

TURF DISEASE MANAGEMENT REPORT

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SNOW MOLD FUNGICIDE TRIALS - 1983-84

The 1983-1984 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 applications of a random block design on October 29, 1983 (Tables 1 and 2). The wettable powders and flowables were applied with a small-plot CO₂ sprayer at a volume of 40 gal/acre. The granular treatments were pre-weighed and applied by hand. The plots were rated immediately following the snow cover melt-off on April 13, 1984.

KENTUCKY BLUEGRASS MELTING-OUT FUNGICIDE TRIALS - 1984

The 1984 Drechslera poae (formerly Helminthosporium vagans) fungicide and fertilizer studies were conducted at the Hancock Turfgrass Research Center on the MSU campus on Kenblue Kentucky bluegrass maintained at 1 1/2" height of cut. The studies were set up in a randomized block design consisting of three replications/treatment with a plot size of 3' x 6' from the fungicide and fertility studies and 6' x 6' for the Daconil 2787 fl application timing study. All treatments (including fertilizers) were applied with a CO₂ small-plot sprayer at 30 PSI at a volume of 48 gal/acre.

Fungicide Study

Treatments were initiated curatively on May 10 with subsequent applications being made on 14, 21 and 30 day schedules as indicated in Table 3. The plots were rated on June 14, at which time the 14 day treatments had been applied 3 times, the 21 day treatments had been applied twice and the 30 day treatments had been applied twice.

Daconil 2787 Application Timing Study

Treatments were initiated during the fall of 1983 and carried over through the spring of 1984 as indicated in Tables 4 and 5. Applications were made on September 28, October 24, November 18, April 19, and May 17. The plots were rated for disease level and overall turf quality on June 1.

Fertility Application Timing Study

Recent research at MSU suggests that melting-out (Drechslera poae) severity can be reduced through the application of fertilizer dormantly and in the spring. This study was established to further test this hypothesis. Urea was applied foliarly as described above at the times indicated in Tables 6 and 7. The dormant application was made on February 24. The plots were rated for disease level and overall turf quality on June 1, 1984.

ANTHRACNOSE FUNGICIDE STUDY - 1984

Glen Gary Golf Course, Holland, Ohio

The Glen Gary anthracnose (Colletotrichum graminicola) fungicide study was established on a moderately fertilized annual bluegrass (Poa annua) fairway. 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 30 PSI and 48 gal/acre. Granular treatments were pre-weighed and applied by hand. The area was mowed regularly at approximately 1/2" height of cut.

Initial applications were made on June 28 with subsequent applications being made according to the intervals cited in Table 8. When the rating was taken (August 23) the 14 day treatments had been applied 4 times. The 21 day treatments had been applied 3 times, and the 28 day treatments had been applied twice.

As Table 8 indicates, disease infection reached only moderate levels this year.

DOLLAR SPOT FUNGICIDE STUDY - 1984

Hancock Turfgrass Research Center

The 1984 dollar spot (Moellerodiscus sp., Lanzia sp.) fungicide study was established on an irrigated Emerald creeping bentgrass green. The study was established in three replicates of a random block design with a 3' X 6' plot size. All liquid applications were made with a CO₂ small plot sprayer at 30 psi and 48 gal/acre. Granular treatments were pre-weighed and hand applied. Treatments were applied curatively beginning on August 16. By the time of the enclosed rating (Sept. 26), the 10 day treatments had been applied 4 times, the 14 day treatments were applied 3 times, the 21 day treatments had been applied twice and the 28 day treatments were applied twice.

As can be seen from Table 9, this was a moderate disease year on our bentgrass research area, as well as elsewhere in the Michigan area.

Table 1. Boyne Highlands Snow Mold Study - 1983-84. Percent area infected with all snow molds. (Typhula incarnata, Typhula ishkariensis, Gerlachia nivalis). Ratings taken 4/13/84. Percent plot area infected.

