

Turfgrass Disease Management Report - 1989-90

Dr. J.M. Vargas
R. Detweiler
C. Golembiewski
K. Penner

Department of Botany and Plant Pathology
Michigan State University
East Lansing, MI 48824

Introduction

The fungicide field trials conducted this year were established under a standard format of 3 replications/treatment in a randomized block design. Plot size was generally 6' x 9', with the exception of the dollar spot trial on creeping bentgrass and the red-thread trial where a 3' x 6' plot was used and the melting-out and yellow tuft fungicide trials where a 6' x 6' plot size was used.

All sprayable (WP, WDG, FL, EC, etc.) treatments were applied with a CO₂, back-pack sprayer utilizing Tee-jet flat fan nozzles producing 48 gal. of spray volume/acre at 30 PSI. Granular (non-sprayable) treatments were pre-weighed and hand-applied.

Data were analyzed using an analysis of variance test and a Duncan's multiple range test at a 5% level of significance.

Snow Mold Fungicide Study - 1989-90

Boyne Highlands Resort, Harbor Springs, MI

The 1989-90 snow mold (*Typhula incarnata*, *Typhula ishkariensis*) fungicide study was conducted at the Boyne Highlands Resort in Harbor Springs, MI, on an irrigated, moderately fertilized Penncross (*Agrostis palustris*) creeping bentgrass/annual bluegrass (*Poa annua*) fairway which was mowed at ½" height of cut. Treatments were applied preventively on 10/28/89.

The plots were rated as soon as the snow cover melted off on 3/22/90. Both gray snow mold organisms were present in the plots this year, so both are cited in the data table (Table 1) where the total percent gray snow mold/plot is listed, followed, in parenthesis, by the percentage plot area infected by *Typhula ishkariensis*. The remainder of the infection was caused by *Typhula incarnata*.

As the data indicates (Table 1), most treatments gave significant control of gray snow mold this year, compared to the control. Especially encouraging for the future is the disease control obtained with non-mercury-based treatments such as various Terraclor formulations, Scotts F & FII, and the Daconil 2787 & Ch. 26019 combination.

Since we visited the plot site approximately 2 weeks after treatment application, we were able to take a phytotoxicity rating in the fall (11/13/89) as well as the following spring (3/22/90). Both ratings are recorded on data Table 1.

Table 1. Snow Mold Fungicide Study - 1989-90

Boyne Highlands Resort, Harbor Springs, MI
Percent plot area infected with gray snow mold
(*Typhula incarnata*, *Typhula ishkariensis*) on 3/22/90

Treatment	Rate/1000 ft ^{2b}	I		II		III	Combined AVE	DMR ^a
		incar. ishi.	incar. ishi.	incar. ishi.	incar. ishi.			
Ch. 26019 + D. 2787	8 fl oz + 8 fl oz	0	0	0	0	0	0 ^h	D
Terraclor(DF)	18 oz	0	0	0	0	0	0 ^c	D
Calo Gran	6 lbs	0	0	0	0	0	0 ^{cd}	D
Scotts F+FII	2 x	0	0	0	0	0	0 ^{gh}	D
SAN 832F	63.78 gm.ai.	0	.1	0	0	0	.03	D
SAN 832F	85.04 gm.ai.	0	0	0	0	.1	.03 ^c	D
Terraclor(DF)	12 oz	0	0	.1	0	.1	.07	D
Rhizolex	85.05 gm.ai.	0	.2	0	0	0	.07	D
Terraclor(W)	16 oz	0	.2	0	0	.1	.13 ^c	D
Prochloraz + Flutolanil	2 oz.ai. + 2 oz.ai	0	0	0	1	0	.3 ^c	D
Calo-Clor	3 oz	0	0	0	0	0	.3 ^{def}	D
Terraclor(W)	8 oz	0	1	.1	0	0	.33 ^c	D
Terraclor(DF)	24 oz	0	0	0	.2	1	.37 ^c	D
Terraclor(W)	12 oz	2	0	0	0	0	.7	D
Ch.26019 + D.2787	2 fl g + 8 fl oz	0	.2	0	3	0	1.1	D
SDS66791	10 oz	.1	.2	0	0	0	1.4	D

Table 1. Snow Mold Fungicide Study - 1989-90 (cont.)

