

TURFGRASS DISEASE MANAGEMENT REPORT 1987-88

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SNOW MOLD FUNGICIDE TRIAL - 1987-88

Boyne Highlands Resort, Harbor Springs, MI

The 1987-88 snow mold fungicide studies were conducted at the Boyne Highlands Resort in Harbor Springs, MI, on irrigated Penncross creeping bentgrass (Agrostis palustris)/annual bluegrass (Poa annua) fairways which were mowed at 1/2" height of cut. Treatments were applied preventively to 6' x 9' plots in three replications of a random block design on various dates, as indicated on the data table, ranging from October 6 through December 10. The sprayable formulations were applied with a CO₂ small-plot sprayer at 30 PSI and a volume of 48 gal/acre. The granular treatments were pre-weighed and applied by hand. The plots were rated for disease immediately upon snow cover melt-off on April 5, 1988.

As can be seen from the control plot ratings (Table 1), disease pressure was fairly heavy this year with Typhula incarnata being the predominant gray snow mold species (compared to T. ishikariensis in recent years). Most of the standard snow mold fungicides continued to provide consistent control across all replicates. These products include Calo-Clor, Calo-Gran, Proturf FF II, Daconil 2787, and the Daconil 2787 + Tersan 1991 combination. PCNB formulated as a 10% a.i. granular (Turfcide 10G) did not seem to be reliably effective while PCNB formulated as an emulsifiable concentrate (Turfcide 2EC) was effective, although mild to moderate phytotoxicity was noted. A number of experimental compounds (SAN. 619, Rizolex, RH-3486, FBC 39865, Prochloraz) seemed to provide excellent control of gray snow mold and warrant further investigation in future years.

Very little pink snow mold (Fusarium nivale) was present in the plots this year, so no ratings were taken.

KENTUCKY BLUEGRASS MELTING-OUT FUNGICIDE TRIAL - 1988

Hancock Turfgrass Research Center

The 1988 Dreschlera poae fungicide trial was 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 1 1/2" 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 at a volume of 48 gal/acre.

Treatments were initiated preventively on May 11 with subsequent applications being made on 14, 21 or 28 day schedules or as otherwise noted on the data table. The plots were rated on June 18, at which time the 14 day treatments had been applied three times (5/11, 5/25, 6/9), the 21 day treatments had been applied twice (5/11, 5/31) and the 28 day treatments had been applied twice (5/11, 6/9). Disease levels were moderate this year due to early season heat and drought. As the data table (Table 2) shows, the

Table 1. Snow Mold Fungicide Study - 1987-88

Boyne Highlands Resort, Harbor Spring, MI							
Percent plot area infected							
Rating date: 4/5/88							
Treatment	Rate/1000 ft ²	Applied	I	II	III	Ave	DMR(.05) ^e
Rizolex	3 oz ai	10-31-87	0	0	0	0	H
RH-3486	3 oz ai	10-31-87	0	0	0	0	H
Turfcide EC	1.5 qts	10-31-87	0 ^b	0 ^a	0 ^b	0	H
Turfcide EC + Urea	1.5 qts + 1 lb N	10-31-87	0 ^a	0 ^b	0 ^a	0	H
Prochloraz + SN84364 + X-77	6fl oz + 8oz + .25% v/v	10-31-87	0	0	0 ^a	0	H
Calo-Gran	6 lbs	10-31-87	0 ^b	0 ^a	0 ^a	0	H
Scotts FF II	2x	10-31-87	0 ^c	0 ^c	0 ^c	0	H
Calo-Clor	3 oz	11-16-87	0 ^a	0 ^a	0 ^a	0	H
RH-3486	1.5 oz ai	11-16-87	1	0	0	0.3	H
RH-3486	.75 oz ai	11-16-87	1	0.5	0	0.5	H
SDS64220	same ai rate as D2782 at 8 fl oz	12-10-87	0.5	1	0.5	0.7	H
San 619	2 gm ai	11-16-87	0	3	0	1	H
Rizolex	2 oz ai	10-31-87	1	2	0	1	H
Calo-Clor	3 oz	10-31-87	0 ^a	3	0 ^a	1	H
SDS64220	same ai rate as D2787 at 4 fl oz	12-10-87	2 ^d	0.5 ^d	0.5 ^d	1	H
ICIA 523 + X-77	6 gm ai + .05% v/v	10-31-87	3	0.5	0	1.2	H
SN84364 + X-77	8 oz + .25% v/v	10-31-87	0	3	1	1.3	H
San 619	8 gm ai	10-06-87	2 ^a	2 ^a	0.5 ^a	1.5	H
San 619	8 gm ai	11-16-87	3	2.5	0.5	2	H
Dac 2787 + Tersan 1991	8 fl oz + 2 oz	10-31-87	0	3	3	2	H
Dac 2787	8 fl oz	12-10-87	2	2	3	2.3	H
SDS66518	same ai rate as D2787 at 8 fl oz	12-10-87	4	2	2.5	2.8	H
Rizolex	1 oz ai	10-31-87	5	2	2 ^f	3	H
Dac 2787	4 fl oz	12-10-87	7	0	5	4	H
San 619	4 gm ai	10-06-87	0	5	7	4	H
San 619	2 gm ai	10-06-87	3	10	4	5.7	GH
Scotts FF II	1x	10-31-87	7	15	0	7.3	GH
San 619	4 gm ai	11-16-87	0	2	25	9	FGH
Prochloraz	6 fl oz	10-31-87	6	25	2	11	EFGH
San 619	2 gm ai	10-31-87	17	25.5	1	14.5	DEFGH
PMAS	2 fl oz	10-31-87	5	20	20	15	DEFGH
Lesco Elite	12 oz ai	10-31-87	9	3	40	17.3	CDEFGH
San 619	4 gm ai	10-31-87	15	23	23	20.3	CDEFGH
San 619	8 gm ai	10-31-87	0	26 ^c	35	20.3	CDEFGH
Prochloraz	7.5 fl oz	10-31-87	10	1	50	20.3	CDEFGH
Lesco PCNB	12 oz ai	10-31-87	2	25	35	20.7	CDEFGH

