

1982-83 TURFGRASS DISEASE MANAGEMENT REPORT

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Snow Mold Fungicide Trials - 1982-83

Establishment:

The 1982-83 snow mold fungicide trials were conducted at the Boyne Highlands Resort on Penncross creeping bentgrass mowed at 1/2". Treatments were applied to 6' x 9' plots in three replications of a random block design on October 30, 1982. The wetttable powders and flowables were applied with a small-plot CO₂ sprayer at a volume of 40 gal/acre. The granular applications were pre-weighed and applied by hand. The plot ratings were made on March 14, 1983.

TABLE 1. Boyne Highlands Snow Mold Study - 1982-83.
 Percent area infected with all snow molds (Typhula incaranta, Typhula ishikariensis, and Fusarium nivale). Rating taken 3/15/83.

Treatment	Rate/1000 ft ²	Repetition			AVE	DMR
		I	II	III		
Scotts F + F II	2 X	0	0	0	0	A
Mallin. Exp. Gr.	10 lbs	0	2	0	.7	AB
Cal-Color	3 oz.	0	1	2	1	AB
Rizolex	2 gm. ai./m ²	0	2	1	1	AB
Calo-Gran	10 lbs	2	2	1	1.7	AB
Rizolex	1 gm ai./m ²	2	2	2	2	ABC
Daconil 2787 FL	16 fl. oz.	2	3	5	3.3	ABC
CGA-64250	8 fl. oz.	5	5	3	4.3	ABC
Mallin. Exp. Gr.	6 lbs	5	5	5	5	ABC
Rizolex	.5 g ai./m ²	2	10	5	5.7	ABC
Scotts F + F II	1 X	5	10	10	8.3	ABC
Calo-Gran	6 lbs	5	5	15	8.3	ABC
Daconil 2787	8 fl. oz.	5	25	20	16.7	ABCD
CGA-64250	4 fl. oz.	5	10	35	16.7	ABCD
Daconil 2787 FL	6 fl. oz.	30	15	15	21.7	BCD
Bayleton	8 oz.	35	10	25	23.3	CDE
MF 654	6 oz.	35	40	25	33.3	DEF
MF 654	3 oz.	45	25	30	33.3	DEF
BTS 41661	1.5 oz. ai.	30	35	40	35	DEFG
CGA-64250	2 fl. oz.	34	25	45	35.7	DEFG
BTS 41661	3 oz. ai.	30	40	40	35.7	DEFG
Bayleton	4 oz.	27	25	60	37.3	DEFG
Prochloraz	1.5 oz. ai.	50	60	20	43.3	EFGH
F-9648R	2 X	60	40	40	46.7	FGH
Bayleton Gr.	6.25 lbs	45	75	25	48.3	FGH
Check	-	45	65	50	53.3	FGHI
BAS 4360F	.62 oz. ai.	50	45	70	55	GHI
F-9648R	1 X	45	60	75	60	HIJ
BAS 43603F	.28 oz. ai.	75	85	50	70	IJ
BAS 43603F	.21 oz. ai.	70	75	75	73.3	J

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

Table 2. Boyne Highlands Snow Mold Study - 1982-83. Percent area infected with *Fusarium nivale*. Ratings taken 3/15/83.

Treatment	Rate/1000 ft ²	Repetition				DMR (5%)
		I	II	III	AVE	
Scotts F + F II	2X	0	0	0	0	A
Mallin. Exp. Gr.	10 lbs.	0	0	0	0	A
F-9648R	2 X	0	0	0	0	A
F-9648R	1 X	0	0	0	0	A
Rizolex	2 gm ai./m ²	0	0	0	0	A
Scotts F + F II	1 X	0	0	2	.7	AB
CGA-64250	8 fl. oz.	0	1	1	.7	AB
Calo-Clor	3 oz.	0	1	1	.7	AB
Prochloraz	1.5 oz. ai.	0	1	2	1	AB
Rizolex	1 gm ai./m ²	2	1	2	1.7	AB
Calo-Gran	10 lbs	2	2	1	1.7	AB
Daconil 2787 FL	16 fl. oz.	2	3	1	2	AB
CGA-64250	4 fl. oz.	0	5	1	2	AB
Mallin. Exp. Gr.	6 lbs.	5	0	4	3	ABC
Daconil 2787 FL	8 fl. oz.	5	2	5	4	ABC
BAS 43603F	.621 oz. ai.	2	5	5	4	ABC
Calo-Gran	6 lbs.	5	2.5	5	4.2	ABC
CGA-64250	2 fl. oz.	10	0	5	5	ABC
Rizolex	.5 gm ai./m ²	2	8	5	5	ABC
BAS 43603F	.21 oz. ai.	10	0	5	5	ABC
Bayleton	8 oz.	5	10	5	6.7	BCD
Daconil 2787 FL	6 fl. oz.	10	5	5	6.7	BCD
Bayleton	4 oz.	10	5	10	8.3	CDE
BTS 41661	1.5 oz. ai.	10	5	10	8.3	CDE
BAS 43603F	.28 oz. ai.	15	5	5	8.3	CDE
BTS 41661	3 oz. ai.	10	20	5	11.7	DEF
MF 654	6 oz.	20	10	10	13.3	EF
MF 654	3 oz.	15	10	20	15	F
Bayleton	6.25 lbs.	20	10	20	16.7	F
Check	-	15	20	15	16.7	F

* Treatment followed by the same letter are not significantly different at the 5% level.

