

## Summer Patch Fungicide Study #1, Dearborn Country Club, Dearborn, MI

The summer patch fungicide study at Dearborn Country Club was initiated preventively on May 11, 1991 (except as noted on data tables). A second application was made on June 7, 1991 (except as noted on data tables). Treatments were foliarly applied.

The disease pressure was moderate this year with turf loss occurring somewhat later than normal and disease pressure abating somewhat earlier than normal, resulting in a relatively short period of actual turf thinning. Disease pressure peaked around the July 26 - August 12 period when the ratings were taken (Tables 4 & 5).

As the 7/26 data indicates, three experimental products (Lynx, Sentinel, EXP 10064 B) gave total and statistically significant control of summer patch through the end of July. The standard preventive fungicide treatments (Rubigan, Banner) also provided good control of the disease, as did Fungo on a 14 day application schedule. Bayleton appeared to be somewhat less effective than expected at the time of this rating, although disease levels were not significantly different from the Rubigan 4 fl oz and Fungo 4.8 oz treatment levels. Most of the other treatments gave levels of disease control which were not significantly different from the untreated control (Table 4).

By the time of the 8/12 rating (Table 5) the Bayleton treatments were inexplicably providing improved disease control despite an overall disease increase in the control plots. Rubigan and Banner were also still controlling the disease, along with the experimental treatments (Sentinel, EXP 10064 B, Lynx) which looked very good in the 7/26 rating.

As the data tables indicate, the effective experimental compounds have a tendency to exhibit plant growth regulation effects on the turf (greening, wider leaves, etc.). With the exception of the Banner + CGA 163935 and the Duosan + 10-30-20 fertilizer treatments, however, no objectionable phytotoxicity was observed.

## Summer Patch Fungicide Study #2, Highland Golf Club, Grand Rapids, MI

The summer patch fungicide study at Highland Golf Club was initiated preventively on May 10, 1991 (except as noted on data tables). This treatment coincided with 2 consecutive days when soil temperatures reached 65°F at a 2" depth. A second application was made approximately 30 days later, on June 6. Treatments were applied foliarly.

Disease pressure developed later in this study than at Dearborn, thus the ratings were taken on August 13 and August 30. As the data (Tables 6 & 7) indicates, few treatments were significantly different from the controls on either rating date. When summer patch did finally develop in the study area, it was spotty and inconsistent across the treatment replicates which resulted in statistically insignificant ratings.

## DOLLAR SPOT FUNGICIDE TRIAL - 1991

### Hancock Turfgrass Research Center, MSU, East Lansing, MI

The 1991 dollar spot (*Sclerotinia homoeocarpa*) fungicide trial was conducted on an irrigated Emerald Creeping bentgrass (*Agrostis palustris* HUDS) putting green at the Hancock Turfgrass Research Center on the MSU campus. The green was maintained at ¼" height of cut and fertilized at 3/8 lb N/Mo. Treatments were applied curatively to 3' x 6' plots in three replications of a random block design on 7, 14, 21 and 28 day schedules as indicated on the data tables. The initial treatments were applied on August 6, 1991. By the end of the study, weekly treatments had been applied 7 times, 14 day treatments were applied 4 times, 21 day treatments were applied 3 times, and 28 day treatments were applied twice.

Disease pressure was moderate this year, reaching a peak for the season around September 24 when the enclosed rating (Table 8) was taken. As the data indicates, all treatments gave significant control of dollar spot, compared to the controls. Many standard and experimental compounds gave complete control of the disease, but Fungo and the fertilizer treatments were least

effective. It should be noted that the dollar spot strain in this plot area is resistant to the benzimidazole fungicides, such as Fungo.

No phytotoxicity was noted in this study, although a "greening effect" was observed in some treatment plots, as noted on data Table 8.

### **NECROTIC RING SPOT FUNGICIDE STUDIES - 1991**

Two necrotic ring spot (*Leptosphaeria korrae*) studies were conducted this year, one on the Hancock Turf Research Center on the MSU campus, and another on the Yankee Springs Golf Course in western Michigan. Both studies were located in previously diseased Kentucky bluegrass turfs which were irrigated, fertilized at 1 lb N/mo (except fertilizer treatments and unfertilized control) and mowed at 1" (Yankee Springs) and 1½" (Hancock Center) height of cut. Both areas were treated for weeds, etc., as necessary, but no general maintenance fungicides were used during the season.

Applications were made as foliar sprays initially on August 1 (Hancock Center) and August 5 (Yankee Springs Golf Course). Second and third applications were made thirty and sixty days later. The goal of these early August applications was to control the new disease outbreaks frequently observed in the September-November period.