Table 1. Snow Mold Fungicide Study - 1987-88 (cont.)

Treatment	Rate/1000 ft ²	Applied	I	II	III	Ave	DMR(.05) ^e
FBC 39865	4 oz	10-31-87	0.5	0.5	65	22	CDEFGH
Lesco R1555	.75 oz ai	10-31-87	15	4	50	23	CDEFGH
Lesco R1555	.5 oz ai	10-31-87	7	0.5	67	24.8	CDEFGH
Turfcide 10G	7.5 lbs	10-31-87	75	0	0.5	25	CDEFGH
Turfcide 10G + Urea	7.5 lbs + 1 lb N	10-31-87	50	57	5	37.3	BCDEFG
Cyprex	1 oz ai	10-31-87	12	17	87	38.7	BCDEFG
Lesco R1555	.25 oz ai	10-31-87	27	25	70	40.7	BCDEF
Cyprex	1.3 oz ai	10-31-87	35	75	17	42.3	BCDE
Lesco PCNB	8 oz ai	10-31-87	25.5	40	70	45.2	BCD
Cyprex	.5 oz ai	10-31-87	70	3.5	73	48.8	BC
Lesco Elite	8 oz ai	10-31-87	67	65	57	63	AB
Control	----	----	66	82	92	80	A

a = mild phytotoxicity

b = moderate phytotoxicity

c = greening effect

d = dark green color

e = treatments followed by the same letter are not significantly different from each other at the 5% level

f = disease symptoms very superficial

Table 2. Kentucky Bluegrass Melting-Out Fungicide Trial - 1988

Hancock Turfgrass Research Center, M.S.U., E. Lansing, MI

Disease rating scale: 1 (no disease) - 9 (90% or more of leaves infected)

Plots rated 6/18/88

Treatment	Rate/1000 ft ²	Interval	I	II	III	Ave	DMR(.05) ^a
Dac 2787	6 fl oz	14 day	1	1	1	1.0	D
Chipco 26019	4 fl oz	28 day	2	1	1	1.3	CD
Banner	2 fl oz	21 day	2	2	2	2.0	BCD
Dac 2787	3 fl oz	14 day	1	3	2	2.0	BCD
SDS-66608	11.2 oz	1 appl only	2	2	2	2.0	BCD
Vorlan	1 oz	21 day	2	2	3	2.3	BC
SDS-66608	3.7 oz	2 appl - 14 days apart	2	2	3	2.3	BC
SDS-66608	7.4 oz	1 appl only	1	3	4	2.7	B
Banner	4 fl oz	21 days	3	3	3	3.0	B
Control	----		4	5	5	4.7	A

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

standards (Dac 2787, Chipco 26019) continue to work well against melting-out. All treatments gave significant disease control compared to the controls.

No phytotoxicity was observed.

BROWN PATCH FUNGICIDE TRIAL - 1988

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

The 1988 brown patch (Rhizoctonia solani) fungicide trial was conducted on irrigated Loretta perennial ryegrass (Lolium perenne L.) mowed at a 2" height of cut. Treatments were applied preventively to 6' x 9' plots in three replicates of a random block design beginning on June 24 with reapplication at the intervals listed on the data table. The treatments were applied with a CO₂ small-plot sprayer at a volume of 48 gal/A and 30 PSI. The area was fertilized at 1 lb N/1000 ft² per month to promote disease development.

At the time of the rating (8/3/88), the 7 day treatments had been applied 6 times, the 14 day treatments had been applied 3 times and the 21 and 28 day treatments had been applied twice. As the controls indicate (Table 3), disease pressure was relatively light this year, probably due to the dry, hot weather we experienced through June and July. Much of the disease that did occur was expressed as a sweeping and superficial leaf spot symptom as opposed to the more typical defined, crown and sheath-level patches. Nevertheless, a number of compounds such as Daconil 2787 and the SDS 66534 experimental did give significant control of this disease compared to the control.

