

## SDS BIOTECH FAIRWAY DISEASE CONTROL STUDIES - 1985

These studies (six treatments each) involved the application of fungicides (as shown below) on a 10 day spray schedule for the control of turf diseases which might appear on golf course fairways. The study was set out in four different locations on three different turfgrass varieties in an effort to collect data on as many turf diseases as possible. Two studies were conducted at the Hancock Turfgrass Research Center, one on annual bluegrass and one on perennial ryegrass. In these studies, we anticipated dollar spot, anthracnose, red thread, pythium and brown patch. A third study was conducted at the Glen Gary Golf course in Holland, Ohio on an annual bluegrass fairway which is generally severely damaged by anthracnose, dollar spot, brown patch and Pythium disease. The fourth study was located on a bentgrass green on the Raisin River golf course in Monroe, MI, where brown patch is frequently a problem. All studies were initiated during the first week of June, prior to disease outbreak. Treatments were re-applied every 10 days for a period of 120 days (4 applications per cycle for 3 cycles). The application sequence for one such cycle is detailed below. All studies were set up in three replications of a randomized block design utilizing a 6' x 9' plot size on all locations except the bentgrass green where a 3' x 6' plot size was used. Treatments were applied foliarly with a CO<sub>2</sub> small plot sprayer at 30 PSI and 48 gal/A. The following spray schedule was used:

### Cycle #1 (four applications at 10 day intervals)

#### Day 1 applications:

Treatment #1 (Dac. 2787 + Tersan 1991, 1.5 fl oz + .5 oz per 1000 ft<sup>2</sup>)  
Treatment #2 (Dac. 2787 3 fl oz per 1000 ft<sup>2</sup>)  
Treatment #3 (Tersan 1991, .5 oz per 1000 ft<sup>2</sup>)  
Treatment #4 (Dac. 2787, 1.5 fl oz per 1000 ft<sup>2</sup>)  
Treatment #5 (Control)

#### Day 10 applications:

Treatment #1 (Dac. 2787 + Tersan 1991, 1.5 fl oz + .5 oz per 1000 ft<sup>2</sup>)  
Treatment #2 (Dac. 2787, 3 fl oz per 1000 ft<sup>2</sup>)  
Treatment #3 (Tersan 1991, .5 oz per 1000 ft<sup>2</sup>)  
Treatment #4 (Dac. 2787, 1.5 fl oz per 1000 ft<sup>2</sup>)

#### Day 20 applications:

Treatment #1 Variation #1 (Dac. 2787 + Bayleton, 1.5 fl oz + 1 oz per 1000 ft<sup>2</sup>)  
Treatment #2 (Dac. 2787, 3 fl oz per 1000 ft<sup>2</sup>)  
Treatment #4 (Dac. 2787, 1.5 fl oz per 1000 ft<sup>2</sup>)  
Treatment #6 (Bayleton, 1 oz per 1000 ft<sup>2</sup>)

#### Day 30 applications:

Treatment #1 Variation #2 (Dac. 2787, 2 fl oz per 1000 ft<sup>2</sup>)  
Treatment #2 (Dac. 2787 3 fl oz per 1000 ft<sup>2</sup>)

Cycle #2 (four applications at 10 day intervals)

Day 40 applications: Same as day #1 applications  
Day 50 applications: Same as day #10 applications  
Etc., through 3 complete cycles.

By the end of the 120 day application period, treatments #1 (including variations) and #2 had been applied 12 times, treatment #3 had been applied 6 times, treatment #4 had been applied 9 times and treatment #6 had been applied three times on all 4 locations.

Data was taken for any diseases which appeared on the studies and the results are summarized below.

Location #1 (annual bluegrass, Hancock Turfgrass Research Center, MSU, E. Lansing, MI.)

Dollar Spot (*Sclerotinia homoeocarpa*) rating of 9/24/85  
Rating scale: 1(no disease) - 9(90% infection or greater)

<u>Treatment No.</u>	<u>Rep.I</u>	<u>Rep.II</u>	<u>Rep.III</u>	<u>Ave.</u>	<u>DMR*</u>
1 (variable applications)	1	1	1	1	a
2 (Dac. 2787, 3 fl oz)	1	1	1	1	a
4 (Dac. 2787, 1.5 fl oz)	1	1	1	1	a
6 (Bayleton, 1 oz)	1	1	1	1	a
3 (Tersan 1991 .5 oz)	3	6	2	3.7	b
5 (Control)	5	4	2	3.7	b

\* Treatments followed by the same letter(s) are not significantly different from each other at the 5% level.

Laboratory examination revealed that the Hancock Research Center dollar spot organisms are moderately benzimidazole resistant. This may account for the poor performance of Tersan 1991 in the above test.

We had hoped to obtain an anthracnose rating from this study as well, but due to the cool summer we experienced, the disease never developed in the plot area.

Location #2 (Loretta perennial ryegrass, Hancock Turfgrass Research Center, MSU, E. Lansing, MI)

Red Thread (*Laetisaria fuciformis*) rating of 8/27/85  
Rating scale: percent plot area infected

<u>Treatment No.</u>	<u>Rep.I</u>	<u>Rep.II</u>	<u>Rep.III</u>	<u>Ave.</u>	<u>DMR*</u>
1 (variable applications)	0	0	0	0	a
2 (Dac. 2787, 3 fl oz)	0	0	0	0	a
6 (Bayleton, 1 oz)	0	0	0	0	a
4 (Dac. 2787, 1.5 fl oz)	0	5	10	5	ab
3 (Tersan 1991, .5 oz)	5	5	10	6.7	b
5 (Control)	0	10	10	6.7	b

\*Treatments followed by the same letter(s) are not significantly different from each other at the 5% level.

