

Evaluation of Fungicides from LESCO to Control of Pink and Gray Snow Mold on Putting Greens in Idaho and Washington 2006-2007.

Charles T. Golob, William J. Johnston, and Karine Paré
Dept. Crop and Soil Sciences
Washington State University

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. Early treatments were applied 2 Oct 06, 13 Oct 06, and 31 Oct 06 at McCall, Chewelah, and Pullman, respectively. Late 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 CO₂ pressurized (40 psi) sprayer with 11008 flat fan TeeJet nozzles. At McCall immediately following the application of the fungicide treatments a heavy topdressing of sand was applied over the entire research area (See figure). 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 April 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 only had 4% area infected with pink snow mold (*M. nivale*) (Table 1). Even so, All treatments resulted in very good to excellent snow mold control. A few treatments showed low turf quality; Spectator Ultra 4 fl oz (early) + Revere 4000 8 fl oz (late), Armada 1.2 g (early) + Revere 4000 12 fl oz (late), and 18 PLUS 4 fl oz (late) + Manicure Ultra 5 oz (late), and Revere 4000 8 fl oz (late).

At Chewelah, the non-treated control had 72 % 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. All fungicide treatments resulted very good to excellent snow mold control. Surprisingly, the treatment with the highest control and turf quality was Insignia 0.7 oz (early) + 18 PLUS 4 fl oz (late) + Manicure Ultra 5 oz (late). As with the

Pullman study the treatments with the worst turfgrass quality were; Spectator Ultra 4 fl oz (early) + Revere 4000 8 fl oz (late) and Armada 1.2 g (early) + Revere 4000 12 fl oz (late). Figure 1 shows all treatments in reps 1 and 2.

At McCall, the non-treated control had 73% area infected with roughly 75% pink (*M. nivale*) and 25% gray (*Typhula spp.*) snow mold (Table 3). No sclerotia were found in any of the control plots, therefore, no determination as to the percent of *Typhula incarnata* or *T. ishkariensis* could be made. Several treatment, except Spectator Ultra 4 fl oz (early) + Revere 400 8 fl oz (late) and the FFII + Fungicide V treatment, resulted in very good to excellent snow mold control. Interestingly, the 4 best treatments with the highest control and highest turf quality (> 5.3) all have Manicure Ultra 5 oz (late) added. Even though Armada 1.2 g (early) + Revere 4000 12 oz (late) resulted in very good control this treatment had significantly lower turf quality than the 4 best treatments. Next year it would be of interest to try Armada with an 8 fl oz rate of Revere 4000 instead of 12 fl oz.

Overall, all treatments provided very good to excellent snow mold control, except for Spectator Ultra 4 fl oz (early) + Revere 4000 8 fl oz (late) at the McCall location.. Insignia 0.7 oz (early) + 18 PLUS 4 fl oz (late) + Manicure Ultra 5 oz (late) was the best overall treatment at all 3 locations.

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

Treatment	Rate (oz, fl oz, or lbs) prod/M)	App. date**	Disease (% area infected)	Turf quality****
Insignia 20WG (Pyraclostrobin)	0.7 oz	early	0.0 a***	4.3 b
18 PLUS (23.2% Iprodione)	4.0 fl oz	late		
Manicure Ultra 82.5WDG w/ ACCUSTICK (Chlorothalonil)	5.0 oz	late		
Insignia 20WG (Pyraclostrobin)	0.7 oz	early	0.0 a	4.0 bc
Manicure Ultra 82.5WDG w/ ACCUSTICK (Chlorothalonil)	5.0 oz	late		
Revere 4000 (40% PCNB)	8.0 fl oz	late		
Spectator Ultra (14.3% Propiconazole)	4.0 fl oz	early	0.0 a	4.0 bc
Insignia 20WG (Pyraclostrobin)	0.7 oz	early		
Manicure Ultra 82.5WDG w/ ACCUSTICK (Chlorothalonil)	5.0 oz	late		
Spectator Ultra (14.3% Propiconazole)	4.0 fl oz	early	0.0 a	3.0 d
Revere 4000 (40% PCNB)	8.0 fl oz	late		
Armada 50WP (8.33% Trifloxystrobin + 41.67% Triadimefon)	1.2 g	early	0.0 a	3.0 d
Revere 4000 (40% PCNB)	12.0 fl oz	late		
FFII 14-3-3 (PCNB) Granular*	6.36 lbs	late	0.3 a	5.3 a
Fungicide V (Chloroneb) Granular	5.95 lbs	late		
18 PLUS (23.2% Iprodione)	4.0 fl oz	late	0.3 a	3.3 cd
Manicure Ultra 82.5WDG w/ ACCUSTICK (Chlorothalonil)	5.0 oz	late		
Revere 4000 (40% PCNB)	8.0 fl oz	late		
CHECK	0.0		4.0 b	3.7 bcd

*Applied granulars by hand.