SUMMER PATCH FUNGICIDE STUDIES - 1988

As a result of our 1987 summer patch (Magnaporthe poae, formerly Phialophora graminicola) studies which suggested preventive fungicide applications were more effective and practical than curative treatments for the control of summer patch, we decided to conduct all summer patch fungicide trials preventively in the 1988 season. We, therefore, established preventive studies on irrigated, annual bluegrass (Poa annua) golf course fairways in three different locations in Michigan where the disease was observed in previous years. All treatments were applied prior to disease occurrence in three replications of a random block design utilizing a 6' x 9' plot size. The fairways were maintained at 1/2" cutting height and were fertilized with 1/2 #N/mo (except as noted on data tables). They were also treated for weed and insect pests as necessary. No fungicides, other than those being tested, were applied to the studies.

Applications were made foliarly using a CO₂ small-plot sprayer at 30 PSI and a volume of 48 gal/A (except as noted on data tables). Granular treatments were pre-weighed and applied by hand.

In general, summer patch disease pressure was severe this summer because of the record high temperatures we experienced in Michigan. We, therefore, experienced a break-down of disease control by August, as the data tables indicate. It is still our feeling, however, that preventive fungicide control of summer patch is preferable to curative control efforts, although recommendations for timing and number of treatments may be modified for next

Table 3. Brown Patch Fungicide Study - 1988

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

Percent plot area infected

Rating date: 8/2/88

Treatment	Rate/1000 ft ²	Interval	I	II	III	Ave	DMR(.05) ^a
Dac 2787 + SDS 66533	3 fl oz + 1 fl oz	14 day	0	0	0	0	B
Dac 2787 + SDS 66533	6 fl oz + 2 fl oz	21 day	0	0	0	0	B
Dac 2787 + SDS 66533	6 fl oz + 4 fl oz	28 day	0	0	0	0	B
SDS 66534	2.1 fl oz	14 day	0	0	0	0	B
SDS 66534	4.3 fl oz	21 day	0	0	0	0	B
Dac 2787	3 fl oz	7 day	0	0	1	0.3	B
Dac 2787	6 fl oz	21 day	0	2 ^b	20	7.3	B
SDS 66518	3.5 fl oz	21 day	2 ^b	5 ^b	15 ^b	7.3	B
SDS 66518	1.75 oz	7 day	2 ^b	2 ^b	20 ^b	8.0	B
ICIA 523	8 gm ai	14 day	0	15 ^b	20 ^b	11.7	B
Control	----	----	10	5	25	13.3	B
SDS 66608	7.4 oz	1 appl only	30 ^b	10 ^b	50 ^b	30.0	A
SDS 66608	3.7 oz	2 appl - 14 days apart	40 ^b	30 ^b	50 ^b	40.0	A
SDS 66608	11.2 oz	1 appl only	50 ^b	50 ^b	30 ^b	43.3	A

a = treatments followed by the same letter are not significantly different from each other at the 5% level

b = superficial symptoms expressed as leaf blighting

year.

Orchard Lake Country Club, Orchard Lake, MI

Summer Patch Fungicide Study #1

The summer patch fungicide study #1 at Orchard Lake Country Club was initiated preventively on May 12, 1988 with a second application being made on June 13, 1988. The plots were rated on August 27.

As the data from the control shows (Table 4), disease pressure slowly intensified during the July 20--August 27 period. Disease control by the various treatments also declined as disease pressure grew, however, the experimental compounds (Spotless, H6573, HWG 1608, etc.) seemed to maintain control of the disease longer than did many of the standards. Of special note was the Spotless compound which maintained season-long control of the disease at the 1 lb ai/1000 ft² rate after the turf outgrew some initial chemical phytotoxicity.

Phytotoxicity was observed as noted on the data tables.

Grand Rapids Elks Country Club, Grand Rapids, MI

Summer Patch Fungicide Study #4

The summer patch fungicide study #4 was initiated preventively on May 24, 1988 with a second application being made on June 21, 1988. The plots were rated for summer patch infection on August 30, 1988.

As the data shows (Table 5) this study was very heavily diseased by summers end. Rather large variations in disease severity between replications are attributable to lack of uniform disease pressure in the plot area. As in the other summer patch trials, experimental compounds such as Spotless, ICIA 523, H6573 and Prochloraz continued to perform well. Banner, Rubigan and Bayleton were the best performing standard compounds.

No phytotoxicity was noted on the dates the ratings were taken.