Helminthosporium (Melting-Out) Fungicide Studies - 1983
Hancock Turfgrass Research center, MSU.

Establishment:

The 1983 Helminthosporium melting-out (Helminthosporium vagans) fungicide study was conducted at the Hancock Turfgrass Research Center on the Michigan State University campus on Kenblue Kentucky bluegrass maintained at a 1 1/2" height of cut. Fungicides were applied at various intervals as indicated on the data table with all treatments being applied initially on May 4. When fungicide treatments were suspended, the 10 day treatments had been applied 4 times, the 14 day treatments had been applied 3 times, and the 21 day treatments had been applied twice. All treatments were applied preventatively with a CO₂ small-plot sprayer at a volume of 40 gal/acre.

The study was set up in a randomized block design consisting of three replications/treatment with a plot size of 3' x 6'. The plots were rated on June 14.

Table 3. Helminthosporium (Melting-Out) Fungicide studies - 1983.
Hancock Turfgrass Research Center, MSU.

Disease rating: 1 (no disease) - 9 (90% infection or greater).

Treatment	Rate*/1000 ft ² + Interval	Repetition				
		I	II	III	AVE	DMR
Chipco 26019	1.5 oz. (21 day sch.)	1	1	1	1	A
Vorlan	2 oz. (14 day sch.)	1	1	1	1	A
Vorlan	1 oz. (14 day sch.)	1	1	2	1.3	AB
Dyrene 4F (3X app. vol.)	.5 oz. ai. (14 day sch.)	2	1	3	2	ABC
DSaconil 2787 FL	12 fl. oz. (21 day sch.)	2	3	2	2.3	ABCD
MF 690	3 oz. (14 day sch.)	2	3	2	2.3	ABCD
Dyrene + Bayleton	1 oz. ai. + 1/2 oz. (14 day sch.)	2	2	3	2.3	ABCD
Dyrene 4F (3X appl vol.)	1 oz. ai. (14 day sch.)	2	4	2	2.7	ABCDE
Dyrene 4F (3X appl. vol.)	2 oz. zi. (14 day sch.)	1	4	3	2.7	ABCDE
MF 690	1.5 oz. (14 day sch.)	4	2	2	2.7	ABCDE
Daconil 2787 FL	6 fl. oz. (10 day sch.)	2	3	4	3	ABCDEF
Daconil 2787 FL	6 fl. oz. (14 day sch.)	3	4	2	3	ABCDEF
Daconil 2787 FL	8 fl. oz. (21 day sch.)	2	4	3	3	ABCDEF
Daconil 2787 FL	2 fl. oz. (10 day sch.)	6	2	3	3.7	ABCDEFGH
Daconil 2787 FL	3 fl. oz. (14 day sch.)	2	4	5	3.7	ABCDEFGH
Daconil 2787 FL	16 fl. oz. (21 day sch.)	1	7	4	4	BCDEFGH
Daconil 2787 FL	3 fl. oz. (10 day sch.)	2	5	6	4.3	CDEFGHI
Banner	3 fl. oz. (21 day sch.)	5	3	5	4.3	CDEFGHI
Duosan	3 oz. (14 day sch.)	6	4	3	4.3	CDEFGHI
NC 28410	2 oz. ai. (14 day sch.)	3	8	3	4.7	CDEFGHI
Daconil 2787 FL	1.47 fl. oz. (10 day sch.)	6	6	3	5	DEFGHIJ
BRC 2127	.2 lb ai./A (21 day sch.)	6	3	6	5	DEFGHIJ
Banner	1 fl. oz. (21 day sch.)	4	5	7	5.3	EFGHIJ
CGA-71818	16 gm ai. (21 day sch.)	5	6	4	5.3	EFGHIJ
Banner	2 fl. oz. (21 day sch.)	5	6	6	5.7	FGHIJ
CGA-71818	8 gm. ai. (21 day sch.)	8	3	7	6	GHIJ
BRC 227	.1 lb. ai./A (21 day sch.)	5	6	7	6	GHIJ
NC 28410	4 oz. ai. (14 day sch.)	7	7	6	6.7	HIJ
Check	-	7	7	7	7	IJ
Bayleton T.O.	1/2 oz. (14 day sch.)	8	8	7	7.7	J

* Rates indicate ounces formulation/1000ft² except as noted.

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

Upjohn Acti-Dione RZ Helminthosporium Melting-Out Fungicide Study - 1983
Hancock Turfgrass Research Center, MSU.

The Upjohn Acti-dione RZ Helminthosporium melting-out (*Drechslera vagans*) fungicide-fertility timing study was conducted on a Kenblue Kentucky bluegrass area which was mowed at 1 1/2", unfertilized and irrigated as needed. The study was initiated in the fall of 1982 with some treatments receiving a single application on Nov. 30. Spring 1983 treatments were initiated on April 26 and reapplied on May 11, May 26, and June 8. Urea was applied (to treatments as indicated on the data tables) at a 1 lb N/1000 ft² rate on Nov. 30, 1982, and April 27, 1983, and a .1 lb N/1000 ft² rate on May 11, May 26, and June 8. Disease ratings were taken on June 14. The study was laid out in three replications of a randomized block design with 3' x 6'; plots. Treatments were applied with a CO₂ small plot sprayer at a volume of 40 gal/acre.

