Turfgrass Disease Management Report - 1987

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Snow Mold Fungicide Trial - 1986-1987

Boyne Highlands Resort, Harbor Springs, MI

The 1986-87 snow mold fungicide studies were conducted at the Boyne Highlands Resort in Harbor Springs, MI on irrigated Penncross creeping bentgrass (Agrostis palustris) fairways which were mowed at ½" height of cut. Treatments were applied preventively to 6' x 9' plots in three replications of a random block design on November 2, 1986. The sprayable formulations were applied with a CO_2 small-plot sprayer at a volume of 48 gal/acre and 30 PSI. The granular treatments were pre-weighed and applied by hand. MF756 was applied only at the 2 highest rates due to a shortage of material. The plots were rated for disease on March 22, 1987 immediately following snow cover melt-off.

As can be seen from the controls (Table 1), disease pressure was very severe this year. There was, however, a good deal of variation in disease pressure within some of the listed treatments. The standard treatments (Calo-Clor, Calo-Gran, PMAS, Scotts F + F II, Daconil 2787 + Tersan 1991), continued to show consistently effective control of all three snow mold organisms (Typhula incarnata, Typhula ishikariensis, Fusarium nivale).

No phytotoxicity was observed.

Kentucky Bluegrass Melting-Out Fungicide Trail-1987

Hancock Turfgrass Research Center

The 1987 Dreschlera poae (formerly Helminthosporium vagans) fungicide studies were conducted at the Hancock Turfgrass Research Center on the MSU campus in E. Lansing, MI on irrigated Kenblue Kentucky bluegrass (Poa pratensis) turf maintained at 1½ height of cut. The study was set up in three replications of a random block design with a 3' x 6' plot size and buffer alleys between the plots. All treatment were applied with a CO_2 small-plot sprayer at 30 PSI at a volume of 48 gal/acre.

Treatments were initiated curatively on May 1 with subsequent applications being made on 14 and 21 day schedules as indicated on the data table (Table 2). The plots were rated on June 15 at which time the 10-14 day treatments had been applied 4 times (5/1, 5/13, 5/26, 6/10) and the 21 day treatments had been applied 3 times (5/1, 5/20, 6/10). Disease levels were low this year because of unusually warm and dry weather during May and June. Daconil 2787 and both formulations of Chipco 26019 continued to work well for control of melting-out, as did a new compound, RH 3486.

No phytotoxicity was observed.

Table 1. **Snow Mold Fungicide Trial 1986-1987**

Boyne Highlands Resort, Harbor Springs, MI

Percent plot area infected with all snow molds (Typhula incarnata, Typhula ishikariensis, Fusarium nivale).

Plots rated 3/22/87

TREATMENT	RATE/1000 ft^2	REP I	REP II	REP III	AVE	DMR[1]
Calo-Clor	3 oz.	0	0	5	1.7	A
Scotts F + FII	2 X	5	10	10	8.3	AB
Calogran	6 lbs.	10	10	15	8.3	AB
MF 755	3.2 oz.	10	10	10	10.0	ABC
Calo-Clor + spring fert.	3 oz + 1/2 #N*	15	5	15	11.6	ABCD
MF 755	9.6 oz.	10	15	15	13.3	ABCD
PMAS	2 fl. oz.	15	5	20	13.3	ABCD
PMAS + Clearspray	2 fl. oz. + 6 fl. oz.	15	15	10	13.3	ABCD
SN 596 + Prochloraz	2 oz. + 6 oz.	2	10	35	15.7	ABCD
SN 596 + SN 84364	2 oz. + 8 oz.	0	30	20	16.7	ABCD
PMAS + Spotrete + Clearspray	2 fl. oz. + 6 fl. oz. + 6 fl. oz.	15	20	15	16.7	ABCD
Daconil 2787(F) + Tersan 1991	8 fl. oz. + 2 oz.	10	25	20	18.3	ABCDEF
Prochloraz	6 fl. oz.	10	15	20	18.3	ABCDEF
PMAS + Spotrete + Clearspray + Fluf	2 fl. oz. + 6 fl. oz. + 6 fl. oz. + 1/2 #N	25	20	15	20.0	ABCDEF
PMAS + Fluf	2 fl. oz. + 1/2 #N	30	20	10	20.0	ABCDEF
Calo-Clor + fall fert.	3 oz. + 1/2 #N*	10	5	45	20.0	ABCDEF
MF 755	6.4 oz.	25	5	35	21.7	ABCDEFG
PMAS + Urea	2 fl. oz. + 1/2 #N	35	15	20	23.3	ABCDEFGH
Scotts F + F II	IX	25	30	15	23.3	ABCDEFGH
PMAS + Fluf + Clearspray	2 fl. oz. + 1/2 #N + 6 fl. oz.	25	27	30	27.3	ABCDEFGHI
PP 523 (SC) + X-77	4 gm. ai. + .05% v/v	10	45	30	28.3	ABCDEFGHI
Chipco 26019 (F)	2 oz. ai.	45	10	45	33.3	BCDEFGHIJ
Daconil 2787 (F)	16 fl. oz.	25	25	50	33.3	BCDEFGHIJ
Mon. 10707	1 oz. ai.	30	30	45	35.0	BCDEFGHIJ
Mon. 10707	4 oz. ai.	40	25	40	35.0	BCDEFGHIJ
MF 756	96 oz.	55	35	20	40.0	CDEFGHIJ
Mon. 10707	.5 oz. ai.	20	30	70	40.0	CDEFGHIJ
SN 596 (KWG 0519=summit)	4 oz.	60	20	40	40.0	CDEFGHIJ
Chipco 26019 (W)	2 oz. ai.	50	30	40	40.0	CDEFGHIJ
Caddy + Clearspray	1 fl. oz. + 6 fl. oz.	25	65	35	41.7	DEFGHIJ
Daconil 2787 (F)	8 fl. oz.	50	60	30	46.7	EFGHIJK
Mon. 10707	2 oz. ai.	50	55	40	48.3	FGHIJKL