Treatment	Rate/1000 ft ^{2b}	I		II		III		Combined AVE	DMR ^a
		incar.	ishi.	incar.	ishi.	incar.	ishi.		
CGA-455(W)	16 gm.ai	0	0	.1	0	5	0	1.7	CD
Lesco 001880	7.5 lbs	.1	0	2	3	.2	0	1.8	CD
Lesco 017720	6 lbs	.5	0	.5	0	4.5	.5	2 ^{gh}	CD
SAN 619F	3.78 gm.ai.	.1	2	0	2	2	1	2.4	CD
ICIA 0523	8 gm.ai.	3	1	.2	0	0	4	2.7	CD
Scotts F+FII	1 X	0	.2	5	2	2	0	3 ^{gh}	CD
SAN 619F	7.56 gm.ai.	1	1	1	2	4	1	3.3 ^c	CD
CGA 455	8 gm.ai.	.5	0	0	.1	10	0	3.5	CD
Ch. 26019	3 oz.ai	1	1	0	0	1	9	4 ^{cd}	CD
G. 696	2 lbs	1	3	0	0	4	4	4 ^{ce}	CD
T. 1991 + D. 2787	2 oz + 8 fl oz	0	10	0	2	.1	0	4 ^h	CD
SDS 66791	6 oz	.1	0	.5	0	20	5	8.6 ^h	CD
Banner	16 gm.ai.	1	0	20	10	2	0	11	BCD
Lesco 017720	4 lbs	5	0	14	1	14	1	11.7 ^{gh}	BCD
G 696	1 lb	9	1	0	.2	15	10	11.7 ^{ce}	BCD
CGA-455(G)	16 gm.ai.	35	0	0	0	7	0	14 ^h	BCD
PMAS	2 fl oz	.2	0	0	0	40	5	15.1 ^{def}	BCD
EXP 10069A	3 oz.ai.	10	20	2	1	10	5	16	BCD
S-2621	3 X	2	18	1	9	25	5	20	BCD
Ch. 26019	2 oz.ai	10	30	20	0	8	2	23.4	BC
SDS66811	3 oz	18	2	30	5	30	5	30	B

Table 1. Snow Mold Fungicide Study - 1989-90 (cont.)

Treatment	Rate/1000 ft ^{2b}	I		II		III		Combined AVE	DMR ^a
		incar.	ishi.	incar.	ishi.	incar.	ishi.		
Control	----	30	10	20	15	35	35	48.3	A
Prochloraz	3 oz.ai.	50	20	2	0	55	20	49 ^c	A
Prochloraz	2 oz. ai.	20	40	32	3	50	25	56.7 ^c	A

^a5% level of significance.

^bRates listed are formulation unless listed as "ai" (active ingredient).

^cMild phytotoxicity on 11/13/89.

^dMild phytotoxicity on 3/22/90.

^eModerately severe phytotoxicity on 11/13/89.

^fModerately severe phytotoxicity on 3/22/90.

^gGreening effect on 11/13/89.

^hGreening effect on 3/22/90.

Kentucky Bluegrass Melting-Out Fungicide Study - 1990

Hancock Turfgrass Research Center

The 1990 melting-out (*Dreschlera poae*) fungicide trial was conducted at the Hancock Turfgrass Research Center on the MSU campus at East 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. All treatments were applied with a CO₂ small-plot sprayer at 30 PSI and a volume of 48 gal/A. The plot area was fertilized dormant in 1989 (fall) and at the rate of ¼# N/1000 ft² on May 25, 1990 and June 6, 1990.

Treatments were applied preventively on May 9, with subsequent treatments being applied at 14 and 21 day intervals as indicated on the data table (Table 2). Disease pressure was mild this year, with the controls exhibiting approximately 43% of maximum disease levels.

As the data indicates (Table 2), a number of standard fungicides (Vorlan, Chipco 26019) and experimental fungicides (CGA-455, Pace) exhibited excellent disease control this year. Most treatments gave significant disease control compared to the untreated control plots.

Summer Patch Fungicide Study #1 - 1990

Dearborn Country Club, Dearborn, MI

The summer patch fungicide study at Dearborn Country Club was initiated preventively on April 30, 1990 (except as noted on data tables). A second application was made on May 30, 1990 (except as noted on data table). Treatments were foliarly applied (sprayed) or sprayed and then drenched into the root zone as requested in the protocols.

