrata 9 fl oz/M and the Compass + Chipco 26GT treatments.

At Chewelah, the non-treated control had 82% area infected with roughly 40% pink (*M. nivale*) and 60% gray (*Typhula spp.*) snow mold (Table 2). No sclerotia were found in any of the control plots, therefore, no determination as to the percent of *Typhula incarnata* or *T. ishikariensis* could be made. Only three treatments resulted in less then 10% disease and surprisingly they all had a 5 oz rate of Daconil Ultrex 82.5WDG added. It is also interesting

to note that Syngenta's Instrata at 9 fl oz/M resulted in 11% disease which was much higher then the same treatment applied on a different part of the research area. It may be that shading in this area of the nursery green created more disease pressure. The worst treatment was Tartan 2 fl oz + Chipco 26GT 6 fl oz. For the most part, Tartan in combination with Prostar, Terraclor, or Chipco 26GT did not provide acceptable levels of snow mold control. Also, TBZ + TFS Green alone and with Chipco 26GT did not provide acceptable levels of snow mold control. Figures 2 - 6 shows an overview of all treatments in reps 1 and 2. Even though it appears that snow mold was controlled, upon closer inspection, there were remnants of underlying snow mold patches and new symptoms of *M. nivale* (brown patches) showing up in the plots, and are difficult to see in the photos in these figures.

At McCall, the non-treated control had 75 % area infected with roughly 80 % pink (*M. nivale*) and 20 % gray (*Typhula spp.*) snow mold (Figure 8). All treatments resulted in significant snow mold control compared to the non-treated control. The treatment with the best control and quality was TBZ+ TFS Green 2 fl oz + Daconil Ultrex at 5 oz (Figure 9). In addition, Lynx 1 fl oz + Chipco 26GT 4 fl oz + Daconil Ultrex 5 oz provided excellent disease control and good quality. Unlike the results at Chewelah, Tartan in combination with Terraclor, Daconil Ultrex, Chipco 26GT, and Prostar provided good snow mold control < 10 % area infected. Perhaps the heavy topdressing of sand, applied late in the fall immediately following the application of the fungicide treatments, contributed to an increase in efficacy. I did not take pictures over the whole plot area because it was snowing heavily and the falling snow flakes looked little blurs over the whole picture. But I was able to take a picture of each individual treatment. If there is a treatment that you would like to see let me know and I will send it.

Overall, all fungicide treatments provided very good to excellent snow mold control at Pullman and McCall but not at Chewelah. However, at all 3 sites, Lynx 1 fl oz + Chipco 26GT 4 fl oz + Daconil Ultrex 5 oz, TBZ + TFS Green 2 fl oz + Daconil Ultrex 5 fl oz, and Tartan 2 fl oz + Daconil Ultrex 5 oz resulted in very good snow mold control with < 10 % area infected with snow mold. For the most part, many of the Bayer fungicide treatments performed as good as or better then Syngenta's Instrata at 9 fl oz.

Table 1. Evaluation of Bayer fungicides to control pink snow mold at the WSU Turfgrass and Agronomy Research Center. Pullman, WA. Rated 6 Mar 2007.

Treatment	Rate (oz or fl oz) prod/M)	Disease (% area infected)	Turf quality**
Tartan (Trifloxystrobin + Triadimefon) Chipco 26GT (Iprodione)	2.0 fl oz 4.0 fl oz	0.0 a*	5.0 a
Compass 50WG (Trifloxystrobin) Chipco 26GT (Iprodione)	0.25 oz 4.0 fl oz	0.0 a	4.0 b
TBZ + TFS Green (Trifloxystrobin + Tebuconazole) Chipco 26GT (Iprodione)	2.0 fl oz 4.0 fl oz	0.3 a	5.0 a
TBZ + TFS Green (Trifloxystrobin + Tebuconazole) Daconil Ultrex 82.5WDG (Chlorothalonil)	2.0 fl oz 5.0 oz	0.3 a	5.0 a
Tartan (Trifloxystrobin + Triadimefon) Terraclor 75WP (PCNB)	2.0 fl oz 4.0 oz	0.3 a	4.7 ab
Instrata 3.61SE (Propiconazole + Flutioxonil + Chlorothalonil)	9.0 fl oz	0.3 a	3.0 c
Tartan (Trifloxystrobin + Triadimefon)	2.0 fl oz	0.7 a	5.3 a
TBZ + TFS Green (Trifloxystrobin + Tebuconazole)	2.0 fl oz	0.7 a	5.0 a
Lynx (Tebuconazole) Chipco 26GT (Iprodione)	1.0 fl oz 4.0 fl oz	2.7 a	4.7 ab
CHECK	0.0	18.0 b	2.7 c

*Values within a column followed by the same letter are not significantly different LSD *P* =0.05.