Plots Rated 3/22/87 (cont.)

TREATMENT	RATE/1000 ft^2	REP I	REP II	REP III	AVE	DMR[1]
Lesco PCNB + 16-4-4	6 lbs.	80	35	30	48.3	FGHIJKL
PP523 (SC) + X-77	8 gm. ai. + .05% v/v	70	25	50	48.3	FGHIJKL
PP523 (SC) + X-77	6 gm. ai. + .05% v/v	40	60	50	50.0	GHIJKL
Chipco 26019 (F)	1 oz. ai.	60	50	45	51.7	HIJKL
Chipco 26019 (W)	1 oz. ai.	50	65	55	56.7	IJKLM
SN596 (KWG0519-Summit)	2 oz.	80	35	50	58.3	JKLM
SAN 619	3.5 gm. ai.	95	40	40	58.3	JKLM
Lesco PCNP (10G)	7.5 lbs.	85	35	55	58.3	JKLM
Lesco PCNP + 16-4-4	4 lbs.	75	35	70	60.0	JKLMN
SN 84364	8 oz.	40	80	65	61.7	JKLMN
Cadtete	8 lbs.	85	60	75	73.3	KLMN
Spotrete	6 fl. oz.	85	60	80	75.0	KLMN
Lesco PCNB (10G)	5 lbs.	95	65	70	76.7	KLMN
SAN 619	7 gm. ai.	95	70	80	81.7	MN
CHECK	-	98	90	75	87.7	N
MF 756	64 oz.	25	35	-	20* only 2 reps	

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

*The fertilizer used in combination with calo-clor was a blend of nitrogen carriers designed to mimic the fertilizer found in Scotts F + F II. The spring fertility was applied on the disease rating date (3/22/87) and these plots were evaluated during the second week of April at which time they showed darker color and more growth than did the Calo-Clor plots or the Calo-Clor + fert. (fall) plots.

Table 2. **Kentucky Bluegrass Melting-Out Fungicide Trial-1987**

Hancock Turfgrass Research Center, MSU, E. Lansing, MI

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

Plots rated 6/15/87

TREATMENT	RATE/1000 ft^2	INTERVAL	REP I	REP II	REP III	AVE	DMR[1]
Chipco 26019 (W)	2 oz	21 days	1	1	1	1.0	A
RH-3486	3 oz ai	"	1	1	2	1.3	AB
Rizolex + Chipco 26019 (W)	2 oz ai + 1 oz ai	"	1	1	2	1.3	AB
Chipco 26019 (F)	4 fl oz	"	1	2	2	1.6	AB
Dac 2787 (F)	6 fl oz	"	1	2	2	1.6	AB
PP523 (SC) + CH 26019 (W) + X-77	6 gmai + 2 oz + .05% v/v	"	2	1	2	1.6	AB
Chipco 26019 (W)	.5 oz ai	"	2	2	2	2.0	ABC
Chipco 26019 (F)	.5 oz ai	"	2	2	2	2.0	ABC
Dac 2787 (F) + SDS 66533	3 fl oz + .5 fl oz	10-14 days	2	2	2	2.0	ABC
Dac 2787 (F) + SDS 66533	6 fl oz + 1 fl oz	21 days	1	2	3	2.0	ABC
RH-3486	.75 oz ai	"	1	2	3	2.0	ABC
PP523 (SC) + Dac. 2787 (F)	6 gmai + 6 fl oz	"	2	2	2	2.0	ABC
Rizolex	2 oz ai	"	2	2	2	2.0	ABC
Dac 2787 (F)	3 fl oz	14 days	2	2	3	2.3	ABCD
RH-3486	1.5 oz ai	21 days	2	2	3	2.3	ABCD
Rizolex	1 oz ai	"	2	2	3	2.3	ABCD
Rizolex	3 oz ai	"	2	3	2	2.3	ABCD
PP523 (SC) + Dithane M-45	6 gm ai + 4 oz	"	2	3	2	2.3	ABCD
Dithane M-45	4 oz	"	2	3	2	2.3	ABCD
DPX-H6573 + Tersan 1991	.125 oz ai + 1 oz ai	"	2	2	4	2.6	BCD
DPX-H6573 + Tersan 1991	.5 oz ai + 1 oz ai	"	2	3	3	2.6	BCD
DPX-H6573	.5 oz ai	"	2	3	3	2.6	BCD
Rizolex + Ditek	2 oz ai + .5 oz ai	"	2	3	3	2.6	BCD
Rizolex + Ditek	2 oz ai + 1 oz ai	"	2	3	3	2.6	BCD
Ditek	1 oz ai	"	2	4	3	3.0	CD
PP523 (SC)	6 gm ai	"	3	2	5	3.3	CD
DPX-H6573 + DPX 965	.125 oz ai + 1 oz ai	"	2	3	6	3.6	D
DPX-H6573 + Tersan 1991	.25 oz ai + 1 oz ai	"	2	4	5	3.6	D
Control	-	-	3	4	3	3.6	D

[1]Treatments followed by same letter are not significantly different from each other at 5% level of significance.