Table 4. Upjohn Acti-Dione RZ Helminthosporium Melting-Out Fungicide Study - 1983. Hancock Turfgrass Research Center. Rating scale - 1 (no disease) - 9 (90% infection or greater). Rating data - 6/14/83

Treatment	Rate*/1000 ft ²	Repetition				DMR**
		I	II	III	AVE	
Acti-dione RZ + Urea	.55 oz. + 1.3 lb. N (Fall + Spring - 14 day sch.)	1	2	1	1.3	A
Urea	2.3 lb. N (Fall + Spring - 14 day sch.)	1	1	2	1.3	A
Acti-dione RZ + Urea	1 oz. + 1.3 lb. N (Fall + Spring - 14 day sch.)	2	2	3	2.3	A
Urea	1.3 lb. N (Spring only)	1	2	4	2.3	A
Acti-dione RZ + Urea	.55 oz. + 1.3 lb. N (Spring only)	2	3	4	3	AB
Acti-dione RZ + Urea	1 oz. + 1.3 lb. N (Spring only)	3	4	5	4	BC
Urea	1 lb. N (Fall only)	7	5	4	5.3	CD
Acti-dione RZ + Urea	1 oz. + 1 lb. N (Fall only)	4	7	7	6	DE
Acti-dione RZ + Urea	.55 oz. + 1 lb. N (Fall only)	6	5	8	6.3	DEF
Acti-dione RZ	.55 oz. (Fall + Spring - 14 day sch.)	7	6	8	7	EFG
Acti-dione RZ	.55 oz. (Spring only - 14 day sch.)	8	8	7	7.7	EFG
Acti-dione RZ	1 oz. (Fall only)	7	8	8	7.7	EFG
Acti-dione RZ	.55 oz. (Fall only)	8	8	8	8	FG
Acti-dione RZ	1 oz. (Spring only - 14 day sch.)	8	8	8	8	FG
Check	-	8	8	8	8	FG
Acti-dione RZ	1 oz. (Fall + Spring - 14 day sch.)	8	9	8	8.3	G

* Urea rates represent total pounds actual nitrogen per 1000 sq.ft. over duration of study.

** Treatments followed by the same letter are not significantly different from each other at the 5% level. 48

Daconil 2787 FL Fungigation Study - 1983
Hancock Turfgrass Research Center, MSU.

Establishment:

The 1983 fungigation study was established on an irrigated annual bluegrass (Poa annua) block at the Hancock Turfgrass Research Center on the Michigan State University campus.

Undiluted Daconil 2787 (FL) was injected directly into the irrigation line in the pump house at a rate of approximately 3 gallons/hr using a Hydro-Flo Chem-Injecto single piston pump. Injections were made into a line with a water capacity of 3600 gallons/hr. The fungigation treatment was applied through 4 Nelson pop-up irrigation heads, each of which was applying approximately 15 gallons/minute. This resulted in a dilution factor of approximately 1:1200. The fungicide was applied at a rate of 7 quarts/acre, the maximum label rate for fairway applications. Treatments were applied on June 13, June 27, July 11, July 19, July 26, August 16 and August 29. On August 2, Cleary 3336 FL was applied at 1 fl. oz./1000 ft² for the control of anthracnose in the plot area.

In order to provide a comparison of fungigation versus sprayer application part of the annual bluegrass study was sprayed with Daconil 2727 FL at 76 qts/acre using a CO₂ small-plot sprayer operating at 20 gallons/acre. The dilution of fungicide to water in this case was approximately 1:12.

This research area was irrigated as needed and fertilized at a total rate of 1 1/2 lb N/1000 ft² during the 1983 season.

The study was rated for dollar spot (Sclerotinia homeocarpa) incidence on July 25, August 3, August 24, and September 7.

Table 5. Daconil 2787 FL Fungigation Study - 1983. Hancock Turfgrass Research Center, MSU. Dollar spot rating scale: 1 (no disease) - 9 (90% infection or greater).

Treatment	Rate/acre	Repetition			DMR ¹
		I	II	III AVE	
Rating of July 25					
Boom sprayer application	7 qts/acre	2	2	2	A
Fungigation application	7 qts/acre	4	5	5	B
Control	-	8	7	8	C
Rating of August 3					
Boom sprayer application	7 qts/acre	1	1	1	A
Fungigation application	7 qts/acre	3	4	4	B
Control	-	7	8	8	C
Rating of August 24					
Boom sprayer application	7 qts/acre	1	1	1	A
Fungigation application	7 qts/acre	1	1	1	A
Control	-	7	8	8	B
Rating of September 7					
Boom sprayer application	7 qts/acre	1	1	1	A
Fungigation application	7 qts/acre	1	1	1	A
Control	-	8	8	8	B

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

Yellow Patch Fungicide Study - 1983
Northville, MI.

The 1983 yellow patch (Rhizoctonia cerealis) fungicide study was conducted on a heavily diseased, irrigated bluegrass lawn area in Northville, MI. The study was laid out in three replications of a randomized block design (6' x 9' plot size). Treatments were applied with a CO₂ small-plot sprayer at a volume of 40 gal/acre beginning on June 29. Treatments were re-applied on July 29, September 6 and October 6. A preliminary disease rating was taken on June 29 and a final rating was taken on November 21. The following data consists of the percent change in the number of disease rings per plot between the initial rating and the final rating (plots that show negative percentages showed increased infection).

This is the first replicated report of chemical management of yellow patch. Rubigan, Chipco 26019 and Banner of the commercially available or soon to be registered products gave the best management of the disease. While these results can be used as suggestions for yellow patch management, further testing is necessary before firm recommendations can be made.