Because symptoms of previous disease activity (patches) were present throughout the Hancock plot area, pre-treatment ratings (% plot area infected) were taken with subsequent efficacy ratings being reported as percent disease increase/decrease compared to initial disease levels (Table 9).

No disease activity was apparent on the Yankee Springs plot area at the time of initial treatment, although the area was moderately diseased in previous seasons.

#### **Necrotic Ring Spot Study #1 - Hancock Turfgrass Research Center, MSU, East Lansing, MI**

This study was initiated on August 1, 1991 with subsequent applications being made on August 29 and October 3, 1990. At the time of the initial applications, numerous, newly-formed patches were present in the plot area as a result of summer heat and drought stress. The turf that was killed had probably been infected by the necrotic ring spot fungus during the previous fall and spring when the soil temperatures were lower. As Table 9 indicates, most of the fungicide treatments promoted recovery from previous disease incidence by allowing old patches to fill in to various degrees. Because this recovery was not uniform across all treatment replicate plots, however, the treatments were not significantly different from each other. There was also no evidence of a renewed disease outbreak in the fall since the control (unfertilized) plot failed to develop increased disease pressure, and actually improved somewhat during the study duration, and no phytotoxicity was observed during the study duration.

#### **Necrotic Ring Spot Study #2 - Yankee Springs Golf Course**

This study was initiated on August 5, 1991 with second and third applications being made on September 3, 1991 and October 9, 1991. Unfortunately, the frequently observed late-season disease outbreak did not occur this year and no data was available from this trial.

No phytotoxicity was observed in the plot area, with the exception of mild phytotoxicity in the EXP 10064 B (3 fl oz) treatment, which persisted through early November.

Table 8. Dollar Spot Fungicide Study - 1991

Hancock Turfgrass Research Center  
 Michigan State University, E. Lansing, MI  
 Rating scale: 0 (no disease), 10 (plot totally diseased)  
 Rating date - 9/24/91

Treatment	Rate/1000 ft. <sup>2b</sup>	Interval	I	II	III	AVE	DMR <sup>a</sup>
Ch. 26019	4 fl oz	28 day	0	0	0	0	I
Banner	2 fl oz	28 day	0 <sup>c</sup>	0 <sup>c</sup>	0 <sup>c</sup>	0	I
Touché	2 fl oz	28 day	0	0	0	0	I
Eagle	1.25 oz	21 day	0	0	0	0	I
Bayleton	2 oz	28 day	0	0	0	0	I
Broadway	4.5 fl oz	14 day	0	0 <sup>c</sup>	0 <sup>c</sup>	0	I
Rubigan	1.5 fl oz	14 day	0	0 <sup>c</sup>	0	0	I
Sentinel	1.42 gm ai	21 day	0	0	0 <sup>f</sup>	0	I
ASC 66825	4 oz	21 day	0	0	0	0	I
EXP 10064 B	.75 fl oz	28 day	0	0 <sup>d</sup>	0 <sup>d</sup>	0	I
Sentinel	2.84 gm ai	28 day	0	0 <sup>d</sup>	0 <sup>d</sup>	0	I
Sentinel	1.89 gm ai	28 day	0	0 <sup>d</sup>	0 <sup>d</sup>	0	I
Lynx + Ch. 26019	.125 oz ai + .5 oz ai	21 day	0	0	0	0	I
EXP 10064 B + Ch.26019 (WDG)	.75 fl oz + 1 oz	28 day	0	0 <sup>c</sup>	0 <sup>d</sup>	0	I
ASC 66825	1.5 oz	21 day	0	0	0	0	I

Table 8. Dollar Spot Fungicide Study - 1991 (cont.)