**Turf quality rated 1-9; 9 = excellent.

Figure 1. Bayer snow mold trial at the WSU Turfgrass and Agronomy Research Center. Pullman, WA. 2006-07.

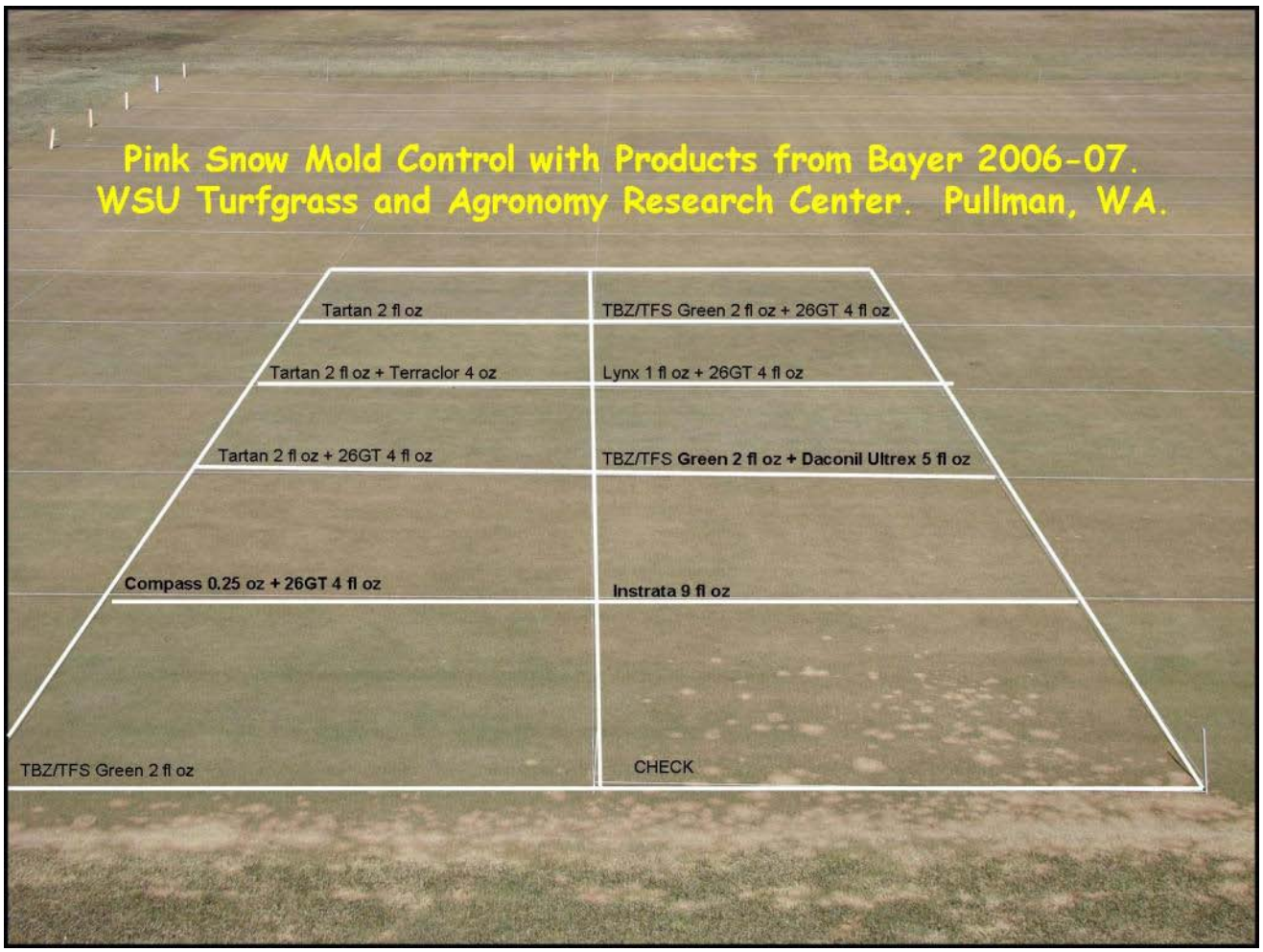

Table 2. Evaluation of Bayer fungicides to control snow mold at Chewelah Golf and Country Club. Chewelah, WA. Rated 23 Mar 2007.