Table 6. Yellow Patch Fungicide Study - 1983. Northville, MI. Rating date - 11/21/83. % improvement per plot following repeated treatment.

Treatment	Rate/1000 ft ²	Repetition			AVE	DMR*
		I	II	III		
Rubigan	2 oz.	75	100	60	78.3	A
Rubigan	6 oz.	100	50	66	72	A
Chipco 26019	4 oz.	100	33	75	69.3	A
Rubigan	4 oz.	64	100	33	65.7	AB
BRC 227	1.04 gm. ai.	50	66	64	60	AB
Banner	1 fl. oz.	100	17	33	50	ABC
CGA-71818	16 gm. ai.	37	60	43	46.7	ABCD
Banner	2 fl. oz.	50	0	86	45.3	ABCD
NC 28410	4 oz. ai.	33	14	75	40.7	ABCDE
Rubigan	1 oz.	56	14	43	37.7	ABCDE
BRC 227	2.08 gm. ai.	50	58	0	36	ABCDE
NTN 19701	2 oz. ai.	33	0	65	32.7	ABCDE
Terraclor	1 oz. ai.	100	-50	44	31.3	ABCDE
MF 690	2 oz.	33	-17	71	29	ABCDE
MF 691	2 oz.	78	-25	33	28.7	ABCDE
CGA-71818	8 gm. ai.	12	69	0	27	ABCDE
Vorlan	4 oz.	18	10	27	18.3	ABCDE
MF 691	3 oz.	33	14	0	15.7	ABCDE
NC 28410	2.08 gm. ai.	0	-22	64	14	ABCDE
MF 654	1.5 oz.	0	20	0	6.7	ABCDE
MF 654	3 oz.	75	-43	-20	4	ABCDE
MTN 19701	1 oz. ai.	-17	-50	42	-8.3	BCDE
Check	-	-33	20	-40	-17.7	CDE
Bayleton	4 oz.	18	-14	-60	-18.7	CDE
Terraclor	2 oz. ai.	0	-100	29	-23.7	CDE
MF 690	3 oz.	-33	-13	-29	-25	DE
NTN 19701	4 oz. ai.	0	-43	-40	-27.7	DE
MF 654	1 oz.	-29	25	-86	-30	E

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

Dollar Spot Fungicide Studies - 1983
Hancock Turfgrass Research Center, MSU

Establishment:

Two dollar spot (Sclerotinia homeocarpa) studies were conducted this year. One was established on an annual bluegrass (Poa annua) fairway area and a second trial was established on a creeping bentgrass green. Liquid applications were made with a CO₂ small plot sprayer at a volume of 40 gal/acre and granular treatments were pre-weighed and applied by hand. Both studies were laid out with three replications in a random block design. The bentgrass plots were 3' x 6' while the annual bluegrass plots were 6' x 9'.

Annual Bluegrass Study

The annual bluegrass dollar spot study was established on an irrigated, simulated fairway area which was mowed at 1/2" height of cut and received moderate fertility. All treatments were applied preventatively on July 8 with subsequent applications being made at the intervals cited on the data table. When the rating was taken (Aug. 24) all 10 day treatments had received 5 applications, the 14 day treatments had 4 applications, the 21 day treatments had 3 applications, and the 30 day treatments had been applied twice.

Creeping Bentgrass Study

The creeping bentgrass dollar spot study was established on an irrigated Penneagle bentgrass green. The treatments were applied curatively on August 2 with subsequent applications being made at the intervals cited on the data table. When the ratings were taken (Sept. 2), the 10 day treatments had been applied 4 times; the 14 day treatments, 3 times; the 21 day treatments, twice; and the 30 day treatments, twice. Disease incidence in the plot area was low when the study was initiated, but it increased steadily and reached a peak around September 2, when the rating was taken.

Table 7. Hancock Annual Bluegrass Dollar Spot Fungicide Study - 1983.
 Hancock Turfgrass Research Center, MSU. Rating scale: 1 (no disease) - 9 (90% infection or greater). Rating date - 9/2/83.