Treatment	Rate/1000 ft ²	Rep. I	Rep II	Rep. III	Ave.	DMR
Calo-Gran	6 lbs.	0	0	0	0	A
Calo-Clor	3 oz.	0	0	0	0	A
Daconil 2787 fl + Tersan 1991	8 fl. oz + 4 fl oz.	0	0	0	0	A
DS-57654	8 oz	0	0	0	0	A
MF-701 (GR)	24 oz.	0	0	0	0	A
Daconil 2787 F1	16 fl oz	1	0	1	.7	A
Daconil 2787 F1	8 fl oz	4	0	0	1.3	A
Daconil 2787 + Tersan 1991	8 fl oz + 2 oz	0	5	1	2	A
Daconil 2787 + Tersan 1991	8 fl oz + 1 oz	5	0	2	2.3	A
PMAS + Clearspray	2 fl oz + 6 fl oz	5	5	1	3.7	A
Scotts F + FII	2X	10	5	0	5	A
BRC 227	8.32 gm ai	6	10	5	7	A
Scotts F + FII	1X	20	10	1	10.3	A
BRC 227	4.16 gm ai	25	40	30	31.7	B
Check	---	80	60	15	51.7	C
Clearspray	6 fl oz	70	80	40	63.3	C

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

Table 2. Boyne Highlands Snow Mold Study - 1983-84. Percent area infected with gray snow molds. (Typhula incarnata, Typhula ishkariensis). Ratings taken 4/13/84. Percent plot area infected.

Treatment	Rate/1000 ft ²	Rep. I	Rep. II	Rep. III	Ave.	DMR
Calo-Gran	6 lbs.	0	0	0	0	A
Calo-Clor	3 oz.	0	0	0	0	A
Daconil 2787 FL + Tersan 1991	8 fl. oz + 4 fl oz.	0	0	0	0	A
DS-57654	8 oz	0	0	0	0	A
MF-701 (GR)	24 oz.	0	0	0	0	A
Daconil 2787 F1	16 fl oz	1	0	0	0.3	A
Daconil 2787 F1	8 fl oz	2	0	0	0.7	A
Daconil 2787 + Tersan 1991	8 fl oz + 2 oz	0	5	1	2	A
Daconil 2787 + Tersan 1991	8 fl oz + 1 oz	5	0	2	2.3	A
PMAS + Clearspray	2 fl oz + 6 fl oz	5	5	1	3.7	A
Scotts F + FII	2X	10	5	0	5	A
BRC 227	8.32 gm ai	4	10	5	6.3	A
Scotts F + FII	1X	20	10	1	10.3	A
BRC 227	4.16 gm ai	25	40	30	31.7	B
Check	---	75	60	15	50	C
Clearspray	6 fl oz	70	70	30	56.7	C

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

Table 3. Drechslera (Melting-out) Fungicide Study - 1984. Hancock Turf-grass Research Center, MSU. Disease rating: 1 (no disease) - 9 (90% infection or greater). Plots rated on 6/14/84.