**Application dates: Early = 31 Oct 06 and Late = 20 Nov 06.

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

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

Table 2. Evaluation of LESCO 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)	App. date**	Disease (% area infected)	Turf quality****
Insignia 20WG (Pyraclostrobin)	0.7	early	0.0 a***	6.0 a
18 PLUS (23.2% Iprodione)	4.0	late		
Manicure Ultra 82.5WDG w/ ACCUSTICK (Chlorothalonil)	5.0	late		
Insignia 20WG (Pyraclostrobin)	0.7 oz	early	0.0 a	5.0 b
Manicure Ultra 82.5WDG w/ ACCUSTICK (Chlorothalonil)	5.0 oz	late		
Revere 4000 (40% PCNB)	8.0 fl oz	late		
Spectator Ultra (14.3% Propiconazole)	4.0	early	0.0 a	5.0 b
Insignia 20WG (Pyraclostrobin)	0.7	early		
Manicure Ultra 82.5WDG w/ ACCUSTICK (Chlorothalonil)	5.0	late		
Spectator Ultra (14.3% Propiconazole)	4.0	early	0.7 a	3.7 d
Revere 4000 (40% PCNB)	8.0	late		
18 PLUS (23.2% Iprodione)	4.0 fl oz	late	1.0 a	4.7 bc
Manicure Ultra 82.5WDG w/ ACCUSTICK (Chlorothalonil)	5.0 oz	late		
Revere 4000 (40% PCNB)	8.0 fl oz	late		
Armada 50WP (Trifloxystrobin + Triadimefon)	1.2	early	2.0 a	4.0 cd
Revere 4000 (40% PCNB)	12.0	late		
FFII 14-3-3 (PCNB) Granular*	6.36 lbs	late	3.3 a	6.7 a
Fungicide V (Chloroneb) Granular	5.95 lbs	late		
CHECK	0.0		71.7 b	1.7 e

*Applied granulars by hand.

**Application dates: Early = 13 Oct 06 and Late = 9 Nov 06.

***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. LESCO snow mold trial at Chewelah Golf and Country Club. Chewelah, WA. 2006-07.

