

CHEMICAL TRIALS FOR SNOW MOULD DISEASE CONTROL, DECEMBER 1992 - APRIL 1993

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ABSTRACT

Twenty-seven chemical and control treatments were evaluated on a 15-year-old sward of creeping bentgrass in Southern Ontario during December 1992 to April 1993. The fungicides tested included: Daconil 2787, Rovral Green, Tersan 1991 50WP, Arrest 75W and Scotts FFII which are registered and recommended to control snow mould disease of turfgrass in Ontario. Among these standard chemicals, Tersan 1991 showed complete failure in controlling snow mould damage. Twenty other treatments were with chemicals provided by Fisons, ISK Biotech, Nutrite, Par Ex and Rohm & Haas. Treatments were applied on 1 December 1992 over bare ground and inoculum was applied three days later. **The following treatments gave aesthetically acceptable disease control:** Banner 130EC (168 mL, 224 mL), Daconil 2787 + Fluazinam 500F (240 mL + 60 mL, 240 mL + 90 mL), Daconil 2787 + ASC 67103 (240 mL + 40 mL), Daconil + ASC 67106 (240 mL + 10 g), Daconil 2787 (240 mL), Daconil 2787 + Rovral Green (240 mL + 120 mL) pre and post snow applications, Daconil 825 + Rovral Green (145 g + 120 mL), **Sustane (0.49 kg, 0.73 kg actual N)**, Vigoro IBDU:Urea + Quintozene (1.5 kg), Vigoro IBDU:SCU + Quintozene (1.5 kg), and Fore (250 g) with rates per 100 m² under our test conditions. Daconil 2787 + Rovral Green (240 mL + 120 mL, 240 mL + 240 mL), Rovral Green (360 mL), Sustane + Polyon (0.49 actual N) and Myclobutanil (15 g, 30 g) provided borderline acceptable control of snow mould damage.

METHODS

Chemical and control treatments were evaluated on a 15-year-old sward of creeping bentgrass (*Agrostis palustris*) at the Cambridge research station of the University of Guelph near Cambridge, Ontario. Turfgrass cultural treatments were similar to those used for maintenance of golf course putting greens in Ontario. Experimental design consisted of a randomized complete block design with 6 replications on 1 x 1.5 m plots.

The snow mould disease caused by *Typhula* spp. (grey snow mould) and *Fusarium nivale* (pink snow mould), were evaluated in fungicide trials. Inoculum was prepared by incubating the fungi on autoclaved cereal grains (chicken scratch) for 1 month (pink) and 3 months (grey). The inoculum was dried overnight and chopped with a mixer into small particles. Inoculum from five strains of the grey snow mould fungus were mixed together, combined with another 9 parts dried, autoclaved and chopped cereal grains, and 15 g were evenly applied to each plot. Pink snow mould inocula was similarly formulated and applied. Inocula were applied 3 days after spraying.

Water based-treatments were applied on 1 December 1992, with a wheel-mounted compressed air boom sprayer at 140 kPa and 10 L/100 m². Granular treatments were applied by hand. The diseases were evaluated after snow melt (late-March) by estimating percent area affected. Ratings were repeated weekly for 5 weeks to evaluate disease severity, and green-up during the last two weeks. Analysis of variance was performed with PROC ANOVA in SAS[®]. When a significant treatment effect was found, mean separation was done with the test of least significant difference (LSD). Twenty percent area affected or less was used as the criterion for efficacious control of snow mould diseases.

RESULTS & DISCUSSION

A three-month uninterrupted snow cover during the 1992-93 season caused a greater disease pressure than normally experienced. Several treatments were inefficacious or borderline probably due to these conditions. Snowfall and snow cover are critical in the development of winter diseases, particularly grey snow mould.

Sustane at 0.49 kg actual N/100 m² was effective in controlling snow mould damage, probably by enhancing recovery. Sustane at 0.73 kg actual N/100 m² had greater levels of damage right after snowmelt, but allowed recovery to an acceptable level by the fifth week. The effect of Sustane + Polyon (0.49 kg actual N) was not considered satisfactory. The two Par Ex products, Vigoro IBDU:Urea + 15.4% Quintozene and Vigoro IBDU:SCU + 15.4% Quintozene were efficacious in the control of snow moulds. Rohm & Haas Fore (250 g) provided satisfactory snow mould control by the fifth week. Myclobutanil at both 15 and 30 g reduced disease significantly from control, but did not provide acceptable levels of control.

The greenness of the plots was confounded by the amount of brown diseased tissue present, but in general, the Sustane products showed very high levels of greenness and permitted significantly enhanced rates of recovery compared to inoculated or uninoculated controls.

Table 2: Area affected and green-up of snow mould patches after snow melt. All treated plots were inoculated with *Typhula* spp. or *Fusarium nivale* and disease counts are expressed as the mean of the estimated percent area affected in six replicate 1 m by 1.5 m plots.

Treatment	Product/100 m ²	% Area Affected					Green-Up*	
		Date	3/31	4/7	4/14	4/21	4/28	4/21
Controls & Standards								
Inoculated		81	71	69	43	40	2.2	1.8
Uninoculated		68	54	57	49	46	2.3	2.0
Sustane (5-2-4)	0.49 kg N	19	21	16	11	11	2.8	3.0
Sustane (5-2-4)	0.73 kg N	48	45	43	23	20	2.8	2.7
LSD (P = 0.05)		29	26	24	18	15	0.9	0.8

*Green-Up, 1 = low greenness, 2 = moderate greenness, 3 = high greenness