DOLLAR SPOT FUNGICIDE TRIALS - 1988

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

Preventive Study

The 1988 preventive 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 1/4" height of cut and fertilized at .33 #N/mo. Treatments were applied preventively to 3' x 6' plots in three replications of a random block design on 7, 14, 21 or 28 day schedules as indicated on the data table. Because of the hot, dry wether we experienced this summer, disease did not begin to develop in the plot area until the rains came in mid-August. Our initial treatments were applied on August 18. All treatments were applied with a CO₂ small-plot sprayer at 30 PSI and 48

Table 4. Summer Patch Fungicide Trial #1 - 1988

Orchard Lake Country Club, Orchard Lake, MI

Percent plot area infected

Rating date: 8/27/88

Treatment	Rate/1000 ft ²	Interval	I	II	III	Ave	DMR(.05) ^a
Spotless	1 lb ai/A	May, June	3 ^d	10	5 ^d	6.0	P
Spotless	.5 lb ai/A	May, June	20	35	1	18.7	OP
H6573 + Tersan 1991	.25 oz ai + 1 oz ai	May, June	35	10	25	23.3	NOP
HWG 1608	.5 oz ai	May, June	30	10	30	23.3	NOP
H6573	.25 oz ai	May, June	30	35	10	25.0	MNOP
Spotless	.25 lb ai/A	May, June	20	35	35	30.0	LMNOP
Flutolanil + SN596	2 oz + 1 oz	May, June	20	60	25	35.0	KLMNO
H6573	.125 oz ai	May, June	50	25	35	36.7	JKLMNO
HWG 1608	.25 oz ai	May, June	20	40	60	40.0	IJKLMNO
Dac 2787 + SDS 66533	6 fl oz + 4 fl oz	May, June	40	40	40	40.0	IJKLMNO
Prochloraz + SN 99731	4.5 fl oz + 1 oz	May, June	40	30	55	41.7	HIJKLMNO
Bayleton	1 oz	June	20	70	40	43.3	GHIJKLMNO
Rubigan	3.75 fl oz	May, June	30	35	70 ^C	45.0	FGHIJKLMNO
ICIA523 + X-77	6 gm ai + .05% v/v	May, June	30	70	40	46.7	EFGHIJKLMNO
ICIA523 + X-77	4 gm ai + .05% v/v	May, June	40	60	45	48.3	DEFGHIJKLMNO
H6573 + Tersan 1991	.125 oz ai + 1 oz ai	May, June	60	55	30	48.3	DEFGHIJKLMNO
Banner	4 fl oz	May, June	30	60	55	48.3	DEFGHIJKLMNO
H6573 + DPX-965	.125 oz ai + 1 oz ai	May, June	35	50	60	48.3	DEFGHIJKLMNO
Prochloraz	4.5 fl oz	May, June	30	45	75	50.0	CDEFGHIJKLMN
ICIA523 + X-77	8 gm ai + .05% v/v	May, June	30	45	75	50.0	CDEFGHIJKLMN
Banner	4 fl oz	May	25	80	50	51.7	BCDEFGHIJKLMN
SDS 66534	4.3 fl oz	May, June	70	30	60	53.3	BCDEFGHIJKLM
Bayleton	2 oz	May, June	65	50	50	55.0	ABCDEFGHIJKLM
Flutolanil + SN99731	2 oz + 1 oz	May, June	50	40	80	56.7	ABCDEFGHIJKL
Spotless	.125 lb ai/A	May, June	70	45	55	56.7	ABCDEFGHIJKL
H6573 + DPX-965	.06 oz ai + 1 oz ai	May, June	40	50	80	56.7	ABCDEFGHIJKL
SDS 66534	2.1 fl oz	May, June	60	45	65	56.7	ABCDEFGHIJKL
Faeriefungin ^b	500 ppm	Monthly	40	80	55	58.3	ABCDEFGHIJKL
Bayleton	2 oz	June	25	70	85	60.0	ABCDEFGHIJKL
Banner	4 fl oz	June	30	75	75	60.0	ABCDEFGHIJKL
Tersan 1991	2 oz	July	80	70	30	60.0	ABCDEFGHIJKL
Bayleton	1 oz	May, June	70	55	65	63.3	ABCDEFGHIJK
Rubigan	3.75 fl oz	June	65	70	60 ^C	65.0	ABCDEFGHIJK
Banner	2 fl oz	June	50	70	75	65.0	ABCDEFGHIJK
Bayleton	2 oz	May	75	90	60	66.7	ABCDEFGHIJ
Banner	2 fl oz	May, June	80	75	50	68.3	ABCDEFGHI
LS84.606	0.05 oz ai	May, June	70	80	55	68.3	ABCDEFGHI
Rubigan	1.75 fl oz	May, June	55	70	80	68.3	ABCDEFGHI
Lesco Fungicide	6 oz	May, June	80	50	80	70.0	ABCDEFGHI
Tersan 1991	2 oz	June, July	70	90	50	70.0	ABCDEFGHI
Dac 2787 + SDS 66533	3 fl oz + 1 fl oz	May, June	80	80	50	70.0	ABCDEFGHI

Table 4. Summer Patch Fungicide Trial #1 - 1988 (cont.)