The disease pressure was very light this year due to a relatively cool, moist summer. Early season yellowing caused by the summer patch pathogen faded in and out during the summer, but resulted in only mild thinning of the turf. In a typically stressful July-August period, these chlorotic areas would have thinned drastically.

On September 15, disease pressure peaked for the season and the study was rated (Table 3). As the data indicates, statistical significance between treatments was limited by low disease pressure and variability within treatments.

Phytotoxicity was first documented on June 25, following the second application on May 30. The SAN 619 (.66 oz) treatment created a dark green turf with some undesirable leaf necrosis. This effect persisted throughout the season and is reported in the September 15 rating table. The lower rate of SAN 619 (.33 oz), however, caused a dark green turf which was aesthetically acceptable, without the necrosis observed at the higher rate. Unfortunately, low levels of disease in the controls reduced statistically significant differences in disease control among the various treatments.

Summer Patch Fungicide Study #2 - 1990

Highland Golf Club, Grand Rapids, MI

The summer patch fungicide study at Highland Golf Club was initiated preventively on May 2, 1990 (except as noted on data tables). A second application was made on May 31, 1990 (except as noted on data tables). Treatments were either applied foliarly (sprayed) or sprayed and then drenched into the soil, as requested in the research protocols.

Table 2. Kentucky Bluegrass Melting-Out Fungicide Trial - 1990

Hancock Turfgrass Research Center
Michigan State University, East Lansing, MI

Disease rating scale:

1 (no disease) - 9 (90% or more of leaves infected)

Plots rated 6/16/90

Treatment	Rate/1000 ft ^{2b}	Interval	I	II	III	AVE	DMR ^a
CGA-455	21 gm. ai.	21 days	1	1	1	1.0	E
Ch 26019	4 fl oz	21 days	1	1	1	1.0	E
CGA-455	14 gm. ai.	14 days	1	1	2	1.3	DE
Vorlan(F)+Fungo(F)	2 fl.oz.+2fl.oz.	21 days	1	1	2	1.3	DE
CGA-455	7 gm.ai.	14 days	2	2	2	2.0	CDE
Pace	7 oz.	14 days	2	2	2	2.0	CDE
ASC-66900	4 oz.	14 days	2	3	2	2.3	CD
Dac 2787	6 fl.oz.	14 days	2	2	3	2.3	CD
Lesco "Twosome"	5 fl.oz.	21 days	2	2	3	2.3	CD
Vorlan(F)+Fungo(F)	1 fl.oz+1 fl.oz.	21 days	2	2	3	2.3	CD
Banner	4 gm.ai.	14 days	2	3	3	2.7	C
Lesco "Twosome"	3 fl.oz.	21 days	3	2	3	2.7	C
Vorlan (F)	2 fl.oz.	21 days	3	2	3	2.7	C
ASC-66608	7.5 oz.	14 days	2	3	4	3.0	BC
ASC-66608	5 oz.	14 days	2	6	4	4.0	AB
Control	---	----	4	4	5	4.3	A

^a5% level of significance.

^bRates listed as formulation unless cited as "ai" (active ingredient).