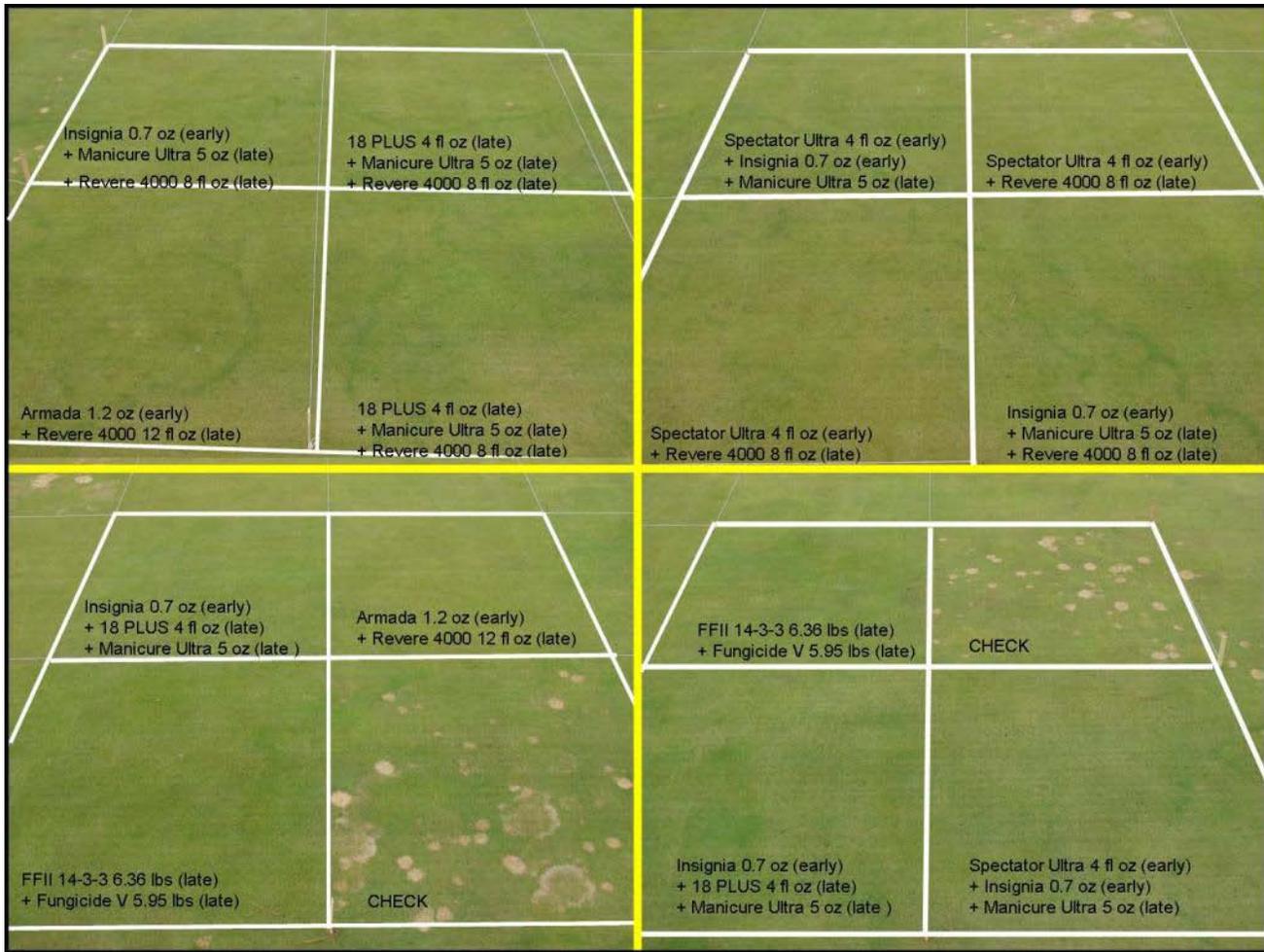


Table 3. Evaluation of LESCO fungicides to control snow mold at the Whitetail Golf Club. McCall, ID. Rated 17 Apr 2007.

Treatment	Rate (oz, fl oz, or lbs) prod/M)	App. date**	Disease (% area infected)	Turf quality****
Insignia 20WG (Pyraclostrobin) + Manicure Ultra 82.5WDG w/ ACCUSTICK (Chlorothalonil) + Revere 4000 (40% PCNB)	0.7 oz 5.0 oz 8.0 fl oz	early late late	0.0 a ***	5.3 bc
Insignia 20WG (Pyraclostrobin) + 18 PLUS (23.2% Iprodione) + Manicure Ultra 82.5WDG w/ ACCUSTICK (Chlorothalonil)	0.7 oz 4.0 fl oz 5.0 oz	early late late	0.3 a	7.0 a
18 PLUS (23.2% Iprodione) + Manicure Ultra 82.5WDG w/ ACCUSTICK (Chlorothalonil) + Revere 4000 (40% PCNB)	4.0 fl oz 5.0 oz 8.0 fl oz	late late late	1.0 a	5.7 b
Spectator Ultra (14.3% Propiconazole) + Insignia 20WG (Pyraclostrobin) + Manicure Ultra 82.5WDG w/ ACCUSTICK (Chlorothalonil)	4.0 fl oz 0.7 oz 5.0 oz	early early late	2.0 a	6.3 ab
Armada 50WP (8.33% Trifloxystrobin + 41.67% Triadimefon) + Revere 4000 (40% PCNB)	1.2 g 12.0 fl oz	early late	3.3 ab	4.3 cd
Spectator Ultra (14.3% Propiconazole) + Revere 4000 (40% PCNB)	4.0 fl oz 8.0 fl oz	early late	14.0 bc	3.3 d
FFII 14-3-3 (PCNB) Granular* + Fungicide V (Chloroneb) Granular	6.36 lbs 5.95 lbs	late late	14.7 c	4.0 d
CHECK	0.0		73.3 d	1.0 e

*Applied granulars by hand

**Application date: Early = 2 Oct 06 and Late = 27 Oct 06.

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

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