Treatment	Rate/1000 ft ²	Interval	I	II	III	Ave	DMR(.05) ^a
H6573 + Tersan 1991	.06 oz ai + 1 oz ai	May, June	70	65	75	70.0	ABCDEFGHI
Tersan 1991	1 oz ai	May, June	70	85	55	70.0	ABCDEFGHI
Tersan 1991	2 oz	June	75	70	70	71.7	ABCDEF GH
Bayleton + Lawn Restore ^b	2 oz + 5 lb	May, June, Monthly	70	70	75	71.7	ABCDEF GH
Dac 2787 + SDS 66533	6 fl oz + 2 fl oz	May, June	60	70	85	71.7	ABCDEF GH
Flutolanil	4 oz	May, June	65	80	70	71.7	ABCDEF GH
H6573	.06 oz ai	May, June	80	70	65	71.7	ABCDEF GH
Faeriefungin	1000 ppm	Monthly	80	80	60	73.3	ABCDEF G
Rubigan	3.75 fl oz	May	80	65	80	75.0	ABCDEF
Rubigan	1.75 fl oz	June	70	80	75	75.0	ABCDEF
Banner	2 fl oz	May	70	65	90	75.0	ABCDEF
Fungo 50	4 oz	June, July	70	80	80	76.7	ABCDE
Fungo 50	8 oz	June, July	70	70	90	76.7	ABCDE
Bayleton	1 oz	May	75	75	85	78.3	ABCD
DPX-965	1 oz ai	May, June	50	90	95	78.3	ABCD
Rubigan	1.75 fl oz	May	80	80	80	80.0	ABC
Control	---	---	80	80	80	80.0	ABC
Ch26019 + LS84.606	1 oz ai + .05 oz ai	May, June	80	80	80	80.0	ABC
Ch26019	2 oz ai	May, June	65	95	85	81.7	AB
Fertilizer (10-4-4) ^b	1.0 lb N	Monthly	70	80	95	81.7	AB
Faeriefungin ^b	1000 ppm	May, June	90	80	85	85.0	A
Turf Restore ^B	20 lb, 15 lb, 10 lb	May, June, Sept	severely damaged - no disease data available				
	(with & w/o microorganisms)						

a = treatments followed by same letter are not significantly different from each other at the 5% level

b = no supplemental fertility applied to these treatments

c = mild phytotoxicity evident

d = greening effect

Table 5. Summer Patch Fungicide Trial #4 - 1988

Grand Rapids Elks Country Club, Grand Rapids, MI

Percent plot area infected

Rating date: 8/30/88

Treatment	Rate/1000 ft ²	Interval	I	II	III	Ave	DMR(.05) ^a
Spotless	.5 lb ai/A	May, June	0	0	2	0.7	JK
Rubigan	3.75 fl oz	May, June	0	0	3	1.0	JK
Banner	4 fl oz	June	5	0	0	1.7	JK
Spotless	1 lb ai/A	May, June	0	7	0	2.3	JK
ICIA523 + X-77	8 g ai + 0.05% v/v	May, June	5	0	5	3.3	IJK
ICIA523 + X-77	6 g ai + 0.05% v/v	May, June	0	2	10	4.0	HIJK
ICIA523 + X-77	4 g ai + 0.05% v/v	May, June	0	0	20	6.7	HIJK
Bayleton	2 oz	May, June	0	5	15	6.7	HIJK
SDS-66534	4.3 fl oz	May, June	0	7	15	7.3	HIJK
Prochloraz + SN99731	4.5 fl oz + 1 oz	May, June	0	3	20	7.7	GHIJK
Flutolanil + SN99731	2.0 oz + 1 oz	May, June	0	5	20	8.3	GHIJK
Bayleton	2 oz	May	5	5	15	8.3	GHIJK
Bayleton	1 oz	May, June	0	20	5	8.3	GHIJK
H6573	.06 oz ai	May, June	0	20	10	10.0	GHIJK
H6573	.25 oz ai	May, June	15	15	2	10.7	FGHIJK
Flutolanil + SN596	2.0 oz + 1 oz	May, June	0	30	3	11.0	FGHIJK
Dac 2787 + SDS66533	3 fl oz + 1 fl oz	May, June	2	25	10	12.3	FGHIJK
Banner	4 fl oz	May, June	40	0	0	13.3	EFGHIJK
Bayleton + Turf Restore ^b	2 oz + 5 lb	May, June,	2	2	40	14.7	EFGHIJK
		Monthly					
H6573 + Tersan 1991	.25 oz ai + 1 oz ai	May, June	0	30	15	15.0	EFGHIJK
Faeriefungin	1000 ppm	Monthly	20	5	20	15.0	EFGHIJK
Dac 2787 + SDS66533	6 fl oz + 2 fl oz	May, June	0	20	25	15.0	EFGHIJK
Dac 2787 + SDS66533	6 fl oz + 4 fl oz	May, June	0	10	35	15.0	EFGHIJK
H6573 + DPX965	.06 oz ai + 1 oz ai	May, June	2	7	40	16.3	EFGHIJK
Biogroundskeeper + P ^b	2 oz + .25 lb	Monthly	5	5	40	16.7	EFGHIJK
H6573	.125 oz ai	May, June	0	35	15	16.7	EFGHIJK
Rubigan	3.75 fl oz	May	7	15	40	20.7	DEFGHIJK
Fungo 50	8 oz	June, July	7	15	40	20.7	DEFGHIJK
Turf Restore ^b	5 lb	Monthly	2	20	40	20.7	DEFGHIJK
Banner	4 fl oz	May	7	20	40	22.3	DEFGHIJK
Banner	2 fl oz	May, June	5	20	45	23.3	DEFGHIJK
Bayleton	2 oz	June	40	20	10	23.3	DEFGHIJK
Spotless	.125 lb ai/A	May, June	0	60	10	23.3	DEFGHIJK
Biogroundskeeper + P + K ^b	2 oz + .25 lb + .25 lb	Monthly	7	25	40	24.0	DEFGHIJK
Tersan 1991	2 oz	June	15	20	40	25.0	DEFGHIJK
Flutolanil	4.0 fl oz	May, June	1	65	10	25.3	DEFGHIJK
Prochloraz	4.5 fl oz	May, June	0	30	50	26.7	CDEFGHIJK