The ryegrass study was fertilized heavily during the summer months to encourage the development of brown patch and pythium, however, the cool weather prevented the occurrence of either disease.

Location #3 (annual bluegrass fairway, Glen Gary Golf Club, Holland, Ohio)

Dollar Spot (Moellerodiscus sp., Lanzia sp.) rating of 8/28/85  
Rating scale: 1(no disease) - 9(90% infection or greater)

<u>Treatment No.</u>	<u>Rep.I</u>	<u>Rep.II</u>	<u>Rep.III</u>	<u>Ave.</u>	<u>DMR*</u>
1 (variable applications)	1	1	1	1	a
2 (Dac. 2787, 3 fl oz)	1	1	1	1	a
6 (Bayleton 1 oz)	1	2	2	1.7	ab
4 (Dac. 2787, 1.5 fl oz)	2	4	6	4	ab
5 (Control)	2	8	4	4.7	ab
3 (Tersan 1991, .5 oz.)	6	2	8	5.3	b

\* Treatments followed by same letter(s) are not significantly different from each other at 5% level.

The dollar spot organisms in the Glen Gary study were shown to be benzimidazole-resistant in laboratory bio-assay analysis.

Anthracoese (colletotrichum graminicola) rating of 8/28/85  
Rating scale: percent plot area infected.

<u>Treatment No.</u>	<u>Rep.I</u>	<u>Rep.II</u>	<u>Rep.III</u>	<u>Ave.</u>	<u>DMR*</u>
6 (Bayleton, 1 oz)	0	0	0	0	a
2 (Dac. 2787, 3 fl oz)	5	0	0	1.7	ab
1 (variable applications)	5	5	0	3.3	ab
3 (Tersan 1991, .5 oz)	5	5	5	5	ab
4 (Dac. 2787, 1.5 fl oz)	0	0	15	5	ab
5 (Control)	6	2	8	5.3	b

\* Treatments followed by same letter(s) are not significantly different from each other at 5% level.

Location 4 (creeping bentgrass green, Raisin River Golf Club, Monroe, MI)

Brown Patch (Rhizoctonia solani) rating of 8/26/85  
Rating scale: number of patches per plot

<u>Treatment No.</u>	<u>Rep.I</u>	<u>Rep.II</u>	<u>Rep.III</u>	<u>Ave.</u>	<u>DMR*</u>
1 (Variable applications)	0	0	0	0	a
2 (Dac. 2787, 3 fl oz)	0	0	0	0	a
4 (Dac. 2787, 1.5 fl oz)	0	0	0	0	a
6 (Bayleton, 1 oz)	0	0	0	0	a
3 (Tersan 1991, .5 oz.)	1	0	0	0.3	a
5 Control	1	2	1	1.3	b

\* Treatments followed by the same letter(s) are not significantly different at the 5 % level.

In general, we experienced less disease in these 4 studies than we anticipated which we attribute to an unusually cool and moist summer in Michigan.

#### BAY POINTE BACTERIAL WILT STUDY - 1985

Three bacterial wilt (Xanthomonas campestris) studies were attempted this year on C-15 (Toronto) creeping bentgrass greens on a number of golf courses in southern Michigan. The only study in which disease pressure persisted long enough to get a control rating was located on the Bay Pointe Golf Club in Union Lake, MI.

Treatments were applied curatively on August 28 to three replicates of 3' x 6' plots in a random block design. The experimental compound was applied foliarly using a C02 small-plot sprayer at 30 PSI and 48 gal/A. The Mycoshield antibiotic was applied as a 50 gal/1000 ft<sup>2</sup> soil drench. The treatments were re-applied on September 27 and on October 25. The plots were rated on Nov. 11.

Though Mycoshield is our standard recommendation for control of bacterial wilt and generally performs well, it seemed to be very slow-acting in this study. Consequently, when the season ended, the recovery within the Mycoshield plots was far from complete. Both of the compounds tested, however, gave significant control over the untreated plots.

Bay Pointe Bacterial Wilt Study 1985  
 Bay Pointe Golf Club, West Bloomfield, Michigan  
 Disease Rating: 1(no disease) - 9(90% infection or greater)  
 Plots Rated: 11/11/85

<u>Treatment No.</u>	<u>Rate/1000 ft<sup>2</sup></u>	<u>Rep.I</u>	<u>Rep.II</u>	<u>Rep.III</u>	<u>Ave.</u>	<u>DMR*</u>
CGA-115944	9.4 gm.	4	5	6	5	a
CGA-115944	18.8 gm.	5	5	5	5	a
Mycoshield	2.5 lbs.	4	6	6	5.3	a
Check	-	7	7	8	7.3	b

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

#### LESCO RYEGRASS DISEASE CONTROL STUDY - 1985 Hancock Turfgrass Research Center MSU, E. Lansing, MI

In addition to their inclusion in our dollar spot and anthracnose studies, the Lesco Corp. experimental fungicide compounds were applied to Loretta perennial ryegrass at the Hancock Center on the MSU campus. As a result of this effort, we obtained some excellent red thread (Laetisaria fuciformis) data which appears below.

Treatments were applied to 3 replicates of 6' x 9' plots in a random block design. Applications were made foliarly and preventively using a C02 small-plot sprayer at a volume of 48 gal/acre and 30 PSI. The first