

rapidly. The constant rainfall caused the plots treated with urea to grow more rapidly than normal, possibly exposing unprotected plant tissue to disease pressure. The other fungicide compounds performed as expected with the exception of the benzimidazoles (Tersan 1991, Fungo 50, Cleary 3336) which failed to control the disease. Laboratory analysis of the dollar spot strains in this plot area indicated a high level of benzimidazole resistance.

Two experimental fungicides showed some phytotoxic effects in the study this year. These effects are explained on the accompanying data tables.

Fermenta Plant Protection Sulfur - Daconil 2787 Disease Studies - 1986

Three studies were established at the Hancock Turfgrass Research Center this summer with the goal of determining the effect of sulfur and Daconil 2787 FL on various turfgrass diseases. In order to screen these materials against the broadest possible disease range, one study was established on Emerald creeping bentgrass, one was established on annual bluegrass (Poa annua) and a third study was placed on perennial ryegrass. Treatments were applied on a 14 day interval using a CO₂ small-plot sprayer which operated at 30 PSI with a volume of 48 gal per acre. All studies were laid out in three replications of a random block design.

Emerald Creeping Bentgrass Study

This study was established and treated initially on June 27 on an irrigated, moderately fertilized putting green which was mowed regularly at 1/4" height of cut. Treatments were applied until Sept. 18 with a dollar spot (Moellerodiscus sp. Lanzia sp.) rating being taken on Sept. 29. By the date of the disease rating (Table 6), treatments had been applied 7 times (6/27, 7/17, 7/25, 8/7, 8/21, 9/3, 9/18). No phytotoxic or other growth effects were noted throughout the season. No other disease outbreaks were observed.

Annual Bluegrass Study

The study described above was also established on annual bluegrass (Poa annua) in an attempt to determine the effect of Daconil 2787 and sulfur on anthracnose (Colletotrichum graminicola) development. The area we chose was an irrigated, moderately fertilized simulated fairway location where we had hoped to experience anthracnose disease pressure. Treatments were applied initially on June 27 and were re-applied on a 14 day interval through September 18. Unfortunately, no disease pressure developed on this turf area and no data was collected. No phytotoxic or other growth effects were noted.

Perennial Ryegrass Study

The study was also established on a Loretta perennial ryegrass simulated lawn area in an attempt to collect brown patch (Rhizoctonia solani) and/or Pythium blight (Pythium sp) data. The area was fertilized heavily beginning in June in an effort to encourage brown patch development. Moisture levels were kept high through frequent

irrigation during periods when the weather was conducive to disease outbreak (hot and humid). The initial application was made on July 9 and treatments were re-applied on a 14 day schedule through Sept. 3 (7/9, 7/23, 8/6, 8/21).

Brown patch disease first appeared during the week of July 15. By July 23, sufficient disease was present for a rating to be taken (Table 7), although disease pressure and distribution were not optimal. Disease pressure peaked around July 23 and gradually abated. No other diseases were noted in the plot area this year, nor were any phytotoxic effects noticed.

Necrotic Ring Spot Fungicide Study - 1986

The 1986 necrotic ring spot fungicide study was conducted at the Countryplace Apartment Complex in Novi, MI, on an irrigated Kentucky bluegrass lawn area which was severely infected with necrotic ring spot (Leptosphaeria korrae) disease. The disease has been intermittently active for a number of years on this location.

Studies were initiated in June with subsequent applications being made on 21 and 28 day intervals through mid-October. In past years, the disease has been observed to be active in July and in October, depending on the year. This year, however, no activity was observed and the area gradually improved through the summer and fall. Therefore, no data was available from this study this year. No phytotoxic effects were observed.

Red Thread Fungicide Study - 1986

The 1986 red thread (Laetisaria fuciformis) fungicide study was conducted on a mixed seeding of perennial ryegrass and Kentucky bluegrass on the MSU campus. The study was initiated curatively on August 5 following a mild disease outbreak. Treatments were applied on a 14 or 21 day schedule through the end of September. Unfortunately, the cool, rainy late summer period inhibited further disease development and disease pressure gradually abated in the controls and the treated plots. No data was available. There was some mild phytotoxicity associated with the PP 523 and SAN 619 treatments which resembled the effects observed with these products in the Emerald bentgrass dollar spot study.

Brown Patch Fungicide Studies - 1986

The 1986 brown patch (Rhizoctonia solani) study was conducted on the MSU campus on a simulated lawn perennial ryegrass (*Lolium perenne* L.) area which was heavily fertilized and irrigated in order to promote brown patch disease development. The study was laid out in three replications of a random block design with a 6' x 9' plot size. Treatments were applied with a CO₂ small plot sprayer at a volume of 48 gal/acre and 30 PSI. The initial application was made curatively on July 15 with treatments being re-applied through August 27 on either 10, 14 or 21 day schedules.

Disease pressure in the plot area persisted for only a 10 day

Table 6. Emerald Creeping Bentgrass Daconil 2787 - Sulfur Study - 1986

Hancock Turfgrass Research Center, MSU, E. Lansing, Mi.
 Rating scale: number of dollar spots/plot
 Rating date: Sept. 29, 1986

<u>Treatment</u>	<u>Rate/1000 ft²</u>	<u>Interval</u>	<u>I</u>	<u>II</u>	<u>III</u>	<u>AVE</u>	<u>DMR¹</u>
Daconil 2787	3 fl oz	14 day	0	0	0	0	A
SDS 63539 (Daconil 2787 + Sulfur)	6 oz	14 day	3	4	2	3	A
Sulfur F (Cleary)	3 fl oz	14 day	136	155	134	141.7	B
Check	--	--	166	146	160	157.3	B

¹ Treatments followed by the same letter are no significantly different from each other at the 5% level.

Table 7. Loretta Perennial Ryegrass Daconil 2787 - Sulfur Study - 1986

Hancock Turfgrass Research Center, MSU, E. Lansing, Mi.
 Rating scale: Percent of plot area infected with brown patch
 Rating date: July 23, 1986

<u>Treatment</u>	<u>Rate/1000 ft²</u>	<u>Interval</u>	<u>I</u>	<u>II</u>	<u>III</u>	<u>AVE</u>	<u>DMR¹</u>
SDS 63539 (Daconil 2787 + Sulfur)	6 oz	14 day	5	10	10	8.3	A
Daconil 2787	3 fl oz	14 day	20	5	2	9.0	A
Sulfur F (Cleary)	3 fl oz	14 day	10	5	25	13.3	A
Check	--	--	5	50	30	28.3	A

¹ Treatments followed by the same letter are not significantly different from each other at the 5% level.