Anthracnose Fungicide Studies-1987

Oak Pointe Golf Course, Brighton, MI and Hancock Turfgrass Research Center, MSU, E. Lansing, MI

Two anthracnose (Colletotrichum graminicola) fungicide studies were conducted this year, one at Oak Pointe Golf Club in Brighton, MI and another at the Hancock Turfgrass Research Center on the MSU campus. Both studies were conducted on moderately fertilized, irrigated annual bluegrass (Poa annua) fairways in three replications of a random block design with 6' x 9' plots. All applications were made with a CO_2 small-plot sprayer at 30 PSI and 48 gal/acre. Both fairway areas were mowed at ½" height of cut.

Initial applications were made preventively on June 25 (Oak Pointe) and June 18 (Hancock Center). Subsequent applications were made at the intervals indicated on the data table. When the disease ratings were taken at the Oak Pointe site (Aug. 28) the 14 day treatments had been applied 5 times (6/25, 7/9, 7/23, 8/6, 8/17) and the 21 day treatments had been applied 3 time (6/25, 7/16, 8/6), except as noted on the data table (Table 3).

Despite the hot, dry weather we experienced this summer, anthracnose pressure was light to moderate in this study. This might be attributable to reduced inoculum levels resulting from fairway fungicide applications in previous years. As the data shows, a number of experimental compounds (DPX-H6573, PP523, HWG1608) look promising for anthracnose control, as Tersan 1991 continues to perform well. Among the other standard fungicides, Rubigan performed moderately well, however, Bayleton proved less effective than anticipated this year.

Following the second 21 day application a mild phytotoxicity (yellowing) was observed in the HWG1608 (14 gm.ai.) treatment. Mild phytoxicity was also observed on other treatments at the time of the 8/28 disease rating, as indicated on the data table.

As stated previously, this anthracnose study was duplicated on the Hancock Turfgrass Research Center on the MSU campus. Disease levels, however, remained very low in the controls (10% or less) throughout the summer, so no data was available.

Emerald Creeping Bentgrass Dollar Spot Fungicide Study-1987

Hancock Turfgrass Research Center, MSU, E. Lansing, MI

The 1987 dollar spot (Moellerodiscus spp., Lanzia spp.) fungicide study was conducted on a moderately fertilized, irrigated Emerald creeping bentgrass (Agrostis palustris) green at the Hancock Turfgrass Research Center on the MSU campus. Treatments were applied preventively in three replications of a random block design (3' x 6' plots) using a CO_2 small-plot sprayer at a volume of 48 gal/acre and 30 PSI. Granular treatments were pre-weighed and applied by hand.

Initial treatments were applied preventively on July 10. By the final rating date (9/7), the 14 day treatments had been applied four times (7/10, 7/28, 8/12, 9/1) and the 21 day treatments had been applied three time (7/10, 7/31, 8/20) (Table 4). Exceptions are noted on the data table.

Table 3. **Anthracnose Fungicide Trial-1987**

Oak Pointe Golf Club, Brighton, MI

Disease rating scale: 0 (no disease) -9 (90% infection or greater)