Table 5. Summer Patch Fungicide Trial #4 - 1988 (cont.)

Treatment	Rate/1000 ft ²	Interval	I	II	III	Ave	DMR(.05) ^a
H6573 + DPX965	.125 oz ai + 1 oz ai	May, June	25	35	20	26.7	CDEFGHIJK
Spotless	.25 lb ai/A	May, June	0	5	75	26.7	CDEFGHIJK
Biogroundskeeper + K ^b	2 oz + .25 lb	Monthly	2	30	50	27.3	CDEFGHIJK
Ch26019	2 oz ai	May, June	0	60	25	28.3	BCDEFGHIJK
Banner	2 fl oz	June	65	15	5	28.3	BCDEFGHIJK
HWG1608	.25 oz ai	May, June	0	45	40	28.3	BCDEFGHIJK
Phosphorus	1 lb	Monthly	3	40	45	29.3	BCDEFGHIJK
Rubigan	1.75 fl oz	June	7	60	25	30.7	BCDEFGHIJK
SDS66534	2.1 fl oz	May, June	0*	50	45	31.7	ABCDEFGHIJK
Lesco Fungicide	6 oz	May, June	55	40	0	31.7	ABCDEFGHIJK
Sustain ^{bc}	1 lb N	Monthly	35	40	20	31.7	ABCDEFGHIJK
Rubigan	1.75 fl oz	May	7	30	60	32.3	ABCDEFGHIJK
H6573 + T1991	.125 oz ai + 1 oz ai	May, June	0	70	30	33.3	ABCDEFGHIJK
Tersan 1991	2 oz	June, July	40	60	5	35.0	ABCDEFGHIJK
Greenspeed + Biogroundskeeper ^b	4 oz + 2 oz	Monthly	50	45	10	35.0	ABCDEFGHIJK
Bayleton	1 oz	June	45	45	15	35.0	ABCDEFGHIJK
Banner	2 fl oz	May	20	65	25	36.7	ABCDEFGHIJK
Fungo	4 oz	June, July	35	45	30	36.7	ABCDEFGHIJK
Tersan 1991	2 oz	July	7	55	50	37.3	ABCDEFGHIJK
Biogroundskeeper ^b	2 oz	Monthly	40	40	35	38.3	ABCDEFGHIJK
Bayleton	1 oz	May	20	35	60	38.3	ABCDEFGHIJK
Faeriefungin	500 ppm	Monthly	50	15	50	38.3	ABCDEFGHIJK
LS84.606	0.05 oz ai	May, June	3	85	30	39.3	ABCDEFGHIJK
Rubigan	3.75 fl oz	June	5	50	65	40.0	ABCDEFGHIJ
Faeriefungin	1000 ppm	May, June	65	20	40	41.7	ABCDEFGHI
Biogroundskeeper + N,P,K ^b	2oz + .5lb, .25lb, .25lb	Monthly	35	45	45	41.7	ABCDEFGHI
Rubigan	1.75 fl oz	May, June	25	50	55	43.3	ABCDEFGH
H6573 + Tersan 1991	.06 oz ai + 1 oz ai	May, June	25	25	80	43.3	ABCDEFGH
Turf Restore ^b	20 lb, 15 lb, 10 lb	May, Jun, Sep	15	45	70	43.3	ABCDEFGH
Turf Restore w/o microbes ^b	20 lb, 15 lb, 10 lb	May, Jun, Sep	20	65	45	43.3	ABCDEFGH
Tersan 1991	1 oz ai	May, June	35	75	25	45.0	ABCDEFGH
DPX 965	1 oz ai	May, June	50	70	20	46.7	ABCDEFG
Sustain ^{bc}	.5 lb N	Monthly	45	50	45	46.7	ABCDEFG
Greenspeed ^b	4 oz	Monthly	30	75	45	50.0	ABCDEF
Greenspeed ^b	8 oz	Monthly	70	45	40	51.7	ABCDE
Ch26019 + LS84.606	1 oz ai + .05 oz ai	May, June	45	65	65	58.3	ABCD
Biogroundskeeper + N ^b	2 oz + .5 lb	Monthly	45	70	80	65.0	ABC
Control	----	----	80	60	60	66.7	AB
Fertilizer (10-4-4) ^b	1.0 lb N	Monthly	70	75	65	70.0	A

a = treatments followed by the same letter are not significantly different at the 5% level

b = no supplemental fertility applied

c = Sustain treatments initiated on 6/28

gal/A. The plots were rated for disease on September 25, at which time the 7 day treatments had been applied five times, the 14 day treatments had been applied three times and the 21 and 28 day treatments had been applied twice.