Table 3. Summer Patch Fungicide Study - 1990

Dearborn Country Club, Dearborn, MI
Rated 9/15/90 - Percent plot area infected

Treatment	Rate/1000 ft ^{2b}	Applic. interval (dates)	I	II	III	AVE	DMR ^d
SAN 619F	.66 oz	65°+30 days (4/30,5/30)	0 ^{GG}	0 ^{GG}	0 ^G	0	C
SAN 619F	.33 oz	65°+30 days (4/30,5/30)	0 ^G	0 ^G	0 ^G	0	C
Rubigan ^d	8 fl oz	65° only (4/30,5/30)	0	0 ^G	0 ^G	0	C
Lynx (F)+X-77	1 fl oz+.06%v/v	75°+30 days (6/19,7/17)	0	0	0 ^G	0	C
Rubigan ^d	4 fl oz	65°+30 days (4/30,5/30)	0	0	0	0	C
Lynx (EC)	1.67 fl oz	65°+30 days (4/30,5/30)	0	0	0	0	C
Terraguard	6 oz	--- (5/30,6/25)	0	0	0	0	C
Banner	4 fl oz	65°+30 days (4/30,5/30)	0	1	0	.3	C
Rubigan ^d	2 fl oz	65° only (4/30)	0	1	1 ^G	.7	C
Lynx (DF) + X-77	1 oz + .06% v/v	65°+30 days (4/30,5/30)	1	1	0	.7	C
Lynx (DF) + X-77	1 oz + .06% v/v	75°+30 days (6/19,7/17)	1	0	1	.7	C
Banner ^d	4 fl oz	65°+30 days (4/30,5/30)	1	1	0	.7	C
Lynx (EC)	1.67 fl oz	75°+30 days (6/19,7/17)	0 ^G	1	2	1	C
Banner	4 fl oz	75°+30 days (6/19,7/17)	2	1	0 ^G	1	C
Lesco 017530	6 lb	65°+30 days (5/17,5/30)	2	1	0	1	C
ASC-66811	.015 oz ai	65°+30 days (4/30,5/30)	2	0	1	1	C
Terraguard	4 oz	--- (5/30,6/25)	2	0	1	1	C
Terraguard	8 oz	once only (5/30)	3	0	0	1	C

Table 3. Summer Patch Fungicide Study - 1990 (cont.)

Treatment	Rate/1000 ft ^{2b}	Applic. interval (dates)	I	II	III	AVE	DMR ^d
Rubigan ^d	2 fl oz	65°+30 days (4/30,5/30)	0	1	3	1.3	C
Rubigan ^d	4 fl oz	65° only (4/30)	1	3	0	1.3	C
Rubigan ^d	4 oz	75°+30 days (6/19,7/17)	5	1	0	2	BC
Ch.26019	4 fl oz	--- (7/17,8/15)	1	0	5	2	BC
Lynx (F) + X-77	1 fl oz + .06% v/v	65°+30 days (5/7,5/30)	0 ^G	5	2	2.3	BC
Banner	4 fl oz	75° only (6/19)	7	0	0	2.3	BC
Terraguard	2 oz	--- (5/30,6/25)	3	5	0	2.7	ABC
Ch.26019	8 fl oz	--- (7/17,8/15)	5	1	2	2.7	ABC
Bayleton	2 oz	75° only (6/19)	3	5	1	3	ABC
Ch.26019	8 fl oz	65°+30 days (4/30,5/30)	2	1	7	3.3	ABC
Bayleton	2 oz	65°+30 days (4/30,5/30)	10	2	0 ^G	4	ABC
Vorlan	2 fl oz	65°+30 days (5/7,5/30)	10	1	1	4	ABC
Bayleton	2 oz	75°+30 days (6/19,7/17)	10	0	2	4	ABC
ASC-66811	.06 oz ai	65°+30 days (4/30,5/30)	7	3	2	4	ABC
Lesco "Twosome"	8.8 fl oz	65°+30 days (5/7,5/30)	5	7	1	4.3	ABC
ASC-66617	2 fl oz	65°+30 days (4/30,5/30)	10	2	1	4.3	ABC
Banner	16 gm ai	65° only (4/30)	15	7	1	2.7	ABC
Lesco "Twosome"	4.4 fl oz	65°+30 days (5/7,5/30)	20	2	1	7.7	ABC
Ch.26019 + Banner	4 fl oz + 2 fl oz	65°+30 days (4/30,5/30)	1	2	20	7.7	ABC
Ch.26019 + Rubigan	4 fl oz + 2 fl oz	65°+30 days (4/30,5/30)	20	5	1	8.7	ABC

Table 3. Summer Patch Fungicide Study - 1990 (cont.)

Treatment	Rate/1000 ft ^{2b}	Applic. interval (dates)	I	II	III	AVE	DMR ^d
ASC-66811	.03 oz ai	65°+30 days (4/30,5/30)	7	20	1	9.3	ABC
Control	---	---	10	10	10	10	ABC
Vorlan + Fungo	1 fl oz + 1 fl oz	65°+30 days (5/7,5/30)	0	7	25	10.7	ABC
ASC-66617	.4 fl oz	65°+30 days (4/30,5/30)	30	2	0	10.7	ABC
Vorlan + Fungo	2 fl oz + 2 fl oz	65°+30 days (5/7,5/30)	20	10	3	11	ABC
ASC-66791	6 oz	65°+30 days (4/30,5/30)	35	2	0	12.3	ABC
CGA-455	28 gm ai	65°+30 days (4/30,5/30)	20	15	3	12.7	ABC
RH-3866	.5 oz ai	65°+30 days (4/30,5/30)	2	10	30	14	ABC
Bayleton	2 oz	65° only (4/30)	35	10	0	15	ABC
Ch.26019	4 fl oz	65°+30 days (4/30,5/30)	25	5	20	16.7	AB
ASC-66791	8 oz	65°+30 days (4/30,5/30)	25	15	10	16.7	AB
Rubigan ^d	4 oz	75° only (6/19)	1	50	1	17.3	A