Treatment	Rate (oz or fl oz) prod/M)	Disease (% area infected)	Turf quality **
Lynx (Tebuconazole) Chipco 26GT (Iprodione) Daconil Ultrex 82.5WDG (Chlorothalonil)	1.0 fl oz 4.0 fl oz 5.0 oz	2.3 a*	4.7 abc
TBZ + TFS Green (Trifloxystrobin + Tebuconazole) Daconil Ultrex 82.5WDG (Chlorothalonil)	2.0 fl oz 5.0 oz	4.3 a	5.0 ab
Tartan (Trifloxystrobin + Triadimefon) Daconil Ultrex 82.5WDG (Chlorothalonil)	2.0 fl oz 5.0 oz	5.3 ab	5.3 a
Instrata 3.61SE (Propiconazole + Flutioxonil + Chlorothalonil)	9.0 fl oz	11.3 ab	4.3 abc
TBZ + TFS Green (Trifloxystrobin + Tebuconazole) Chipco 26GT (Iprodione)	2.0 fl oz 4.0 fl oz	12.3 ab	4.7 abc
TBZ + TFS Green (Trifloxystrobin + Tebuconazole)	2.0 fl oz	16.7 ab	4.0 abc
Tartan (Trifloxystrobin + Triadimefon) Prostar 70WP (Flutolanil)	2.0 fl oz 2.2 oz	19.0 ab	3.7 bc
Tartan (Trifloxystrobin + Triadimefon) Terraclor 75WP (PCNB)	2.0 fl oz 6.0 oz	20.7 ab	3.3 c
Tartan (Trifloxystrobin + Triadimefon) Chipco 26GT (Iprodione)	2.0 fl oz 6.0 fl oz	23.3 b	3.3 c
CHECK	0.0	81.7 c	1.0 d

*Values within a column followed by the same letter are not significantly different LSD *P* =0.05.

**Turf quality rated 1-9; 9 = excellent.

Figure 2. Bayer snow mold trial at Chewelah Golf and Country Club. Chewelah, WA. 2006-07.

Figure 3. Bayer snow mold trial at Chewelah Golf and Country Club. Chewelah, WA. 2006-07.

Figure 4. Bayer snow mold trial at Chewelah Golf and Country Club. Chewelah, WA. 2006-07.