Treatment	Rate ¹ /1000ft ² + Interval	Repetition				
		I	II	III	AVE	DMR ²
Fungo 50	1 oz. (21 day sch.)	3	2	2	2.3	A
CGA 71818	6 gm. ai. (21 day sch.)	3	2	2	2.3	A
Daconil 2787 FL	16 fl. oz. (21 day sch.)	3	3	2	2.7	AB
Tersan 1991	1 oz. (21 day sch.)	5	1	2	2.7	AB
Tersan 1991	2 oz. (21 day sch.)	4	2	2	2.7	AB
Banner	1 fl. oz. (21 day sch.)	4	3	2	3	ABC
Banner	2 fl. oz. (21 day sch.)	3	3	3	3	ABC
Cl. 3336	2 oz. (21 day sch.)	4	4	4	3	ABC
Banner	.5 fl. oz. (21 day sch.)	4	2	3	3	ABC
Duosan	3 oz. (21 day sch.)	4	3	2	3	ABC
Fungo 50	2 oz. (21 day sch.)	4	3	2	3	ABC
Bayleton	2 oz. (21 day sch.)	3	4	3	3.3	ABC
Bayleton	1 oz. (21 day sch.)	3	5	2	3.3	ABC
BRC 227	2 lb. ai./A (21 day sch.)	5	3	2	3.3	ABC
Cl. 3336	1 oz. (21 day sch.)	5	3	2	3.3	ABC
Bayleton T.O.	2 oz. (30 day sch.)	5	2	3	3.3	ABC
Daconil 2787 FL	6 fl. oz. (10 day sch.)	3	5	3	3.7	ABC
Daconil 2787 FL	12 fl. oz. (21 day sch.)	4	4	3	3.7	ABC
Daconil 2787 FL	8 fl. oz. (21 day sch.)	4	6	2	4	ABC
CGA 71818	8 gm. qi. (21 day sch.)	3	6	3	4	ABC
Bayleton T.O.	1 oz. (14 day sch.)	6	3	5	4.7	BCD
Bayleton 5% Gr.	6.25 lbs (30 day sch.)	6	4	4	4.7	BCD
Daconil 2787 FL	6 fl. oz. (14 day sch.)	5	5	4	4.7	BCD
BRC 227	.1 lb ai./A (21 day sch.)	7	4	4	5	CDE
Daconil 2787 FL	3 fl. oz. (10 day sch.)	7	4	4	5	CDE
Daconil 2787 FL	1.47 fl. oz. (10 day sch.)	6	6	6	6	DEF
Daconil 2787 FL	3 fl. oz. (14 day sch.)	7	7	5	6.3	DEF
MF 654	1.5 oz. (21 day sch.)	8	6	5	6.3	DEF
Daconil 2787 FL	2 fl. oz. (10 day sch.)	7	7	5	6.3	DEF
NC 28410	4 oz. ai. (14 day sch.)	8	5	7	6.7	EF
NC 28410	2 oz. ai. (14 day sch.)	7	8	5	6.7	EF
Check	-	8	8	6	7.3	F
MF 654	1 oz. (21 day sch.)	9	8	6	7.7	F

¹ Rates indicate formulation, except as otherwise noted.

² Treatments followed by the same letter are not significantly different from each other at the 5% level.

Table 8. Hancock Bentgrass Dollar Spot Fungicide Study - 1983. Hancock Turfgrass Research Center, MSU. Rating scale: 1 (no disease) - 9 (90% infection or greater). Rating date - 9/2/83.

Treatment	Rate/1000 ft ² + Interval	Repetition				
		I	II	III	AVE	DMR ²
Vorlan	1 oz. (14 day sch.)	0	0	0	0	A
Vorlan	2 oz. (14 day sch.)	0	0	0	0	A
Duosan	3 oz. (14 day sch.)	0	0	0	0	A
MF 690	1.5 oz. (14 day sch.)	0	0	0	0	A
MF 690	3 oz. (14 day sch.)	0	0	0	0	A
MF 691	1.5 oz. (14 day sch.)	0	0	0	0	A
DPX 965-4L	.5 oz. ai. (14 day sch.)	0	0	0	0	A
DPOX H6573	.25 oz. ai. (14 day sch.)	0	0	0	0	A
DPX H6573	.5 oz. ai. (14 day sch.)	0	0	0	0	A
Tersan 1991	1 oz. (14 day sch.)	0	0	0	0	A
Daconil 2787 FL	6 fl. oz. (10 day sch.)	0	0	0	0	A
Daconil 2787 FL	8 fl. oz. (21 day sch.)	0	0	0	0	A
Daconil 2787 FL	12 fl. oz. (21 day sch.)	0	0	0	0	A
Daconil 2787 FL	16 fl. oz. (21 day sch.)	0	0	0	0	A
Bayleton T.O.	1 oz. (14 day sch.)	0	0	0	0	A
Banner	.5 fl. oz. (21 day sch.)	0	0	0	0	A
Banner	1 fl. oz. (21 day sch.)	0*	0	0*	0	A
Banner	2 fl. oz. (21 day sch.)	0*	0	0	0	A
Fungo 50	1 oz. (14 day sch.)	0	0	0	0	A
Cl. 3336	1 oz. (14 day sch.)	0	0	0	0	A
Bayleton	.5 oz. (14 day sch.)	0	0	0	0	A
Ad-TGF + Baylton	1 oz. + .5 oz. (14 day sch.)	0***	0**	0***	0	A
MF-691	3 oz. (14 day sch.)	0	8	0	2.7	A
Daconil 2787 FL	6 fl. oz. (14 day sch.)	10	0	0	3.3	A
Daconil 2787 FL	3 fl. oz. (10 day sch.)	0	12	0	4	A
AD-TGF + Daconil 2787 FL	1 oz. + 2.5 fl. oz. (14 day sch.)	13**	2***	0***	5	A
BRC 227	.2 lb ai./A (14 day sch.)	0	0	19	6.3	A
AD-TGF	1 oz. (14 day sch.)	4**	0**	20**	8	A
Chipco 26019	1.5 oz. (21 day sch.)	56	0	0	18.7	AB
Bayleton T.O.	2 oz. (30 day sch.)	38	22	14	24.7	ABC
BRC 227	.1 lb ai./A (14 day sch.)	44	26	17	29	ABc
Bayleton	2 oz. (30 day sch.)	30	38	60	42.7	ABCD
Daconil 2787 FL	3 fl. oz. (14 day sch.)	52	75	10	45.7	ABCD
Daconil 2787 FL	1.47 fl. oz. (10 day sch.)	73	6	115	64.7	BCD
Bayleton	1 oz. (30 day sch.)	40	119	75	75	CDE
Daconil 2787 FL	2.5 fl. oz. (14 day sch.)	52	125	57	78	DE
NC 28410	2 oz. (14 day sch.)	150	73	65	96	DE
Daconil 2787 FL	2 oz. (10 day sch.)	175	100	90	121.7	E
Bayleton Gr.	6.25 lbs. (30 day sch.)	250	86	40	125.3	E
NC 28410	4 oz. (14 day sch.)	200	195	155	183.3	F
Check	-	225	275	200	233.3	G

¹ Rates indicate formulation, except as otherwise noted.