^a5% level of significance.

^bRates listed are formulation unless listed as "ai" (active ingredient).

^cBlanked-out treatments are proprietary.

^dTreatments drenched in after spraying.

Whereas summer patch disease pressure was light at Dearborn, it failed to develop at all in the Grand Rapids study, hence, no summer patch data was obtained from this study this year. Dollar spot (*Lanzia sp.*, *Moellerodiscus sp.*), however, moved aggressively and uniformly into the study and two ratings (mid-late summer) are included in this report. As Table 4 indicates, at approximately 3 months after the last application, some products, such as SAN 619, Banner, Bayleton, Chipco 26019, and Lesco 017530 were still controlling dollar spot quite effectively.

Dollar Spot Fungicide Trial - 1990

Hancock Turfgrass Research Center, MSU, East Lansing, MI

The 1990 dollar spot (*Moellerodiscus sp.*, *Lanzia sp.*) fungicide trial was conducted on an irrigated Emerald creeping bentgrass (*Agrostis palustris huds*) putting green at the Hancock Turfgrass Research Center on the MSU campus. The green was maintained at ¼" height of cut and fertilized at 3/8 lb N/Mo. Treatments were applied curatively to 3' x 6' plots in three replications of a random block design on 7, 10, 14, 21 and 28 day schedules as indicated on the data tables. The initial treatments were applied on August 17, 1990. By the end of the study, weekly treatments had been applied 7 times, 10-day treatments were applied 4 times, 14 day treatments were applied 4 times, 21 day treatment were applied 3 times, and 28 day treatments were applied twice.

Disease pressure was moderate this year, reaching a peak for the season around September 20 when the enclosed rating (Table 5) was taken. As the data indicates, all treatments gave significant control of dollar spot, compared to the controls. Many standard and experimental compounds gave complete control of the disease but Fungo and the fertilizer treatments were least effective. It should be noted that the dollar spot strain in this plot area is resistant to the benzimidazole fungicides, such as Fungo.

To phytotoxicity was noted in this study although a "greening effect" was observed in some treatment plots as noted on data Table 5.

Yellow Tuft Fungicide Trial - 1990

Hancock Turfgrass Research Center, MSU, East Lansing, MI

The 1990 yellow tuft (*Sclerophthora macrospora*) fungicide study was conducted on an irrigated Penneagle creeping bentgrass putting green at the Hancock Turfgrass Research Center on the MSU campus. Foliar treatments were applied preventively to 6' X 6' plots in three replications of a random block design.

Initial applications were made on May 24, 1990 with subsequent applications being made at 14 and 21 day intervals through Sept. 28.

Disease pressure was light this year but it peaked around the time of the August 22 rating. As Table 6 indicates, both Subdue and Aliette gave significant control of the disease compared to the control. Aliette at the 8 oz. rate was mildly phytotoxic to the bentgrass from approximately day 3 to day 10 following each application throughout the season.

Table 4. Dollar Spot Fungicide Study #2.

Highlands Golf Course, Grand Rapids, MI
Dollar spot rating scale: 0 (no disease) - 10 (100% of plot area infected)
Rating date: 8/28/90