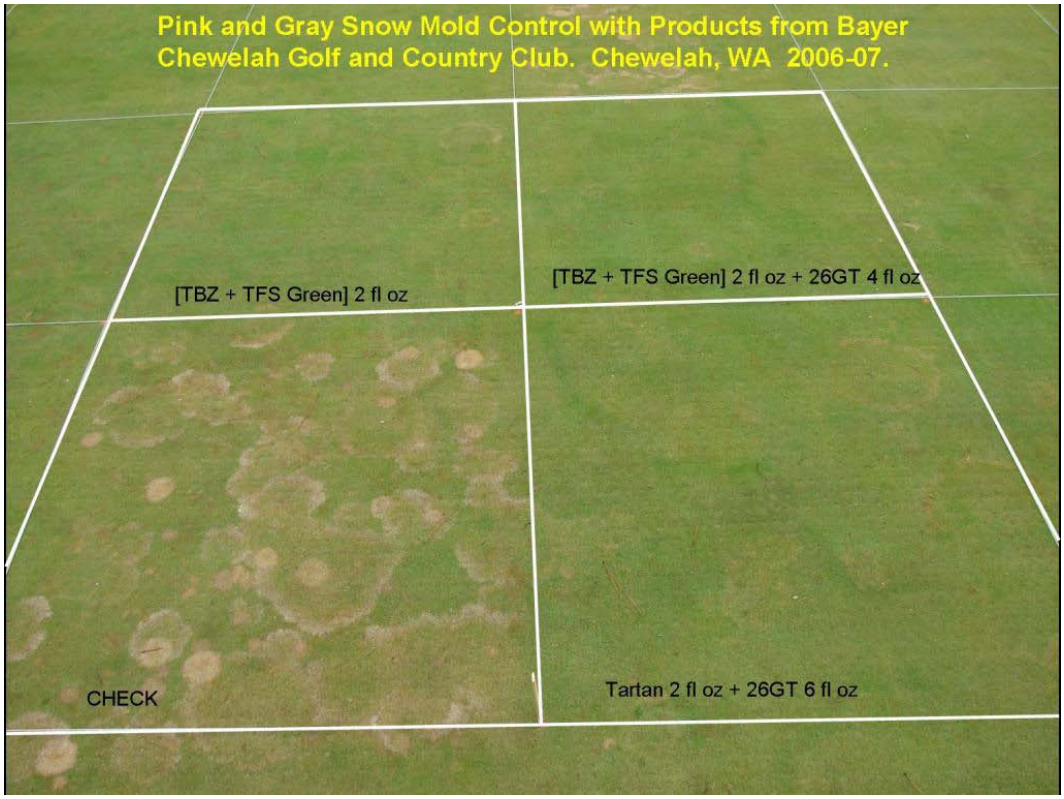

Figure 5. Bayer snow mold trial at Chewelah Golf and Country Club. Chewelah, WA. 2006-07.

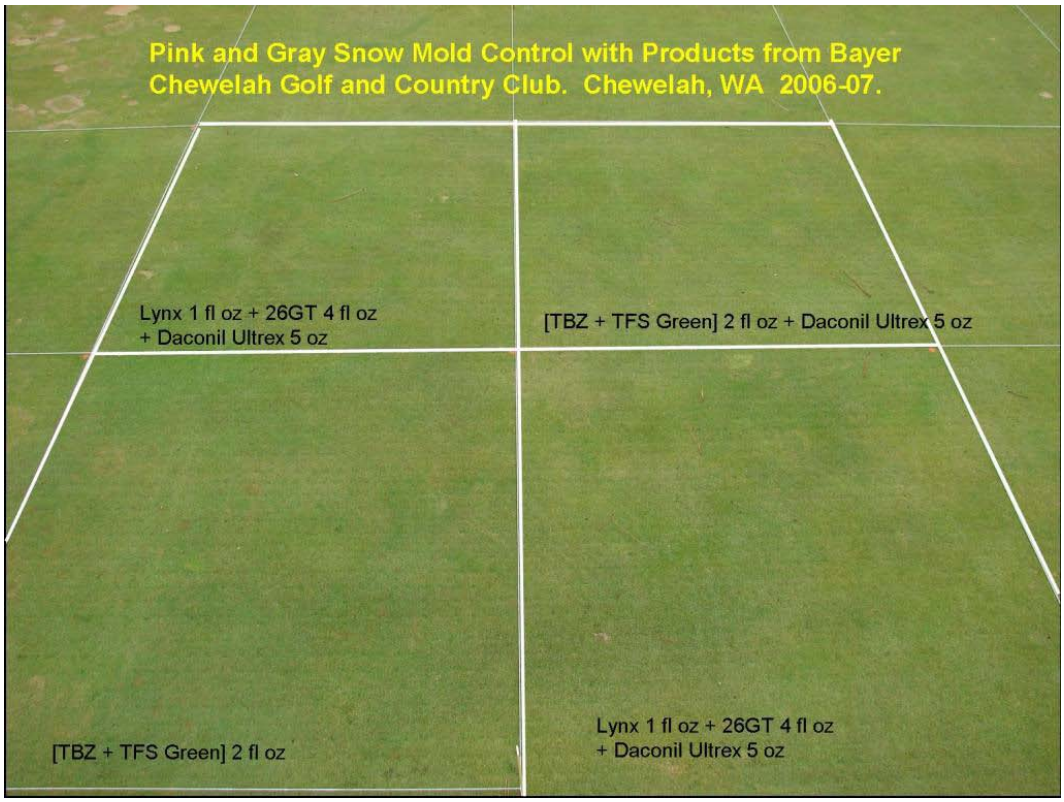

Figure 6. Bayer snow mold trial at Chewelah Golf and Country Club. Chewelah, WA. 2006-07.