Disease pressure was late in developing and remained relatively light in the plot area this year which might explain why most of the treatments worked so well. As in previous years, the Tersan 1991 treatment was ineffective due to benzimidazole-resistant dollar spot strains which predominate in the plot area. As the data table shows (Table 6), many of the newer, experimental fungicides which looked promising in our summer patch trials also show promise as dollar spot controls (SDS 66533, Spotless, ICIA523, H6573, etc.). All the products tested (except T1991) gave significant disease control when compared to the control.

Phytotoxicity was observed as indicated on the data tables.

Curative Study

The 1988 curative dollar spot (Lanzia sp., Moellerodiscus sp.) fungicide study was conducted at the same location and under the same conditions described above except that it was located on a heavily diseased turf area. The duration of the study was limited somewhat by late development of disease pressure and an unusually early fall. Initial applications were made on September 10 with all subsequent applications being made at the intervals indicated on the data table. The rating was taken on October 3, 1988.

At the time of the rating (Table 7), the 7 day treatments had been applied 3 times, the 14 day treatments had been applied twice and the 21 and 28 day treatments had been applied once. The study was terminated after the October 3 rating because disease pressure in the controls and the plot area in general was abating. This decline in disease pressure occurred before recovery was complete in some treated plots. Had we been able to continue the study for two additional weeks, some of the treatments (CH 26019 + LS 84.606, H6573 + T1991, etc.) would probably have shown 100% recovery from initial disease damage. As the statistics show, however, all treatments gave a significant reduction in the disease levels, compared to the untreated controls.

Phytotoxicity was observed as indicated on the data tables.

NECROTIC RING SPOT FUNGICIDE TRIALS #1 AND #2 - 1988

Glen Haven Condominiums, Novi, MI

The 1988 necrotic ring spot (Leptosphaeria korrae) fungicide trials #1 and #2 were conducted on an irrigated, moderately fertilized (1/3 #N/mo) Kentucky bluegrass residential turf area at the Glen Haven Condominium complex in Novi, Mi. Two preventive studies were initiated in May 1988, one study utilizing the same treatments and rates used in our summer patch fungicide trials, and a second study which used corporate contract treatments and rates. These studies will be referred to as study #1 and study #2, respectively.

Both studies were laid out in three replications (6' x 9' plots) of a random block design in areas which showed evidence of severe and uniform disease pressure in previous seasons. All sprayable formulations were applied

Table 6. Preventive Dollar Spot Fungicide Trial - 1988

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

Rating date: 9/24/88

Number of dollar spots/plot

Treatment	Rate/1000 ft ²	Interval	I	II	III	Ave	DMR(.05) ^a
HWG1608	.125 oz ai	21 day	0	0	0	0	B
Dac 2787	6 fl oz	14 day	0	0	0	0	B
Bayleton	1 oz	21 day	0	0	0	0	B
Banner	1 fl oz	21 day	0	0	0	0	B
CH 26019 (W)	1 oz ai	21 day	0	0	0	0	B
CH 26019	1 oz ai	21 day	0	0	0	0	B
CH 26019 + LS 84.606	1 oz ai + .05 oz ai	21 day	0	0	0	0	B
RH 3486	.75 oz ai	14 day	0	0	0	0	B
RH 3486	.75 oz ai	21 day	0	0	0	0	B
RH 3486	.75 oz ai	28 day	0	0	0	0	B
RH 3486	.5 oz ai	14 day	0	0	0	0	B
RH 3486	.5 oz ai	21 day	0	0	0	0	B
RH 3866	.25 oz ai	14 day	0	0	0	0	B
Spotless	.125 lb ai/A	21 day	0	0	0	0	B
Spotless	.25 lb ai/A	21 day	0	0	0	0	B
Spotless	.5 lb ai/A	21 day	0	0	0	0	B
Spotless	1 lb ai/A	21 day	0 ^b	0	0	0	B
SAN 619	1 gm ai	21 day	0 ^b	0	0 ^b	0	B
SAN 619	1.5 gm ai	28 day	0 ^b	0 ^b	0 ^b	0	B
SAN 619	1.5 gm ai	21 day	0 ^c	0 ^b	0 ^b	0	B
SAN 619	2 gm ai	28 day	0 ^b	0 ^b	0 ^b	0	B
SAN 832	31 gm ai	21 day	0	0 ^b	0 ^b	0	B
SAN 832	46.5 gm ai	28 day	0 ^b	0 ^b	0	0	B
Vorlan	1 oz	21 day	0	0	0	0	B
H6573 + DPX-965	.06 oz ai + 1 oz ai	21 day	0	0	0	0	B
H6573 + DPX-965	.125 oz ai + 1 oz ai	21 day	0	0	0	0	B
H6573 + Tersan 1991	.06 oz ai + 1 oz ai	21 day	0	0	0	0	B
H6573 + Tersan 1991	.125 oz ai + 1 oz ai	21 day	0	0	0	0	B
H6573 + Tersan 1991	.25 oz ai + 1 oz ai	21 day	0	0	0	0	B
H6573	.06 oz ai	21 day	0	0	0	0	B
H6573	.125 oz ai	21 day	0	0	0	0	B
H6573	.25 oz ai	21 day	0	0	0	0	B
ICIA 523 + X-77	3 gm ai + .05% v/v	21 day	0 ^b	0	0 ^b	0	B
ICIA 523 + X-77	6 gm ai + .05% v/v	21 day	0 ^b	0 ^b	0 ^c	0	B
Dac 2787	3 fl oz	7 day	0	0	0	0	B
Dac 2787	6 fl oz	21 day	0	0	0	0	B
SDS66518	1.75 oz	7 day	0	0	0	0	B
Dac 2787	3.5 oz	21 day	0	0	0	0	B
Dac 2787 + SDS 66533	3 fl oz + 1 fl oz	14 day	0	0 ^b	0	0	B
Dac 2787 + SDS 66533	6 fl oz + 2 fl oz	21 day	0	0	0	0	B
Dac 2787 + SDS 66533	6 fl oz + 4 fl oz	28 day	0	0 ^b	0 ^b	0	B