Treatment	Rate/1000 ft ^{2b}	Applic. interval (dates)	I	II	III	AVE	DMR ^a
Bayleton	2 oz	75°+30 days (6/20,7/19)	2	1	1	1.3	F
Ch.26019	8 fl oz	--- (7/19,8/16)	1	2	1	1.3	F
SAN-619 F	.66 oz	65°+30 days (5/2,5/31)	2	1	2	1.7	F
Lynx (EC)	1.67 fl oz	75°+30 days (6/20,7/19)	2	1	2	1.7	F
Lynx(DF)+X-77	1 oz + 0.6% v/v	75°+30 days (6/20,7/19)	2	1	2	1.7	F
Ch.26019	4 fl oz	--- (7/19,8/16)	1	2	2	1.7	F
Banner	4 fl oz	75°+30 days (6/20,7/19)	2	2	2	2.0	F
Lynx (F) + X-77	1 fl oz + .06% v/v	75°+30 days (6/20,7/19)	1	2	6	3.0	EF
SAN-619 F	.33 oz	65°+30 days (5/2,5/31)	2	6	4	4.0	DE
Bayleton	2 oz	75° only (6/20)	7	6	4	5.7	CD
Bayleton	2 oz	65°+30 days (5/2,5/31)	8	3	8	6.3	BC
Rubigan ^d	2 fl oz	65° only (5/2)	8	5	7	6.7	ABC
Rubigan ^d	4 + 4 fl oz	65°+30 days (5/2,5/31)	9	7	5	7.0	ABC
Rubigan ^d	2 + 2 fl oz	65°+30 days (5/2,5/31)	9	5	7	7.0	ABC
Banner	4 fl oz	75° only (6/20)	5	8	8	7.0	ABC
Vorlan (F) + Fungo (F)	2 fl oz + 2 fl oz	65°+30 days (5/2,5/32)	5	8	9	7.3	ABC
Lesco 017530	6 lbs	65°+30 days (5/2,5/31)	9	7	6	7.3	ABC
Banner	4 fl oz	65°+30 days (5/2,5/31)	9	7	6	7.3	ABC
Asc-66811	.06 oz ai	65°+30 days (5/2,5/31)	7	7	8	7.3	ABC

Table 4. Dollar Spot Fungicide Study #2 (cont.)

Treatment	Rate/1000 ft ^{2b}	Applic. interval (dates)	I	II	III	AVE	DMR ^d
Banner ^d	4 fl oz	65°+30 days (5/2,5/31)	7	8	8	7.7	ABC
Control	---	---	8	6	9	7.7	ABC
Rubigan ^d	4 fl oz + 4 oz	75°+30 days (6/20,7/19)	8	8	8	8.0	AB
Rubigan ^d	4 fl oz	65°+30 days (5/2,5/31)	9	8	7	8.0	AB
Ch.26019	4 fl oz	65°+30 days (5/2,5/31)	8	9	7	8.0	AB
Lynx (EC)	1.67 fl oz	65°+30 days (5/2,5/31)	9	8	7	8.0	AB
Terraguard	6 oz	65°+30 days (5/2,5/31)	7	8	9	8.0	AB
Vorlan (F) + Fungo (F)	1 fl oz + 1 fl oz	65°+30 days (5/2,5/31)	8	9	8	8.3	AB
Ch.26019+Banner	4 fl oz + 2 fl oz	65°+30 days (5/2,5/31)	9	8	8	8.3	AB
Ch.26019 + Rubigan	4 fl oz + 2 fl oz	65°+30 days (5/2,5/31)	8	8	9	8.3	AB
Lynx(F)+X-77	1 fl oz + .06% v/v	65°+30 days (5/2,5/31)	9	8	8	8.3	AB
Lynx(DF)+X-77	1 oz + .06% v/v	65°+30 days (5/2,5/31)	9	7	9	8.3	AB
RH-3866	.5 oz ai	65°+30 days (5/2,5/31)	9	8	8	8.3	AB
ASC-66811	.015 oz ai	65°+30 days (5/2,5/31)	9	8	8	8.3	AB
ASC-66617	.4 fl oz	65°+30 days (5/2,5/31)	9	8	8	8.3	AB
Terraguard	2 oz	65°+30 days (5/2,5/31)	9	8	8	8.3	AB
Terraguard	4 oz	65°+30 days (5/2,5/31)	7	9	9	8.3	AB
Rubigan ^d	8 fl oz	65°+30 days (5/2,5/31)	9	8	9	8.7	A
Vorlan (F)	2 fl oz	65°+30 days (5/2,5/31)	8	9	9	8.7	A
Lesco "Twosome"	4.4 fl oz	65°+30 days (5/2,5/31)	9	8	9	8.7	A

Table 4. Dollar Spot Fungicide Study #2 (cont.)