Plots rated 8/28/87

TREATMENT	RATE/1000 ft^2	INTERVAL	I	II	III	AVE	DMR[1]
DPX-H6573 + Tersan 1991	.25 oz ai + 1 oz ai	21 days	0	0	0	0	A
PP523 (SC) + X-77	6 gm ai + .05% v/v	"	0*	0	0*	0	A
PP523 (SC) + X-77	8 gm ai + .05% v/v	"	0*	0	0	0	A
HWG1608 (250EC)	14 gm ai	"	0	0	0	0	A
RH-3486	3 oz ai	"	0	0	0	0	A
Prochloraz + SN596	3 fl oz + .5 oz	"	1	0	0	.3	AB
PP523 (SC) + X-77	4 gm ai + .05% v/v	"	0	0*	1	.3	AB
PP523 (G) + X-77	8 gm ai + .05% v/v	"	1	0	0	.3	AB
HWG1608 (250EC)	7 gm ai	"	1	0	0	.3	AB
DPX-H6573 + DPX 965	.03 oz ai + 1 oz ai	"	0	1	0	.3	AB
DPX-H6573 + Tersan 1991	.03 oz ai + 1 oz ai	"	1	0	0	.3	AB
DPX-H6573 + Tersan 1991	.06 oz ai + 1 oz ai	"	0	0	1	.3	AB
DPX-H6573	.25 oz ai	"	0	1	0	.3	AB
Rizolex + Ditek	2 oz ai + 1 oz ai	"	0	1	0	.3	AB
Tersan 1991	.5 oz ai	"	0	0	1	.3	AB
Dac. 2787 (F)	3 fl oz	14 days	1	1	0	.6	ABC
Dac. 2787 (F) + SDS66533	6 fl oz + 1 fl oz	21 days	2	0	0	.6	ABC
Prochloraz	4.5 fl oz	"	1	1	0	.6	ABC
FBC 39865	1 oz	"	1	0	1	.6	ABC
EXP 2185A	.4 oz ai	"	1	0	1	.6	ABC
PP523 (SC) + X-77	2 gm ai + .05% v/v	"	0*	1	1	.6	ABC
DPX-H6573 + Tersan 1991	.125 oz ai + 1 oz ai	"	0	2	0	.6	ABC
Rizolex + CH26019 (W)	2 oz ai + 1 oz ai	"	1	1	0	.6	ABC
Tersan 1991	1 oz ai	"	0	1	1	.6	ABC
Rubigan (W)	.2 oz	"	1	1	0	.6	ABC
Prochloraz + SN596	1.5 fl oz + .5 oz	"	2	0	1	1.0	ABCD
PP523 (W) + X-77	2 gm ai + .05% v/v	"	1	1	1	1.0	ABCD
RH-3486	1.5 oz ai	"	1	1	1	1.0	ABCD
Ditek	1 oz ai	"	1	1	1	1.0	ABCD
Dac. 2787 (F) + SDS 66533	3 fl oz + .5 fl oz	14 days	2	1	1	1.3	ABCDE
PP523 (W) + X-77	6 gm ai + .05% v/v	21 days	1	2	1	1.3	ABCDE
Bayleton TOF	50 oz	"	0	3	1	1.3	ABCDE
HWG 1608 (1.2EC)	7 gm. ai.	"	2	0	2	1.3	ABCDE
HWG 1608 (1.2EC)	14 gm ai.	"	2	1	1	1.3	ABCDE
STJ 3762 (250 EC)	14 gm. ai.	"	1	2	1	1.3	ABCDE
DPX-H6573	.06 oz ai	"	2	0	2	1.3	ABCDE
Rizolex + Ditek	2 oz ai + .5 oz ai	"	1	2	1	1.3	ABCDE
Rubigan (W)	.8 oz	"	1	1	2	1.3	ABCDE
Rubigan (W)[2]	2 oz	"	2	0	2	1.3	ABCDE
RH-3486	.75 oz. ai.	"	2	2	0	1.3	ABCDE

Plots rated 8/28/87 (cont.)

TREATMENT	RATE/1000 ft[2]	INTERVAL	I	II	III	AVE	DMR[1]
FBC 39865	.5 oz	"	3	1	1	1.6	ABCDEF
EXP2185A	.2 oz ai	"	2	1	2	1.6	ABCDEF
Baycor (300EC)	46.7 ml	"	1	1	3	1.6	ABCDEF
DPX-H6573	.25 oz ai	21 days	1	2	2	1.6	ABCDEF
Rizolex	3 oz ai	"	2	1	2	1.6	ABCDEF
Rubigan (W)	.4 oz	"	2	2	1	1.6	ABCDEF
Rubigan AS[2]	7.5 fl oz	"	2	2	1	1.6	ABCDEF
Tersan 1991[2]	4 oz	"	2	3	0	1.6	ABCDEF
Turfcide (G)	7.5 lbs	"	2	2	2	2.0	BCDEFG
EXP 2185A	.1 oz ai	"	2	4	0	2.0	BCDEFG
Baycor 300EC	23.3 ml	"	3	2	1	2.0	BCDEFG
Rizolex	2 oz ai	"	2	2	2	2.0	BCDEFG
Dac. 2787 (F)	6 fl oz	"	3	2	2	2.3	CDEFG
Bayleton (DF)	.25 oz ai	"	3	3	1	2.3	CDEFG
CH 26019 (F)	.5 oz ai	"	4	0	3	2.3	CDEFG
Bayleton TOF	2 oz	"	2	1	4	2.3	CDEFG
Rizolex	1 oz ai	"	2	3	2	2.3	CDEFG
SN596	1 oz	"	3	3	3	2.6	DEFG
Control	-	-	3	2	3	2.6	DEFG
Bayleton (1G)	25 oz	"	3	4	2	3.0	EFG
Banner[2]	1 fl oz	"	2	3	4	3.0	EFG
CH26019 (W)	.5 oz ai	"	3	4	3	3.3	FG
Turfcide (G)[2]	2 lbs	"	5	1	5	3.6	G

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

[2]Applied twice only (7/16, 8/6). Also, Turficide (EC) at 1.5 qt. rate not applied due to phytotoxicity.

*Mild phytotoxicity observed.