Treatment	Rate/1000 ft. <sup>2b</sup>	Interval	I	II	III	AVE	DMR <sup>a</sup>
RH 0611	4 oz	7 day	0	0	0 <sup>f</sup>	0	I
EXP 10064 B	1.5 fl oz	28 day	0 <sup>c</sup>	0 <sup>a</sup>	0 <sup>e</sup>	0	I
Sentinel	1.89 gm ai	21 day	0	0 <sup>d</sup>	0 <sup>d</sup>	0	I
ASC 66825	2.5 oz	21 day	0	0	1	.3	I
Lynx + D. 2787	.125 oz ai + 3.12 fl oz	21 day	0	0	1	.3	I
Lynx	.125 oz ai	21 day	0	1	0	.3	I
ASC 66518	3.8 oz	14 day	0	0	1	.3	I
Bayleton	1 oz	28 day	0	1	0	.3	I
ASC 66608	7.5 oz	14 day	0 <sup>c</sup>	0 <sup>c</sup>	1	.3	I
D. 2787	6 fl oz	7 day	1	0	0	.3	I
Lynx + Dyrene	.125 oz ai + 2 oz ai	21 day	0	0	1	.3	I
Vorlan	2 fl oz	21 day	0	0	1	.3	I
Vinclozolin (DF)	2 oz	21 day	0	1	1	.7	HI
EXP 10221 + Ch. 26019 (WDG)	1 fl oz + 1 oz	21 day	1	0	1	.7	HI
EXP 10221 + Ch. 26019 (WDG)	.75 fl oz + .75 oz	21 day	1	0	1	.7	HI
D. 2787 (WDG)	3.5 oz	14 day	0	1	1	.7	HI
Rubigan	2 fl oz	28 day	1	0	1 <sup>c</sup>	.7	HI
D. 2787	3.12 fl oz	14 day	0	1	1	.7	HI
ASC 66791	5.6 oz	14 day	1	0	2	1	GHI
ASC 66900	4.2 fl g	14 day	1	0	2	1	GHI
ASC 66518	1.9 oz	14 day	1	0	2	1	GHI
Ch. 26019 (WDG)	2 oz	28 day	1	1	1	1	GHI
Vinclozolin (F)	2 fl oz	21 day	1	1	1	1	GHI
Twosome	3 fl oz	21 day	0	1	2	1	GHI
Vorlan	1 fl oz	21 day	1	1	1	1	GHI
Fungo/ Vorlan Premix	4 oz	21 day	1	1	2	1.3	GHI
Ch. 26019 (WDG)	1 oz	28 day	1	1	2	1.3	GHI
D. 2787	6 fl oz	14 day	1	0	3	1.3	GHI
RH 0611	4 oz	14 day	1	1	2	1.3	GHI
Ch. 26019	.5 oz ai	21 day	1	1	3	1.7	F-I
D. 2787	3 fl oz	14 day	1	1	3	1.7	F-I
Silbos + X-77	7.5 oz + .25% v/v	28 day	1	1	3	1.7	F-I
ASC 66900	2.1 fl oz	14 day	1	1	3	1.7	F-I
EXP 10221 + Ch. 26019 (WDG)	1 fl oz + 1 oz	28 day	3	1	2	2	E-I
ASC 66791	2.8 oz	14 day	1	2	4	2.3	D-I

Table 8. Dollar Spot Fungicide Study - 1991 (cont.)

Treatment	Rate/1000 ft. <sup>2b</sup>	Interval	I	II	III	AVE	DMR <sup>a</sup>
Fungo/							
Vorlan Premix	2 oz	21 day	1	1	5	2.3	D-I
ASC 66608	3.75 oz	14 day	1	1	5	2.3	D-I
Duosan	6 oz	21 day	1	2	5	2.7	D-H
Duosan + 30-10-10	6 oz + .3 lb N	14 day	2	3	4	3	C-H
Duosan + 10-30-20	6 oz + .3 lb N	14 day	2	3	4	3	C-H
D. 2787 (WDG)	1.75 oz	14 day	1	1	7	3	C-H
Silbos + X-77	5 oz + .25% v/v	28 day	1	2	7	3.3	B-G
Dyrene	2 oz ai	21 day	1	2	7	3.3	B-G
Duosan + 20-20-20	6 oz + .3 lb N	14 day	2	3	6	3.7	A-F
Fungo + 28-5-18	4.8 oz + .3 lb N	14 day	2	3	6	3.7	A-F
Fore	6.4 fl oz	14 day	3	1	8	4	A-E
Silbos + X-77	2.5 oz + .25% v/v	28 day	2	3	7	4	A-E
Fungo + 27-15-12	4.8 oz + .3 lb N	14 day	4	2	6	4	A-E
Duosan	4 oz	21 day	5	2	6	4.3	A-D
Fungo + 25-5-20	4.8 oz + .3 lb N	14 day	3	3	7	4.3	A-D
Fungo + 25-0-25	4.8 oz + .3 lb N	14 day	3	3	7	4.3	A-D
Duosan	6 oz	14 day	3	5	7	5	ABC
Fungo	4.8 oz	14 day	2	5	9	5.3	AB
Control	---	---	3	5	9	5.7	A

<sup>a</sup>Treatments followed by same letter are not significantly different at 5% level.

<sup>b</sup>Rates are formulation unless listed as "ai" (active ingredient).

<sup>c</sup>Mild greening of turf.

<sup>d</sup>Moderate greening of turf.

<sup>e</sup>Severe greening of turf.

<sup>f</sup>Mild phytotoxicity (browning).