Treatment ^c	Rate/1000 ft ^{2b}	Applic. interval (dates)	I	II	III	AVE	DMR ^d
Lesco "Twosome"	8.8 fl oz	65°+30 days (5/2,5/31)	9	8	9	8.7	A
Ch.26019	8 fl oz	65°+30 days (5/2,5/31)	9	9	8	8.7	A
CGA-455	28 gm ai	65°+30 days (5/2,5/31)	9	8	9	8.7	A
ASC-66811	.03 oz ai	65°+30 days (5/2,5/31)	8	9	9	8.7	A
ASC-66617	.2 fl oz	65°+30 days (5/2,5/31)	9	8	9	8.7	A
ASC-66791	8 oz	65°+30 days (5/2,5/31)	9	8	9	8.7	A
Bayleton	2 oz	65° only (5/2)	9	8	9	8.7	A
Terraguard	8 oz	one app. (5/2)	9	9	8	8.7	A
Rubigan ^d	4 oz	75° only (6/20)	10	9	8	9.0	A
Banner	16 gm ai	65° only (5/2)	9	9	9	9.0	A
ASC-66791	6 oz	65°+30 days (5/2,5/31)	9	9	9	9.0	A

^a5% level of significance

^bRates listed are formulation unless listed as "ai" (active ingredient)

^cBlanked out treatments are proprietary

^dTreatments sprayed and drenched into soil

Table 5. Dollar Spot Fungicide Study - 1990

Hancock Turfgrass Research Center
 Michigan State University, E. Lansing, MI
 Rating scale: 0 (no disease), 10 (plot totally diseased)
 Rating date - 9/20/90

Treatment	Rate/1000 ft. ^{2b}	Interval	I	II	III	AVE	DMR ^G
Chipco 26019	4 fl oz	21 day	0	0	0	0	E
SAN 619F	1.89 gm ai	21 day	0 ^{GG}	0 ^G	0 ^G	0	E
Dac 2787	6 fl oz	10 day	0	0	0	0	E
ASC 66518-X-A	4.2 oz	10 day	0	0	0	0	E
ASC 66518-X-B	4.2 oz	10 day	0	0	0	0	E
ASC 66518-X-C	3.8 oz	10 day	0	0	0	0	E
ASC 66518-X-D	3.8 oz	10 day	0	0	0	0	E
ASC 66608	5 oz	10 day	0	0	0	0	E
ASC 66608	7.5 oz	10 day	0 ^G	0 ^G	0 ^G	0	E
ASC 66900	4 oz	10 day	0	0	0	0	E
ASC 66811	.015 oz ai	14 day	0	0	0	0	E
ASC 66811	.03 oz ai	21 day	0	0	0	0	E
Daconil 2787 (DG)	3.5 oz	10 day	0	0	0	0	E
ASC 66617	.2 fl oz	14 day	0	0	0	0	E
ASC 66617	.4 fl oz	14 day	0	0	0	0	E
Vorlan (W) + Fungo (W) Pre-mix	2 oz	21 day	0	0	0	0	E
Vorlan (W) + Fungo (W) Pre-mix	4 oz	21 day	0	0	0	0	E
Banner	4 fl oz	30 day	0 ^{GG}	0 ^{GG}	0 ^G	0	E
Daconil 2787	6 fl oz	14 day	0	0	0	0	E
Rubigan	2 fl oz	21 day - 2 apps. only	0 ^{GG}	0	0 ^G	0	E
Rubigan	8 fl oz	1 app only	0 ^G	0 ^G	0	0	E
Bayleton	2 oz	30 day	0	0	0	0	E
Banner	2 fl oz	30 day	0 ^G	0 ^G	0 ^G	0	E
Turf Restore + Dac 2787	.5 lb N + 6 fl oz	30day+14day	0	0	0	0	E
Urea + Dac 2787	.5 lb N + 6 fl oz	30day+14day	0	0	0	0	E
Lesco 017530	3 lb	28 day	0	0	0	0	E
Lesco "Twosome"	3 fl oz	21 day	0 ^G	0 ^G	0 ^G	0	E
Vorlan (F)	2 fl oz	21 day	0	0	0	0	E
SAN 619F	1.89 gm ai	28 day	0 ^G	0 ^G	0 ^G	0	E
SAN 619F	2.84 gm ai	28 day	0 ^G	0 ^G	0 ^G	0	E
Vorlan (F) + Fungo (F)	1 fl oz + 1 fl oz	21 day	0	0	0	0	E
Vorlan (F) + Fungo (F)	2 fl oz + 2 fl oz	21 day	0	0	0	0	E

Table 5. Dollar Spot Fungicide Study - 1990 (cont.)