² Treatments followed by the same letter are not significantly different from each other at 5% level.

* Indicates a visible greening effect.

** Indicates a mild phytotoxicity (brown tinge)

*** Indicates a moderate phytotoxicity (obvious browning of plot)

Anthracnose Fungicide Study - 1983
Hancock Turfgrass Research Center, MSU.

Establishment:

The 1983 Anthracnose (Colletotrichum graminicola) study was established at the Hancock Turfgrass Research Center in East Lansing on an irrigated, moderately fertilized annual bluegrass (Poa annua) simulated fairway area. The study was set up in three replications of a random block design with a 6' x 9' plot size. All liquid applications were made with a CO₂ small-plot sprayer at a volume of 40 gal/acre. Granular treatments were pre-weighed and applied by hand. The area was mowed regularly at 1/2" height of cut.

Initial applications were made preventatively on July 8 with succeeding applications being made at the intervals cited on the data tables. When the first reading was taken (Aug. 24), the 10 day treatments had been applied 5 times, the 14 day treatments 4 times, the 21 day treatments 3 times, and the 30 day treatments twice. When the second rating was taken (Sept 15), the 10 day treatments had received 2 additional applications, and the 14, 21, and 30 day treatments had received 1 additional application.

As the data tables indicate, disease infection in our plots reached only moderate levels this year, despite the hot summer we experienced.

Table 9. Hancock Annual Bluegrass Anthracnose Fungicide Study - 1983.
 Hancock Turfgrass Research Center, MSU. Rating Scale: 1 (no
 disease) - 9 (90% infection or greater). Rating date - 8/24/83.

Treatment	Rate ¹ /1000 ft ² + Interval	Repetition				
		I	II	III	AVE	DMR
Banner	2 fl. oz. (21 day sch.)	1	1	1	1	A
Banner	1 fl. oz. (21 day sch.)	1	1	1	1	A
Daconil 2787 FL	16 fl. oz. (21 day sch.)	1	1	1	1	A
CGA 71818	8 gm. ai. (21 day sch.)	1	1	1	1	A
CGA 71818	16 gm. ai. (21 day sch.)	1	1	1	1	A
Bayleton	2 oz. (21 day sch.)	1	1	1	1	A
Bayleton	1 oz. (21 day sch.)	1	1	1	1	A
Tersan 1991	2 oz. (21 day sch.)	1	1	1	1	A
Tersan 1991	1 oz. (21 day sch.)	1	1	1	1	A
Bayleton T.O.	2 oz. (30 day sch.)	1	1	1	1	A
Bayleton T.O.	1 oz. (14 day sch.)	1	1	1	1	A
Daconil 2787 FL	12 fl. oz. (21 day sch.)	1	2	1	1.3	A
BRC 227	.2 lb ai./A (21 day sch.)	2	1	1	1.3	A
Duosan	3 oz. (21 day sch.)	2	1	1	1.3	A
Daconil 2787 FL	6 fl. oz. (14 day sch.)	1	2	1	1.3	A
Daconil 2787 FL	3 fl. oz. (10 day sch.)	1	2	1	1.3	A
Daconil 2787 FL	8 fl. oz. (21 day sch.)	1	2	2	1.7	AB
Cl. 3336	2 oz. (21 day sch.)	2	2	1	1.7	AB
Banner	.5 fl. oz. (21 day sch.)	1	1	3	1.7	AB
Fungo 50	1 oz. (21 day sch.)	1	1	3	1.7	AB
Daconil 2787 FL	1.47 fl. oz. (10 day sch.)	2	2	2	2	ABC
Bayleton .5% Gr.	6.25 lbs. (30 day sch.)	2	2	2	2	ABC
Fungo 50	2 oz. (21 day sch.)	2	3	2	2.3	ABCD
NC 28410	2 oz. ai. (14 day sch.)	2	2	3	2.3	ABCD
Daconil 2787 FL	2 fl. oz. (10 day sch.)	2	2	3	2.3	ABCD
Daconil 2787 FL	6 fl. oz. (10 day sch.)	1	2	4	2.3	ABCD
Daconil 2787 FL	3 fl. oz. (14 day sch.)	1	4	2	2.3	ABCD
MF 654	1.5 oz. (21 day sch.)	5	2	2	3	BCDE
Cl. 3336	1 oz. (21 day sch.)	4	2	3	3	BCDE
BRC 227	.1 lb. ai./A (21 day sch.)	4	3	3	3.3	CDEF
MF 654	1 oz. (21 day sch.)	4	4	3	3.7	DEF
NC 28410	4 oz. ai. (14 day sch.)	2	5	5	4	EF
Check	-	3	7	4	4.7	F

¹ Rates indicate formulation, except as otherwise noted.

² Treatments followed by the same letter are not significantly different from each other at the 5% level.

Table 10. Hancock Annual Bluegrass Anthracnose Fungicide Study - 1983.
 Hancock Turfgrass Research Center, MSU. Rating scale: 1 (no
 disease) - 9 (90% infection or greater). Rating date - 9/15/83.