Treatment	Rate/1000 ft ²	Interval	Replication No.			Ave	DMR
			I	II	III		
DPX H6573	1 oz ai	21 day	2	2	2	2	A
Chipco 26019	1.5 oz	21 day	2	2	3	2.3	AB
Banner/Manzate 200	2 fl oz + 4 oz	21 day	2	2	3	2.3	ABC
Prochloraz/ Manzate 200	1 oz ai + 1.6 oz ai	21 day	2	3	3	2.7	ABC
Prochloraz	2 oz ai	21 day	3	2	3	2.7	ABC
CGA-448	48 gm ai	21 day	2	3	3	2.7	ABC
CGA-448	24 gm ai	21 day	2	3	3	2.7	ABC
Dyrene 4F	1 oz ai	30 day	4	2	3	3	ABC
BAS 45406 F	2.8 fl oz	21 day	2	2	5	3	ABC
Banner	4 fl oz	21 day	4	2	3	3	ABC
XE 779	.0625 lb ai	21 day	6	2	2	3.3	ABCD
Banner/ Chlorothalonil	6 oz	21 day	3	4	3	3.3	ABCD
Dyrene F	.5 oz ai	21 day	5	2	4	3.7	ABCD
DPX H6573	2 oz ai	21 day	4	4	3	3.7	ABCD
XE 779	.031 lb ai	21 day	6	3	3	4	ABCD
XE 779	.0078 lb ai	21 day	3	5	4	4	ABCD
Prochloraz	1 oz ai	21 day	6	3	3	4	ABCD
DPX H6573	.5 oz ai	21 day	3	4	5	4	ABCD
CGA-71818	16 gm ai	21 day	5	4	3	4	ABCD
CGA-71818	8 gm ai	21 day	6	3	3	4	ABCD
XE 779	.0156 lb ai	21 day	4	5	4	4.3	ABCD
Dyrene 4F	.5 oz ai	14 day	4	6	4	4.7	BCD
BAS 45406 F	1.4 fl oz	21 day	3	5	6	4.7	BCD
BAS 45406 F	4.2 fl oz	21 day	3	5	6	4.7	BCD
DPX H6573	.25 oz ai	21 day	7	3	5	5	CD
Check	---	----	7	4	6	5.7	D

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

Table 4. Drechslera (Melting-Out) - Daconil 2787 Application Timing Study, 1984. Hancock Turfgrass Research Center. Disease rating 1 = no disease, to 9 = 90% infection or greater. Rating date - 6/1/84.

Treatment	Rate/1000 ft ²	Month of Treatment	Replication No.			Ave	DMR
			I	II	III		
Daconil 2787 FL	9 fl oz	April, May	2	3	3	2.7	A
Daconil 2787 FL	9 fl oz	Sept, Oct	3	3	4	3.3	AB
Daconil 2787 FL	9 fl oz	Sept, Oct, Nov	6	3	3	4	ABC
Daconil 2787 FL	6 fl oz	Oct, Nov	3	7	3	4.3	ABCD
Daconil 2787 FL	6 fl oz	April, May	2	8	3	4.3	ABCD
Daconil 2787 FL	6 fl oz	April	4	7	3	4.7	ABCD
Daconil 2787 FL	9 fl oz	April	4	3	8	5	ABCD
Daconil 2787 FL	3 fl oz	April, May	2	8	6	5.3	ABCD
Daconil 2787 FL	3 fl oz	April	4	5	7	5.3	ABCD
Daconil 2787 FL	9 fl oz	Oct, Nov	3	8	5	5.3	ABCD
Daconil 2787 FL	6 fl oz	Sept, Oct	2	7	7	5.3	ABCD
Daconil 2787 FL	6 fl oz	Oct	5	8	3	5.3	ABCD
Daconil 2787 FL	3 fl oz	Sept	6	7	4	5.7	ABCD
Daconil 2787 FL	9 fl oz	Oct	4	7	6	5.7	ABCD
Daconil 2787 FL	9 fl oz	Nov	5	7	7	5.7	ABCD
Daconil 2787 FL	9 fl oz	Nov, April	5	8	4	5.7	ABCD
Daconil 2787 FL	3 fl oz	Nov	6	4	8	6	BCD
Daconil 2787 FL	6 fl oz	Sept	7	6	6	6.3	BCD
Daconil 2787 FL	6 fl oz	Sept, Oct, Nov	7	5	7	6.3	BCD
Daconil 2787 FL	3 fl oz	Oct, Nov	5	6	8	6.3	BCD
Daconil 2787 FL	3 fl oz	Sept, Oct	4	8	8	6.7	BCD
Check	---	---	7	6	7	6.7	BCD
Daconil 2787 FL	9 fl oz	Sept	7	7	7	7	CD
Daconil 2787 FL	3 fl oz	Oct	6	7	8	7	CD
Daconil 2787 FL	6 fl oz	Nov	6	8	7	7	CD
Daconil 2787 FL	6 fl oz	Nov, April	7	7	7	7	CD
Daconil 2787 FL	3 fl oz	Nov, April	8	7	7	7.3	CD
Daconil 2787 FL	3 fl oz	Sept, Oct, Nov	8	7	8	7.7	D