Treatment ^c	Rate/1000 ft. ^{2b}	Interval	I	II	III	AVE	DMR ^G
SAN 619 F	1.42 gm ai	21 day	0 ^G	0 ^G	0 ^G	0	E
Banner	4 gm ai	7 day	0 ^G	0 ^G	0 ^G	0	E
Terraguard	6 oz	21 day -2 apps only	1	0	0	.3	E
Terraguard	4 oz	21 day - 2 apps only	1	0	1	.7	DE
Rubigan	1.5 fl oz	28 day	1	1	1	1	DE
Daconil 2787 (DG)	1.7 oz	10 day	1	1	1	1	DE
Terraguard	8 oz	1 app only	1	1	3	1.3	CD
Terraguard	2 oz	21 day	1	2	4	2.3	B
Urea	.5 lb N	30 day	2 ^G	3	3 ^G	2.7	B
Turf Restore (greens grade)	.5 lb N	30 day	2	3	3	2.7	B
Fungo	2 fl oz	21 day	3	2	3	2.7	B
Control	--	--	3	3	8	4.7	A

^a5% level of significance.

^bRates listed as formulation unless listed as "ai" (active ingredient).

^cBlanked out treatments are proprietary.

^GMild greening effect.

^{GG}Moderate greening effect.

^{GGG}Severe greening effect.

Table 6. Yellow Tuft Fungicide Trial - 1990

Hancock Turfgrass Research Center
Michigan State University, East Lansing, MI

Rating date: 8/22/90
Rating scale: 0 = no disease, 10 = all plants infected

Treatment	Rate/1000 ft ²	Interval	I	II	III	AVE	DMR ^a
Subdue	2 fl oz	28 days	0	0	0	0.0	C
Aliette	4 oz	14 days	0	1	1	0.7	B
Aliette	8 oz	21 days	1 ^b	1 ^b	1 ^b	1.0	B
Control	---	---	1	2	2	1.7	A

^a5% level of significance.

^bMild phytotoxicity observed in these plots from approximately day 3 to day 10 following each application.

Red Thread Fungicide Study - 1990

Hancock Turfgrass Research Center, MSU, East Lansing, MI

The red thread (*Laetisaria fuciformis*) fungicide trial was conducted on an irrigated, moderately fertilized Kentucky bluegrass research area on the Hancock Turfgrass Research Center on the MSU campus. Treatments were applied curatively as a foliar spray with the exception of the Lesco 017530 granular product which was pre-weighed and applied by hand. Treatments were first applied on July 10 with subsequent applications being made on 14, 21 and 28 day schedules through August 22 when disease pressure abated. The plots were rated on August 13 (Table 7).

Table 7. Red Thread Fungicide Study - 1990

Hancock Turfgrass Research Center, MSU, East Lansing, MI

Rating scale: Percent plot area infected
 Rating date: August 13, 1990

Treatment	Rate/1000 ft ²	Applic. Interval	I	II	III	AVE	DMR ^a
Chipco 26019	4 fl oz	21 days	0	0	0	0.0	C
Lesco"Twosome"	9 fl oz	14 days	0	0	0	0.0	C
ASC-66608	5 oz	14 days	1	3	0	1.3	C
Lesco 017530	3 lbs	28 days	0 ^G	5 ^G	0 ^G	1.7	C
Lesco"Twosome"	6 fl oz	14 days	1	5	0	2.0	C
Bayleton	2 oz	28 days	0	10	0	3.3	BC
ASC 66608	7.5 oz	14 days	2	10	0	4.0	BC
ASC 669000	4 oz	14 days	1	10	2	4.3	BC
Daconil 2787	6 fl oz	14 days	0	15	0	5.0	BC
Control	---	---	10	15	5	10.0	B
Vorlan (W) + Fungo (W) Pre-mix	4 oz	21 days	20	35	10	21.7	A

^a5% level of significance.

^GFertilizer (greening) effect dramatic.