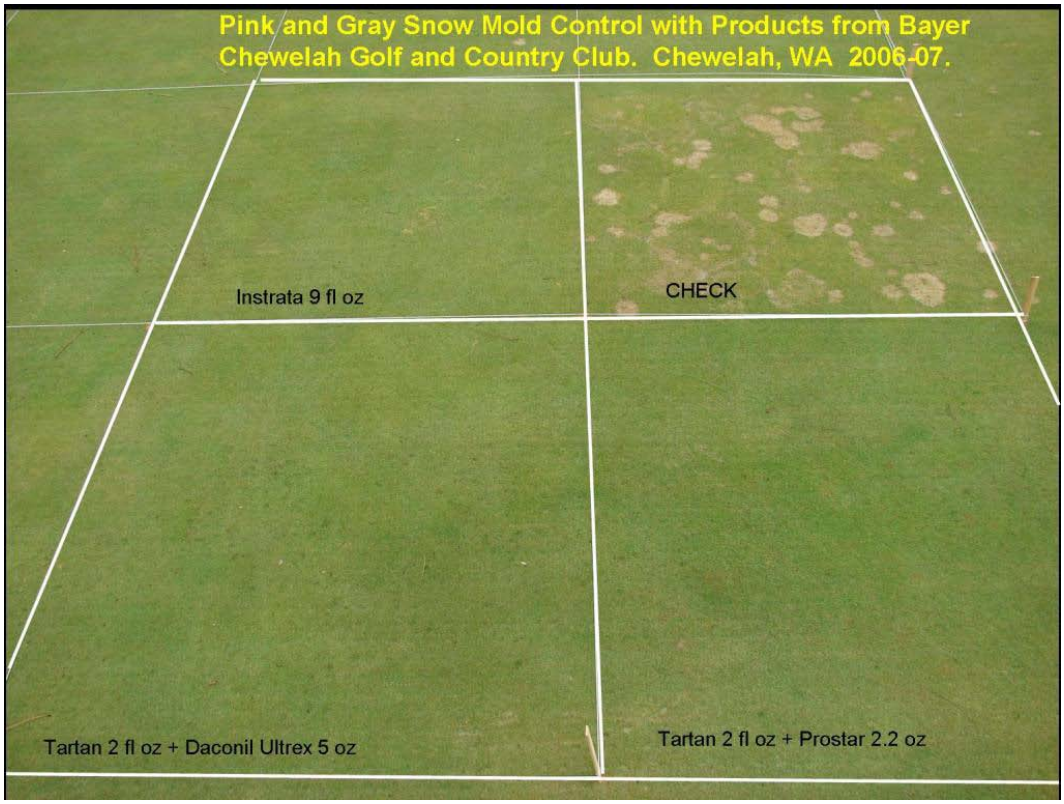

Table 3. Evaluation of Bayer fungicides to control snow mold at Whitetail Golf Club. McCall, ID. Rated 17 Apr 2007.

Treatment	Rate (oz or fl oz) prod/M)	Disease (% area infected)	Turf quality**
TBZ + TFS Green (Trifloxystrobin + Tebuconazole) + Daconil Ultrex 82.5WDG (Chlorothalonil)	2.0 fl oz 5.0 oz	**0.0 a***	**5.7 a**
Lynx (Tebuconazole) + Chipco 26GT (Iprodione) + Daconil Ultrex 82.5WDG (Chlorothalonil)	1.0 fl oz 4.0 fl oz 5.0 oz	**0.0 a***	**5.0 ab**
Tartan (Trifloxystrobin + Triadimefon) + Terraclor 75WP (PCNB)	2.0 fl oz 6.0 oz	**0.3 ab**	**4.3 ab**
Tartan (Trifloxystrobin + Triadimefon) + Daconil Ultrex 82.5WDG (Chlorothalonil)	2.0 fl oz 5.0 oz	**3.7 ab**	**5.0 ab**
TBZ + TFS Green (Trifloxystrobin + Tebuconazole) + Chipco 26GT (Iprodione)	2.0 fl oz 4.0 fl oz	**3.7 ab**	**4.7 ab**
Tartan (Trifloxystrobin + Triadimefon) + Prostar 70WP (Flutolanil)	2.0 fl oz 2.2 oz	**5.0 ab**	**4.7 ab**
Tartan (Trifloxystrobin + Triadimefon) + Chipco 26GT (Iprodione)	2.0 fl oz 6.0 fl oz	**8.0 ab**	**4.3 ab**
Instrata 3.61SE (Propiconazole + Flutioxonil + Chlorothalonil)	9.0 fl oz	**10.0 ab**	**4.0 b**
TBZ + TFS Green (Trifloxystrobin + Tebuconazole)	2.0 fl oz	**10.7 b**	**4.0 b**
CHECK	0.0	**75.0 c**	**1.0 c**

*Values within a column followed by the same letter are not significantly different LSD *P* =0.05.

**Turf quality rated 1-9; 9 = excellent.

Figure 7. Heavy sand topdressing of greens late in the fall immediately following the final snow mold control application. Whitetail Golf Club. McCall, ID. 2006.

Figure 8. Non-treated control (Check) plot showing snow mold damage at Whitetail Golf Club on 17 Apr 2007. McCall, ID.

Figure 9. TBZ + TFS Green + Daconil Ultrex treatment at Whitetail Golf Club on 17 Apr 2007. McCall, ID.