Table 4. **Dollar Spot Fungicide Trial-1987**

Hancock Turgrass Research Center, MSU, E. Lansing, MI

Number of dollar spots/plot

Rating date - 9/7/87

TREATMENT	RATE/1000 ft^2	INTERVAL	I	II	III	AVE	DMR[1]
Rizolex + CH 26019 (W)	2 oz ai + 1 oz ai	21 days	0	0	0	0	A
Baycor (300 EC)	14 gm. ai.	"	0	0	0	0	A
Bayleton (G)	25 oz	"	0*	0*	0*	0	A
Bayleton (G)	50 oz	"	0**	0*	0*	0	A
Bayleton TOF	1 oz	"	0	0	0*	0	A
Bayleton TOF	2 oz	"	0*	0*	0*	0	A
RH-3486	.75 oz	"	0	0	0	0	A
RH-3486	1.5 oz	"	0	0	0	0	A
RH-3486	3 oz	"	0	0	0	0	A
DPX-H6573 + Tersan 1991	.125 oz ai + 1 oz ai	"	0*	0*	0	0	A
DPX-H6573 + Tersan 1991	.25 oz ai + 1 oz ai	"	0*	0*	0	0	A
DPX-H6573	.06 oz ai	"	0	0	0	0	A
DPX-H6573	.25 oz ai	"	0	0	0	0	A
EXP 2185A	.1 oz ai	"	0	0	0	0	A
EXP 2185A	.2 oz ai	"	0	0	0*	0	A
EXP 2185A	.4 oz ai	"	0*	0*	0**	0	A
PP523 (SC) + X-77	2 gm ai + .05% v/v	"	0*	0*	0	0	A
PP523 (SC) + X-77	4 gm ai + .05% v/v	"	0*	0*	0*	0	A
PP523 (SC) + X-77	6 gm ai + .05% v/v	"	0**	0**	0*	0	A
Dac 2787 (F) + SDS 66533	3 fl oz + 1 fl oz	14 days	0	0	0	0	A
Dac 2787 (F) + SDS 66533	6 fl oz + 2 fl oz	21 days	0	0	0	0	A
PP523 (W) + X-77	2 gm ai + .05% v/v	"	0*	0*	0*	0	A
PP523 (W) + X-77	4 gm ai + .05% v/v	"	0	0*	0	0	A
DPX-H6573	.125 oz ai	"	0	0	2	0.6	A
PP523 (W) + X-77	6 gm ai + .05% v/v	"	0**	0**	2*	0.6	A
Rizolex	2 oz ai	"	0	8	0	2.6	A
Baycor (300 EC)	7 gm. ai.	"	0	2	10	3.0	A
HWG 1608 (1.2EC)	14 gm ai	"	0	0	14^A	4.6	A
Banner	1 fl oz	"	6	0	12	6.0	A
Rizolex	3 oz ai	"	0	2	20	7.3	A
Rizolex + Ditek	2 oz ai + .5 oz ai	"	15	0	8	7.6	A
DPX-H6573 + Tersan 1991	.06 oz ai + 1 oz ai	"	15	0	9	8.0	A
Chipco 26019 (F)	4 fl oz	"	30	0	0	10.0	A
Rizolex + Ditek	2 oz ai + 1 oz ai	"	27	12	0	13.0	A
Dac 2787 (720F)	2 fl oz	14 days	14	3	33	16.6	AB
Daconil 2787 (F)	6 fl oz	21 days	7	43^A	0	16.6	AB
DPX-H6573 + DPX 965	.3 oz ai + 1 oz ai	"	41	20	6	22.3	AB
Rubigan (W)	.4 oz	"	4	27	75	35.3	ABC
HWG 1608 (1.2EC)	7 gm ai	"	22^B	2	83	35.6	ABC

Rating date - 9/7/87 (cont.)

TREATMENT	RATE/1000 ft^2	INTERVAL	I	II	III	AVE	DMR[1]
Daconil 2787 (F)	3 fl oz	14 days	60[A]	0	65	41.6	ABC
DPX-H6573 + Tersan 1991	.03 oz ai + 1 oz ai	21 days	39	21	90	50.0	ABC
STJ 3762 (250EC)	14 gm. ai.	21 days	125	5	25[B]	51.6	ABC
SDS 66518 (Dac 90DG)	1.75 oz	14 days	69	40	30	53.0	ABC
SDS 63539 (Dac S)	6 fl oz	"	22	127	36	61.6	ABC
Rizolex	1 oz ai	21 days	49	58	95	67.3	ABC
HWG 1608 (250EC)[C]	14 gm. ai.	"	62	95	85	80.6	BC
Chipco 26019 (F)	.5 oz ai	"	115	47	110	90.6	CD
Chipco 26019 (W)	.5 oz ai	"	130	75	70	91.6	CD
Turfcide (G)	7.5 lbs	"	200[Y]	80	20[Y]	100.0	CD
Control			110	56	275	147.0	DE
HWG 1608 (250EC)[C]	7 gm. ai.	"	137	260	95	164.0	E
Tersan 1991	1 oz	"	235	230	136	200.3	EF
Tersan 1991	4 oz	"	300+	225	150	225.0	FG
Turfcide (G)	2 lbs	"	250	160	300+	236.6	FG
Ditek	1 oz ai	"	275	230	300+	268.3	G

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

[A]Small spots representing a new outbreak of disease.

[B]Spots filling in w/disease progression arrested.

[C]These treatments applied 7/10 and 7/31 only due to unavailability of product.

[Y]Turf yellowed.

*Mild phytotoxicity.

