

FUSARIUM PATCH DISEASE CONTROL - SPRING 2004

S. Cook and T. Hsiang

The Guelph Turfgrass Institute and the Department of Environmental Biology
University of Guelph, Guelph, Ontario, Canada N1G 2W1

Project Sponsor: Syngenta

ABSTRACT

Ten chemical and control treatments were evaluated on an infection of Fusarium patch disease in a 11-year-old sward of creeping bentgrass in southern Ontario during April to June 2004 for Fusarium patch control. In addition to the untreated control treatment, the standard fungicide treatment Rovral Green GT (185 mL/100 m² - 14 days), which is registered and recommended for control of Fusarium patch disease of turfgrass in Ontario, was included in the trial. All chemical treatments provided excellent control from 13 May to 3 June 2004 with the exception of Subdue MAXX (32 mL/100 m² - 14 days) on 13 May. No phytotoxicity was observed.

METHODS

Eight chemical treatments were evaluated on a 11 year old sward of creeping bentgrass (*Agrostis palustris*) at the Guelph Turfgrass Institute, Guelph, Ontario. Turfgrass cultural treatments were similar to those used for maintenance of golf course greens in Ontario. The area had been seeded in 1994 with Penncross® creeping bentgrass and mowing height was set at 5 mm. Sulfur-coated urea (N-P-K: 25-4-10) was applied at a rate of 2 kg/100m² in April and November annually.

The experimental design consisted of a randomized complete block design with 4 replications on 1 m x 2 m plots. Chemicals were applied at 14 day intervals, beginning 14 April 2004 with a wheel-mounted compressed air boom sprayer at 140 kPa in water at 10 L/100 m² using Lurmark 03-F110 nozzles. The final application occurred on application 13 May 2004. Inoculum was prepared by incubating five strains of *Microdochium nivale* on autoclaved wheat bran for 1 month. The inoculum was dried and chopped into small particles with a domestic mixer.

Inocula from the five strains were combined and 8 g of inoculum plus 2 g of wheat bran as a carrier were evenly applied to each 2 m² plot on 2 April 2004. Experimental design consisted of a randomized complete block design with 4 replications on 1 m x 2 m plots. Plots were evaluated weekly until 25 June 2004 for Fusarium patch injury using the Horsfall-Barratt rating scale (Horsfall and Cowling 1978, Plant Disease Treatise II:120) to estimate percent winter injury of the plots (1=99%, 2=95%, 3=91%, 4=82%, 5=62%, 6=38%, 7=18%, 8=9%, 9=5%, and 10=1% injury). The disease ratings were converted to percent injury values prior to statistical analysis. 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, P=0.05).


RESULTS AND DISCUSSION

Initial injury on the plots was not even and was a combination of winter injury (abiotic and snow mold disease) with some Fusarium patch disease. Recovery from the winter injury was slow because of cool spring temperatures and slow growth of the turf, but the treatments allowed recovery from 13 May onward with maximum Fusarium patch disease injury observed on the untreated check on 13 May 2004. Plots treated with Rovral Green GT (185 mL/100m² - 14 days), Heritage (6 g/100m² - 14 days), Heritage Maxx (32 mL/100m² - 14 days), Subdue MAXX (16 mL and 32 mL/100m² - 14 days), Heritage (6 g/100m² - 14 days) + Subdue MAXX (16 mL and 32 mL/100m² - 14 days) and Heritage Maxx (32 mL/100m² - 14 days) + Subdue MAXX (16 mL and 32 mL/100m² - 14 days) showed aesthetically acceptable levels of disease from 13 May onward with the exception of Subdue MAXX (32 mL/100m² - 14 days) which exceeded our acceptable level of 10% injury on 13 May. No phytotoxicity was observed from any treatments during the trial. Results are presented in Table 1 as percent area injured.



Table 1: Treatment, application rate and schedule, and percent area injury by Fusarium Patch disease from April to June 2004. Plots of 1 m by 2 m with 4 replicates were located at the Guelph Turfgrass Institute. All plots were inoculated with the pathogen.

Treatment	Active Ingredient	Product /100 m ²	% Injury ^a							
			14 Apr	21 Apr	28 Apr	5 May	13 May	21 May	28 May	3 Jun
Untreated Check			32	42	41	36	48	21	8	39
Heritage	azoxystrobin 50%	6 g	25	52	41	32	6	2	2	1
Heritage MAXX	azoxystrobin 8.8%	32 mL	18	24	23	8	4	2	1	2
Subdue MAXX	metalaxyl-M 22.7%	16 mL	17	23	16	7	10	5	5	3
Subdue MAXX	metalaxyl-M 22.7%	32 mL	23	50	33	21	23	6	6	6
Heritage + Subdue MAXX	azoxystrobin 50% + metalaxyl-M 22.7%	6 g + 16 mL	13	12	7	3	2	1	1	1
Heritage + Subdue MAXX	azoxystrobin 50% + metalaxyl-M 22.7%	6 g + 32 mL	36	36	34	25	7	2	1	1
Heritage MAXX+ Subdue MAXX	azoxystrobin 8.8% + metalaxyl-M 22.7%	32 mL + 16 mL	26	43	37	16	5	1	1	3
Heritage MAXX+ Subdue MAXX	azoxystrobin 8.8% + metalaxyl-M 22.7%	32 mL + 32 mL	17	22	26	10	4	2	1	2
Rovral Green	Iprodione 23%	185 mL	39	66	61	45	6	1	3	7
LSD (p=0.05)			28	41	38	26	17	5	2	9
Application Schedule			X		X		X			

^a  less than 10% area affected, this is our criterion for efficacious control