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

Table 5. Drechslera (Melting-Out) - Daconil 2787 Application Timing Study, 1984. Hancock Turfgrass Research Center. Quality rating 9 (best) - 1 (worst). Rating date - 6/1/84.

Treatment	Rate/1000 ft ²	Month of Treatment	Replication No.			Ave	DMR
			I	II	III		
Daconil 2787 FL	9 fl oz	Sept, Oct, Nov	8	8	8	8	A
Daconil 2787 FL	9 fl oz	April, May	8	7	8	7.7	AB
Daconil 2787 FL	6 fl oz	Oct, Nov	9	5	8	7.3	ABC
Daconil 2787 FL	6 fl oz	April, May	7	6	8	7	ABCD
Daconil 2787 FL	6 fl oz	Sept, Oct, Nov	5	8	8	7	ABCD
Daconil 2787 FL	9 fl oz	Sept, Oct	6	8	6	6.7	ABCDE
Daconil 2787 FL	9 fl oz	Oct	5	6	8	6.3	ABCDE
Daconil 2787 FL	9 fl oz	Nov, April	7	4	8	6.3	ABCDE
Daconil 2787 FL	6 fl oz	April	5	6	8	6.3	ABCDE
Daconil 2787 FL	6 fl oz	Sept, Oct	8	5	4	5.7	ABCDE
Daconil 2787 FL	9 fl oz	Oct, Nov	8	5	4	5.7	ABCDE
Daconil 2787 FL	9 fl oz	April	5	8	4	5.7	ABCDE
Daconil 2787 FL	9 fl oz	Nov	7	5	4	5.3	ABCDE
Daconil 2787 FL	3 fl oz	April	7	5	4	5.3	ABCDE
Daconil 2787 FL	6 fl oz	Nov, April	5	6	4	5	ABCDE
Daconil 2787 FL	3 fl oz	April, May	4	4	7	5	ABCDE
Daconil 2787 FL	6 fl oz	Nov	6	5	4	5	ABCDE
Daconil 2787 FL	6 fl oz	Sept	3	6	5	4.7	ABCDE
Daconil 2787 FL	3 fl oz	Sept, Oct	6	5	3	4.7	ABCDE
Daconil 2787 FL	3 fl oz	Nov	5	7	1	4.3	BCDE
Daconil 2787 FL	3 fl oz	Oct, Nov	5	3	5	4.3	BCDE
Daconil 2787 FL	9 fl oz	Sept	4	4	4	4	CDE
Daconil 2787 FL	6 fl oz	Oct	5	1	6	4	CDE
Daconil 2787 FL	---	---	1	4	7	4	CDE
Daconil 2787 FL	3 fl oz	Sept	2	4	5	3.7	DE
Daconil 2787 FL	3 fl oz	Sept, Oct, Nov	3	5	3	3.7	DE
Daconil 2787 FL	3 fl oz	Nov, April	3	2	6	3.7	DE
Daconil 2787 FL	3 fl oz	Oct	4	4	2	3.3	E

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

Table 6. Fertility application timing - melting out disease study, 1984. Hancock Turfgrass Research Center. Melting-out disease rating scale: 1 (no disease) - 9 (90% infection or greater). Rating date: 6/1/84.