**Moderately severe phytotoxicity.

The weather this summer was very conductive to dollar spot disease and disease pressure in this study was heavy. Bayleton and a number of experimental compounds were quite effective as were Banner and the high rate of Chipco 26019. Tersan 1991 was ineffective because the dollar spot strains on this plot area are benzimidazole-resistant.

A number of treatments produced phytotoxic responses including Bayleton, PP523, Nustar + Ter. 1991, and EXP 2185A at the high rate. Turfcide 2EC burned the turf so severely after one application that its use was discontinued.

Summer Patch Fungicide Studies

Orchard Lake Country Club, Orchard Lake, MI

The weather this summer was ideal for the development of summer patch (Phialophora graminicola) disease on annual bluegrass (Poa annua L.) fairways and greens. We conducted a curative disease study at Orchard lake Country Club on an irrigated annual bluegrass fairway which was mowed at ½". The study was set up in 3 replications of a random block design. Treatments were applied as soil drenches at a volume of 28 gal/1000 ft. Granular treatments were pre-weighed and applied by hand.

The initial application was made curatively on July 27 (except as noted on data table). Subsequent treatments were applied on a 14 day schedule (8/14, 8/24) and a 28 day schedule (8/24). It was our original intention to maintain a 21 day (rather than 28 day) schedule, but we mis-marked our calendar. We apologize for this error. By the date of the final rating (9/8), the 14 day treatments had been applied three times and the 28 day treatments had been applied twice.

Disease pressure was extremely heavy when this curative study was initiated. As a result, none of the treatments had promoted complete recovery by the end of the season when disease pressure was abating in the controls and the last rating was taken (Table 7). As the data of August 14 (Table 5) shows, the benzimidazole fungicides (Tersan 1991, Fungo 50) promoted the fastest recovery during the first 18 days after initial treatment. This corresponds with previous research findings from our summer patch field research in 1983. Bayleton and Rubigan were somewhat slower in arresting this disease out-break. By the August 24 rating, (Table 6) however, visual observation and data taken from the study showed that the benzimidazole fungicides were breaking down, with renewed yellowing of the turf and renewed disease activity, while Bayleton-treated plots continued to improve and Rubigan-treated plots remained essentially unchanged. Following re-application of treatments on August 24, the benzimidazole-treated plots began to recover once again (Table 7).

Some phytotoxicity was observed as noted on the data tables. Treatments which severely burned the turf as a result of the 7/27 application were not re-applied. These treatments, however, were applied to new plots at one-half label rates on 8/14 and 8/24 in an attempt to control the fertilizer burn during the hot weather. These plots were then rated for disease control on 9/8.

Table 8. **Summer Patch Fungicide Trial-1987**

Orchard Lake Country Club, Orchard Lake, MI

Percent recovery in each plot from 7/27/87-9/8/87

Rating Date: 9/8/87

TREATMENT	RATE/1000 ft[2]	INTERVAL	I	II	III	AVE	DMR[1]
Tersan 1991	6 oz	"	71	90	70	77.0	A
Prochloraz + SN596	3 fl oz + .5 oz	monthly	50	73	94	72.3	AB
SN 596	1 oz	"	70	65	80	71.7	AB
Tersan 1991	3 oz	"	46	80	88	71.3	AB
Prochloraz	4.5 fl oz	"	67	63	83	71.0	AB
Bayleton TOF	2 oz	"	59	56	80[Y]	65.0	ABC
PP523 (G)	8 gm ai	"	65	50	75[Y]	63.3	ABCD
HWG 1608 (1.2EC)	.375 oz ai	"	42	63	83	62.7	ABCD
PP523 (G)	6 gm ai	"	53	73[Y]	57	61.0	ABCDE
Bayleton (G)	1 oz ai	"	38	77[Y]	67	60.7	ABCDEF
Fungo 50	6 oz	"	25	77	80	60.7	ABCDEF
Rizolex + Ditek	2 oz ai + 1 oz ai	"	36	58	88	60.7	ABCDEF
PP523 (SC) + X-77	6 gm ai + .05% v/v	"	42	62	70	58.0	ABCDEF
DPX-H6573	.15 ox ai	"	50	73	50[Y]	57.7	ABCDEF
Rizolex + Ditek	2 oz ai + .5 oz ai	"	42	58	71[Y]	57.0	ABCDEFG
Bayleton TOF	4 oz	"	62	50	50[Y]	54.0	ABCDEFGH
RH 3486	3 oz ai	"	54	55	50	53.0	ABCDEFGH
Dac. 2787 (F) + SDS 66533	3 fl oz + 1 fl oz	"	47	60	50	52.3	ABCDEFGH
PP523 (SC) + X-77	8 gm ai + .05% v/v	"	43	60	50	51.0	ABCDEFGHI
PP523 (SC) + X-77	4 gm ai + .05% v/v	"	0	67	83	50.0	ABCDEFGHI
Rizolex + CH. 26019	2 oz ai + 1 oz ai	"	80	31	38	49.7	ABCDEFGHI
Dac. 2787 (F) + SDS 66533	6 fl oz + 2 fl oz	"	47	50	50	49.0	ABCDEFGHI
HWG 1608 (1.2EC)	.25 oz ai	"	20	36	88	48.0	ABCDEFGHI
Bayleton (G)	.5 oz ai	"	30	38	60	42.7	ABCDEFGHIJ
RH 3486	1.5 oz ai	"	47	67	13	42.3	ABCDEFGHIJ
Ditek	1 oz ai	"	46	25	56	42.3	ABCDEFGHIJ
Fungo 50	3 oz	"	13	75	33	40.3	ABCDEFGHIJ
Dac. 2787 (F)	6 fl oz	"	47	50	13	36.7	ABCDEFGHIJ
Control	-	-	53	29	27	36.3	ABCDEFGHIJ
FBC 39865	1 oz	monthly	43	20	42	35.0	ABCDEFGHIJ
Rizolex	3 oz ai	"	42	36	25	34.3	ABCDEFGHIJ
Rubigan (W)	1 oz	"	20	50	33	34.3	ABCDEFGHIJ
Agrilite w/Ureaformal	10 lbs (.9 lb N)	"	20	69	14	34.3	ABCDEFGHIJ
HWG 1608 (1.2EC)	.125 oz ai	"	20	27	55	34.0	ABCDEFGHIJ
Lawn Restore	10 lbs (.9 lb N)	"	30	36	30	32.0	BCDEFGHIJK
Fertilizer (20-0-2)[3]	.4 lb N	-	30	38	27	31.7	BCDEFGHIJK
Nutra Aid + Green Magic[3]	.2 qt + 1 qt	-	46	25	20	30.3	BCDEFGHIJK
Rizolex	1 oz ai	"	40	17	33	30.0	BCDEFGHIJK
PP523 (G)	4 gm ai	"	23	33	33	29.7	BCDEFGHIJK