Treatment	Rate ¹ /1000 ft ² + Interval	Repetition			AVE	DMR ²
		I	II	III		
Bayleton T.O.	2 oz. (30 day sch.)	1	1	1	1	A
Bayleton T.O.	1 oz. (14 day sch.)	2	1	1	1.3	AB
Bayleton	2 oz. (21 day sch.)	2	1	1	1.3	AB
Daconil 2787 FL	12 fl. oz. (21 day sch.)	1	2	1	1.3	AB
Banner	2 fl. oz. (21 day sch.)	1	1	2	1.3	AB
Banner	1 fl. oz. (21 day sch.)	1	2	1	1.3	AB
BRC 227	.2 lb ai./A (21 day sch.)	2	1	2	1.7	ABC
Bayleton 5% Gr.	6.25 lbs/A (30 day sch.)	2	2*	1	1.7	ABC
Bayleton	1 oz. (21 day sch.)	1	3	1	1.7	ABC
Daconil 2787 FL	6 fl. oz. (14 day sch.)	2	2	1	1.7	ABC
Daconil 2787 FL	16 fl. oz. (21 day sch.)	1	3	2	2	ABCD
Banner	.5 fl. oz. (21 day sch.)	1	1	4	2	ABCD
Daconil 2787 FL	3 fl. oz. (10 day sch.)	1	3	2	2	ABCD
Daconil 2787 FL	6 fl. oz. (10 day sch.)	1	2	3	2	ABCD
CGA 71818	16 gm. ai. (21 day sch.)	2	2	2	2	ABCD
Cl. 3336	1 oz. (21 day sch.)	3	2	2	2.3	ABCD
Tersan 1991	2 oz. (21 day sch.)	2	3	2	2.3	ABCD
CGA 71818	8 gm. ai. (21 day sch.)	1	3	3	2.3	ABCD
Daconil 2787 FL	3 fl. oz. (10 day sch.)	4	2	1	2.3	ABCD
Duosan	3 oz. (21 day sch.)	2	2	3	2.3	ABCD
Daconil 2787 FL	3 fl. oz. (14 day sch.)	1	4	3	2.3	ABCD
Tersan 1991	1 oz. (21 day sch.)	2	1	4	2.3	ABCD
DAconil 2787 FL	8 fl. oz. (21 day sch.)	3	3	2	2.7	ABCDE
Daconil 2787 FL	2 fl. oz. (10 day sch.)	3	1	4	2.7	ABCDE
NC 28410	2 oz. ai. (14 day sch.)	1	4	3	2.7	ABCDE
Fungo 50	1 oz. (21 day sch.)	2	3	4	3	ABCDE
MF 654	1 oz. (14 day sch.)	4	3	3	3.3	BCDE
NC 28410	4 oz. ai. (14 day sch.)	2	4	4	3.3	BCDE
MF 654	1.5 oz. (21 day sch.)	5	4	2	3.7	CDE
Fungo 50	2 oz. (21 day sch.)	3	5	3	3.7	CDE
Cl. 3336	2 oz. (21 day sch.)	4	4	4	4	DE
BRC 227	.1 lb. ai./A (21 day sch.)	3	4	5	4	DE
Check	-	4	7	3	4.7	E

¹ Rates indicate formulation, except as otherwise noted.

² Treatments followed by the same letter are not significantly different from each other at the 5% level.

* Mild yellowing.

Upjohn Annual Bluegrass Fungicide Phytotoxicity-Dollar Spot Study - 1983
Hancock Turfgrass Research Center, MSU.

The 1983 Upjohn fungicide study was conducted on an annual bluegrass area at the Hancock center on the MSU campus. This simulated fairway area was irrigated as needed, moderately fertilized and mowed at 1/2" height of cut. The study was set up in three replications (6' x 9') of a randomized block design. All treatments were applied preventatively on July 14 with subsequent applications being made on July 28, August 12, August 25, and Sept. 8. The fungicides were applied with a CO₂ small-plot sprayer at a volume of 40 gal/acre at 30 PSI.

Dollar spot (*Moellerodiscus* sp., *Lanzia* sp.) disease pressure was moderate in the plot area this year with the greatest infection levels occurring in mid-August. Despite record temperatures, however, phytotoxicity was mild and occurred only after 3 applications had been made. The phytotoxicity effects were not evident following the last application on Sept. 8. No significant anthracnose infection was noted in the plot area this year.

Table 11. Upjohn Annual Bluegrass Fungicide Phytotoxicity-Dollar Spot Study - 1983. Hancock Turfgrass Research Center, MSU. Dollar spot rating scale: 1 (no disease) - 9 (90% infection or greater). Rating date - 8/13/83.

Treatment	Rate/1000 ft ²	Repetition				DMR*
		I	II	III	AVE	
Bayleton	1/2 oz.	1	1	1	1	A
Acti-done TGF + Bayleton	.34 oz. + .5 oz.	1	1	1	1	A
Acti-done TGF + Daconil 2787 FL	.34 oz. + 1.5 fl. oz.	1	2	1	1.3	AB
Acti-done TGF + Acti-dione RZ	.34 oz. + .55 oz.	1	2	2	1.7	AB
Acti-dione RZ	.55 oz.	2	2	2	2	BC
Acti-dione TGF	.34 oz.	1	3	2	2	BC
Daconil 2787 F	1.5 fl. oz.	3	3	2	2.6	C
Check	-	5	5	4	4.7	D

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

Table 12. Ciba-Geigy Bentgrass Phytotoxicity Study - 1983. Hancock Turfgrass Research Center, MSU. Dollar spot rating scale: 1 (no disease) - 9 (90% infection or greater). Rating date - 9/2/83.