Treatment Date	lbs N/1000 ft ² (urea)	Replication No.			Ave	DMR
		I	II	III		
2/24, 4/19/ 5/16	1, 3/4, 3/4	4	4	4	4	A
4/19, 5/16	3/4, 3/4	7	7	4	6	AB
4/19	3/4	8	5	8	7	B
2/24	1	7	7	8	7.3	B
2/24, 4/19	1, 3/4	8	7	7	7.7	B
No fertilizer	---	7	8	8	7.7	B

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

Table 7. Turf Quality Rating Scale: 9 (Best) - 1 (Worst)

Treatment Date	lbs N/1000 ft ² (urea)	Replication No.			Ave	DMR
		I	II	III		
2/24, 4/19, 5/16	1, 3/4, 3/4	9	8	8	8.3	A
4/19, 5/16	3/4, 3/4	6	6	8	6.7	A
4/19	3/4	5	5	4	4.7	B
2/24, 4/19	1, 3/4	4	5	4	4.3	B
2/24	1	4	3	2	3	BC
No fertilizer	---	4	1	1	2	C

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

Table 8. Glen Gary Annual Bluegrass Anthracnose Fungicide Studies 1984.
Glen Gary Golf Course, Holland, Ohio. Rating Scale - Percent
Plot Area Infected. Rating Date 8/23/84

Treatment	Rate/1000 ft ²	Interval	Repetition			Ave.	DMR
			I	II	III		
S-640	1.1 fl oz	14 day	0	0	0	0	A
S-640	2.2 fl oz	14 day	0	0	0	0	A
DPX H6573	.25 oz ai	21 day	0	0	0	0	A
DPX H6573	.5 oz ai	21 day	0	0	0	0	A
DPX H6573	2 oz ai	21 day	0	0	0	0	A
BAS 45406 F	4.2 fl oz	21 day	0	0	0	0	A
Prochloraz	3 oz ai	21 day	0	0	0	0	A
XE-779	.0078 lb ai	21 day	0	0	0	0	A
XE-779	0.031 lb ai	21 day	0	0**	0	0	A
Fungo + Vorlan	2 oz + 2 oz	21 day	0	0	0	0	A
Manzate 200	2.6 oz	21 day	0	0	0	0	A
Fungo	2 oz	21 day	0	0	0	0	A
DPX H6573	1 oz ai	21 day	0	2	0	.7	A
CGA-448	24 gm ai	21 day	0	0	2	.7	A
Banner	1 fl oz	21 day	0	0	2	.7	A
Banner/ Chlorothalonil	3 oz	21 day	0	2	0	.7	A
BAS 45406 F	2.8 fl oz	21 day	0	0	2	.7	A
Bayleton .5G	.25 oz ai	28 day	0	2	0	.7	A
Cl 3336	1 oz	21 day	0	2	0	.7	A
Banner	2 oz	21 day	0	2	0	.7	A
CGA 71818	16 gm ai	21 day	2	0	0	.7	A
Bayleton	1 oz	21 day	0	2	2	1.3	A
CGA-448	12 gm ai	21 day	0	5	0	1.7	A
Banner/Manzate	1.33 fl oz + 2.66 oz	21 day	0	0	5	1.7	A
CGA-71818	8 gm ai	21 day	0	5	0	1.7	A
XE 779*	.0625 lb ai	21 day	0	0	5**	1.7	A
Tersan 1991	1 oz	21 day	0	10	2	4	AB
Bayleton TOF	.125 oz ai	14 day	5	5	7	5.7	AB
Bayleton TOF	.25 oz ai	28 day	0	20	0	6.7	AB
Bayleton .5G	.125 oz ai	14 day	5	15	0	6.7	AB
BAS 45406F	1.4 fl oz	21 day	5	25	0	10	AB
Fungo + Vorlan	1 oz + 1 oz	21 day	0	5	25	10	AB
XE-779	0.0156 lb ai	21 day	30	2	0	10.7	AB
Vorlan	2 oz	21 day	5	25	2	10.7	AB
Prochloraz	1.5 oz ai	21 day	0	0	50	16.7	ABC
Fungo	1 oz	21 day	40	10	0	16.7	ABC
Vorlan	1 oz	21 day	10	20	50	26.7	BC
Dac 2787	1.5 oz	21 day	0	2	80	27.3	BC
Check	---	---	15	20	80	38.3	C

* Applied once only due to phytotoxicity

**Greening effect noted

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

Table 9. Hancock Bentgrass Dollar Spot Fungicide Study - 1984. Hancock Turfgrass Research Center, MSU. Rating Scale: number of dollar spots/plot. Rating date: 9/26/84.