Rating Dates: 7/27/87 and 9/8/87 (cont.)

TREATMENT	RATE/1000 ft^2	INTERVAL	I	II	III	AVE	DMR[1]
Rizolex	2 oz ai	"	36	23	29	29.3	BCDEFGHIJK
Rubigan (W)	.5 oz	"	39	27	17	27.7	CDEFGHIJK
Fertilizer (9-4-4)[3]	5 lbs (.45 lb N)	-	40	20	22	27.3	CDEFGHIJK
Agrilite w/o Ureaformal	10 lbs	monthly	13	69	0	27.3	CDEFGHIJK
Green Magic (20-0-2)[3]	1 qt (.4 lb N)	-	36	10	27	24.3	CDEFGHIJKL
Dyrene (F)	2 oz ai	14 days	-14	62	13	20.3	DEFGHIJKL
PMAS	1/2 fl oz	monthly	25	31	0	18.7	EFGHIJKL
Cleary Sulfur (F)	1 pt	"	-17	50	20	17.7	FGHIJKL
BioControl	1.6 oz each of A,B,C	"	13	11	20	14.7	GHIJKL
Dyrene (F)	4 oz ai	14 days	-29	67	0	12.7	HIJKL
Phosphorus (0-46-0)	1 lb	monthly	-17	27	25	11.7	HIJKL
Rubigan AS	7.5 fl oz	"	17	-20	38	11.7	HIJKL
Dyrene (F)	1 oz ai	14 days	11	36	-20	9.0	IJKL
Green Magic (20-0-2)[2]	2 qts (.8 lb N)	-	10	23	-8	8.3	IJKL
Fertilizer (20-0-2)[2]	.8 lb N	-	0	25	0	8.3	IJKL
Rubigan (W)	2 oz	"	14	-25[Y]	13[Y]	.7	JKL
Fertilizer (9-4-4)[2]	10 lbs (.9 lb N)	-	17	8	-38	-4.3	KL
Nutra Aid + Green Magic[2]	.4 qt + 2 qt (.8 lb N)	-	-50	33	-33	-16.7	L

[1]Treatments followed by same letter are not significantly different at 5% level of significance.

[2]Plots severly burned on 7/27 and no further applications made.

[3]Plots treated in two applications (8/14 and 8/24).
Ratings represent percent recovery between 8/14 and 9/8.

Brown Patch Fungicide Study-1987

Hancock Turfgrass Research Center, MSU, E. Lansing, MI

A replicated fungicide study was established on July 1 on Loretta perennial ryegrass (Lolium perenne L.) at the Hancock Turfgrass Research Center on the MSU campus. Treatments were applied to a heavily fertilized and irrigated plot area through July and August on 14 and 21 day schedules. Ratings of the plots were taken on numerous occasions, however, disease development was insufficient to yield meaningful data with the controls never exceeding 2% infection levels.

It was noted that PP523 + X-77 at all concentrations was phytotoxic to the turf after 3 applications (21 day schedule), producing a slower growing, darker green turf. No other phytotoxicity was observed.

ICI-PP523(SC) Phytotoxicity Studies-1987

Hancock Turfgrass Research Center, MSU, E. Lansing, MI

A phytotoxicity study was conducted at the Hancock Turfgrass Research Center on the MSU campus using PP523(.5SC) at 8 and 16 gm. ai/1000 ft^2 with X-77 surfactant added (.05% v/v). Non-replicated plots (3' x 6') were established on Emerald creeping bentgrass and on Kenblue Kentucky bluegrass. Treatments were applied foliarly with a CO_2 small-plot sprayer at 30 PSI and 48 gal/acre beginning on June 26. Treatments were applied on a 14 day schedule through August 20 for a total of 5 applications (6/26, 7/10, 7/28, 8/7, 8/20).