Treatment	Rate/1000 ft ²	Repetition				DMR**
		I	II	III	AVE	
Acti-dione TGF	.34 oz.	1	1	1	1	A
Bayleton	.5 oz.	1	1	1	1	A
Acti-dione TGF + Bayleton	.34 oz. + .5 oz.	1	1	1*	1	A
Acti-dione TGF + Acti-dione TZ	.34 oz. + .55 oz.	1	1*	1*	1	A
Acti-dione RZ	.55 oz.	1	1	1	1	A
Acti-dione TGF + Daconil 2787 FL	.34 oz. + 1.5 fl. oz.	1	2	1	1.3	AB
Daconil 2787 FL	1.5 fl. oz.	1	2	2	1.7	B
Check	-	3	4	3	3.3	C

* Light phytotoxicity (browning) noted.

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

Ciba-Geigy Bentgrass Phytotoxicity Study - 1983
Hancock Turfgrass Research Center, MSU

The Banner (CGA 64250 1.125 E) phytotoxicity studies were conducted on Emerald creeping bentgrass and on Fylking Kentucky bluegrass. Both studies were set up in a randomized block design with 3 replications. Treatments were applied with a CO₂ small-plot sprayer with 8002 E nozzle tips at a volume of 40 gal/acre. Treatments were applied on July 1, July 22, Aug. 12 and Sept. 2 with each fungicide rate being applied from one to four times.

In contrast to last year, no phytotoxicity was observed in either study this year. This finding was surprising in light of the extremely high temperatures we experienced this summer. Throughout the growing season, however, we did observe differences in dollar spot incidence between treatments in the bentgrass study. This data is presented in the following table, along with observed "greening" response we also observed.

Table 13. Ciba-Geigy Bentgrass Phytotoxicity Study - 1983. Hancock Turfgrass Research Center, MSU. Dollar spot rating scale: 1 (no disease) - 9 (90% infection or greater). Rating taken - 9/2/83.

Treatment	Rate/1000 ft ²	Repetition				DMR**
		I	II	III	AVE	
Banner	4 fl. oz. (7/1, 7/22)	1*	1*	1*	1	A
Banner	1 fl. oz. (7/1, 7/22, 8/12)	1	1	1	1	A
Banner	2 fl. oz. (7/1, 7/22, 8/12)	1	1	1	1	A
Banner	4 fl. oz. (7/1, 7/22, 8/12)	1*	1*	1*	1	A
Banner	1 fl. oz. (7/1, 7/23, 8/12, 9/2)	1	1	1	1	A
Banner	2 fl. oz. (7/1, 7/22, 8/12, 9/2)	1	1	1	1	A
Banner	4 fl. oz. (7/1, 7/22, 8/12, 9/2)	1	1*	1*	1	A
Banner	2 fl. oz. (7/1, 7/22)	3	2	1	2	AB
Banner	4 fl. oz. (7/1)	4	3	2	3	BC
Banner	1 fl. oz. (7/1, 7/22)	4	3	3	3.3	C
Banner	2 fl. oz. (7/1)	5	4	3	4	C
Banner	1 fl. oz. (7/1)	8	8	5	7	D
Check	-	9	9	8	8.7	E

* Greening effect

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

Yellow Tufts Fungicide Study - 1983
Hancock Turfgrass Research Center, MSU.

The 1983 Yellow Tufts fungicide study was conducted on a Penneagle creeping bentgrass putting green which was irrigated as needed, fertilized moderately and mowed at 1/4" height of cut. The study was laid out in three replications of a randomized block design with the initial treatments being applied curatively on Sept. 7. A subsequent application was made on October 3. Treatments were applied with a CO₂ small-plot sprayer at a volume of 40 gal/acre. The plots were rated on October 18.

No control of yellow tufts was achieved this year with the fungicides used in this experiment. Disease incidence throughout the duration of the study remained more or less constant in both the checks and the treated plots. No phytotoxicity or other fungicide effects were noted.

Table 14. Yellow Tufts Fungicide Study - 1983. Hancock Turfgrass Research Center, MSU. Rating scale - 1 (no disease) - 9 (90% infection or greater). Rating date- 10/18/83.

Treatment	Rate/1000 ft ²	Repetition				DRM*
		I	II	III	AVE	
SD-087353	1.5 oz.	6	4	3	4.3	A
SD-087353	.37 oz.	4	5	7	5.3	A
Banol	2 fl. oz.	6	7	4	5.7	A
SD-087353	.74 oz.	5	6	7	6	A
Subdue	1 fl. oz.	6	6	6	6	A
Check	-	6	6	6	6	A

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

Pythium Blight Fungicide Studies - 1983

The 1983 Pythium blight (Pythium spp.) fungicide tests were conducted at the Hancock Turfgrass Research Center on a Penncross creeping bentgrass green and an NK-200 perennial ryegrass simulated fairway area. The study was laid out in three replications of a randomized block design with treatments being applied preventatively with a CO₂ small-plot sprayer at a volume of 40 gal/acre. The studies were inoculated and treatments were applied initially on July 22 when weather conditions were optimum for disease development. No disease developed during this period so the studies were re-inoculated and subsequently re-treated on Aug. 18. After disease again failed to develop in either plot area, the studies were abandoned. No phytotoxicity or other fungicide effects were noted.

* Treatments included SD-087353 at 3 rates and Banol and Subdue at label rates.