Treatment	Rate/1000 ft ²	Interval	Repetition			Ave.	DMR
			I	II	III		
CGA-448	12 gm ai	21 day	0	0	0	0	A
BAS-45406F	1.4 fl oz	21 day	0	0	0	0	A
BAS-45406F	4.2 fl oz	21 day	0	0	0	0	A
MF 690	2 oz	21 day	0	0	0	0	A
Chipco 26019	2 oz	21 day	0	0	0	0	A
XE 779	.0625 lb	21 day	0*	0**	0	0	A
Daconil 2787	3 fl oz	10 day	0	0	0	0	A
Chipco 26019	1.5 oz	21 day	1	0	0	.3	A
XE-779	.0078 lb	21 day	1	0	0	.3	A
DPX-H6573	.5 oz ai	21 day	0	1	0	.3	A
Bayleton WP	.5 oz	14 day	0	1	1	.7	A
CGA-71818	8 gm ai	21 day	0	2*	0	.7	A
Banner + Manzate	1.33 fl oz + 2.66 oz	21 day	3	0	0	1	A
Vorlan	1 oz	14 day	2	0	1	1	A
Vorlan	2 oz	14 day	3	0	0	1	A
Prochloraz	2.5 oz ai	21 day	0	3	0	1	A
Prochloraz + Tersan 1991	1 oz ai 1 oz	21 day	3	0	0	1	A
Clearys 3336	1 oz	14 day	3	0	0	1	A
DPX-H6573	1 oz ai	21 day	0*	3	0	1	A
Banner + Chlorothalonil	3 oz	21 day	0	2	2	1.3	A
MF 690	2 oz	14 day	0	4	0	1.3	A
Vorlan	2 oz	21 day	4	0	0	1.3	A
Tersan 1991	1 oz	14 day	2	2	0	1.3	A
XE-779	.0156 lb ai	21 day	0	3	1	1.3	A
DPX-H6573	.25 oz ai	21 day	0	5	0	1.7	A
Fungo	1 oz	14 day	0	5	0	1.7	A
DPX-H6573	2 oz ai	21 day	0*	5**	0**	1.7	A
Prochloraz	1.25 oz ai	21 day	0	3	4	2.3	A
Bayleton TOF	.125 oz ai	14 day	0	0	8	2.7	A
BAS 45406 F	2.8 fl oz	21 day	0	0	8	2.7	A
CGA-448	24 gm ai	21 day	0	0	10	3.3	A
Tersan 1991	1 oz	21 day	9	0	2	3.7	A
Daconil 2787	3 fl oz	14 day	10	0	2	4	A
Bayleton WP	1 oz	21 day	0	12	0	4	A
Bayleton GR	.25 oz ai	28 day	14	0	0	4.7	A
MF 690	1 oz	14 day	0	13	1	4.7	A
Daconil 2787	6 fl oz	14 day	0	10	5	5	A
CGA-71818	16 gm ai	21 day	0*	15**	0	5	A
Bayleton GR	.125 oz ai	14 day	13	4	0	5.7	A
XE-779	.031 lb ai	21 day	0	47	1*	16	AB
Bayleton TOF	.25 oz ai	28 day	6	44	0	16.7	AB
Manazate 200	2.66 oz	21 day	64	17	6	29	B
Daconil 2787	1.5 oz	21 day	22	71	7	33.3	BC
Check	--	--	10	29	113	50.7	C

* Indicates slight phytotoxicity

**Indicates moderate phytotoxicity

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