The creeping bentgrass seemed to be more prone toward phytotoxicity than the Kentucky bluegrass. On July 19, following the second application, moderately severe phytotoxicity appeared on the creeping bentgrass with both rates of PP523(.5SC). The Kentucky bluegrass showed no phytotoxicity on July 19. By the 8/7 application, however, the Kentucky bluegrass was showing moderately severe phytotoxicity on the high rate plots and mild phytotoxicity at the low rate while the creeping bentgrass was now severely burned at both rates. By the last application (8/20) the bentgrass plots and the high rate bluegrass plot were severely burned and this damage remained evident through the rest of the growing season until the turf went dormant. The low rate bluegrass plot exhibited moderate phytotoxicity and recovered by the end of the growing season.

Fungicides Tested In 1986-1987

PRODUCT	% ACTIVE INGREDIENT	PRODUCER
Agrilite w/o Ureafomal	natural fertilizer without urea formaldehyde fertilizer	The Andersons
Agrilite w/Ureaformal	natural fertilizer with urea formaldehyde fertilizer	The Andersons
Banner	1.1 EC	Ciba-Geigy Corp.
Baycor	300 EC	Mobay Chemical Corp.
Bayleton (G)	1 GR	Mobay Chemical Corp.
Bayleton TOF	25 DF	Mobay Chemical Corp.
BioControl	natural thatch control liquids	KLM Biosystems, Inc.
Caddy	20.1% F	W.A. Cleary Chemical Corp.
Cadtrete	2.5% Thiram, .38% Cadmium Chloride G	W.A. Cleary Chemical Corp.
Calo-Clor	90 W	Mallinckrodt, Inc.
Calo-Gran	2.7% GR	Mallinckrodt, Inc.
Chipco 26019 (F)	240 gm ai/L	Rhone Poulenc, Inc.
Chipco 26019 (W)	50 WP	Rhone Poulenc, Inc.
Clearspray	anti-transpirant	W.A. Cleary Chemical Corp.
Cleary Sulfur (F)	6 F	W.A. Cleary Chemical Corp.
Daconil 2787 (F)	40.4% FL	Fermenta Plant Protection Co.
Dithane M-45	80 W	Rohm & Haas
Ditek	80 DF	Sandoz Crop Protection
DPX-965	50 DF	E.I. DuPont de Nemours & Co.
DPX-H6573	20 DF	E.I. DuPont de Nemours & Co.
Dyrene (F)	38.5% F	Mobay Chemical Corp.
EXP. 2185A	100 gm ai/L	Rhone Poulenc, Inc.
FBC 39865	25 WP	Nor-Am Chemical Corp.
Fluf	18-0-0 flowable fertilizer	W.A. Cleary Chemical Corp.
Fungo 50	50 WP	Mallinckrodt, Inc.
Green Magic	20-0-2 fertilizer	Agro-Chem, Inc.
HWG 1608 (1.2EC)	1.2 EC	Mobay Chemical Corp.
HWG 1608 (250EC)	250 EC	Mobay Chemical Corp.
Lawn Restore	9-4-4 fertilizer	Ringer Corp.
Lesco PCNB	10 G	Lesco, Inc.
MF 755	50 W	Mallinckrodt, Inc.
MF 756	5 G	Mallinckrodt, Inc.
Mon. 10707	4 EC	Monsanto Corp.
Nutra-Aid	soil conditioner liquid	Agro-Chem, Inc.
PMAS	10% EC	W.A. Cleary Chemical Corp.
PP523 (G)	10 G	ICI Americas, Inc.
PP523 (SC)	.5 SC	ICI Americas, Inc.
Prochloraz	42.9% EC	Nor-Am Chemical Corp.
RH 3486	50 W	Rohm & Haas Chemical Corp.
Rizolex	75 W	Sandoz Crop Protection
Rubigan AS	11.6% F	Elanco
Rubigan (W)	50 WP	Elanco
SAN 619	40 WP	Zoecon Corp.

Fungicides Tested In 1986-1987 (cont.)

PRODUCT	% ACTIVE INGREDIENT	PRODUCER
Scotts F + F II	14-3-3 fert, 15.4% PCNB	O.M. Scotts & Sons
SDS 63539	Daconil S	Ferminta Plant Protection Co.
SDS 66518	90 DG	Ferminta Plant Protection Co.
SDS 66533	1 F	Fermenta Plant Protection Co.
SN 596	25 DF	Nor-Am Chemical Corp.
SN 84364	50 W	Nor-Am Chemical Corp.
Spotrete	4 F	W.A. Cleary Chemical Corp.
STJ 3762 (250 EC)	250 EC	Mobay Chemical Corp.
Tersan 1991	50 W	E.I. DuPont de Nemours & Co.
Turfcide (EC)	2 EC	Uniroyal Chemical Corp.
Turfcide (G)	10 G	Uniroyal Chemical Corp.
X-77	surfactant	Nor-Am Chemical Corp.