Table 6. Preventive Dollar Spot Fungicide Trial - 1988 (cont.)

Treatment	Rate/1000 ft ²	Interval	I	II	III	Ave	DMR(.05) ^a
Dac 2787 + SDS 66533	1.5 fl oz + .5 fl oz	7 day	0	0	0	0	B
SDS 66534	2.1 fl oz	14 day	0	0	0	0	B
SDS 66534	4.3 fl oz	21 day	0 ^b	0 ^b	0 ^b	0	B
SDS 66608 ^d	7.4 oz	one appl	0 ^b	0 ^b	4 ^b	1.3	B
SDS 66608 ^d	11.2 oz	one appl	0 ^c	9 ^c	4 ^c	4.3	B
SDS 66608 ^d	3.7 oz	14 day (2 appl only)	1 ^b	26 ^b	8 ^b	11.7	B
DPX-965	1 oz ai	21 day	23	29	50	34.0	A
Control	----	----	54	23	36	37.7	A
Tersan 1991	1 oz ai	21 day	9	38	82	43.0	A

a = treatments followed by the same letter are not significantly different at the 5% level

b = indicates mild phytotoxicity

c = indicates moderately severe phytotoxicity

d = SDS 66608 treatments at all levels were phytotoxic only for 7-10 days following application.

Phytotoxicity was primarily a greening response in which no actual foliar injury was observed

Table 7. Curative Dollar Spot Fungicide Trial - 1988

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

Number of dollar spots/plot

Rating date - October 3, 1988

Treatment	Rate/1000 ft ²	Interval	I	II	III	Ave	DMR(.05) ^a
SAN-619	1 gm ai	21 day	0 ^c	0 ^c	0 ^b	0	B
H6573 + Tersan 1991	.06 oz ai + 1 oz ai	21 day	0	0	0	0	B
Dac 2787 + SDS 66533	6 fl oz + 4 fl oz	28 day	0 ^b	0 ^b	0 ^b	0	B
RH-3486	.75 oz ai	14 day	0	0	0	0	B
H6573	.25 oz ai	21 day	0	0	1	0.3	B
SAN-619	2 gm ai	28 day	2 ^c	0 ^c	0 ^b	0.7	B
H6573 + Tersan 1991	.125 oz ai + 1 oz ai	21 day	0	0	2	0.7	B
RH-3486	.75 oz ai	28 day	0	0	2	0.7	B
RH-3486	.5 oz ai	21 day	0	0	2	0.7	B
SDS-66608 ^d	11.2 oz	1 appl only	0 ^b	0 ^c	3 ^b	1.0	B
CH26019	1 oz ai	21 day	0	0	3	1.0	B
Dac 2787 + SDS-66533	3 fl oz + 1 fl oz	14 day	1 ^b	0	2	1.0	B
SDS-66608 ^d	7.4 oz	1 appl only	2 ^b	0 ^b	2 ^b	1.3	B
Dac 2787	3 fl oz	7 day	0	0	4	1.3	B
CH26019(W)	1 oz ai	21 day	3	0	2	1.7	B
Spotless	.5 lb ai/A	21 day	0	0	5	1.7	B
RH-3486	.5 oz ai	14 day	0	0	5	1.7	B
SDS-66518	1.75 oz ai	7 day	0	0	6	2.0	B
RH-3486	.75 oz ai	21 day	0	0	7	2.3	B
H6573 + DPX-965	.125 oz ai + 1 oz ai	21 day	0	8	0	2.7	B
H6573	.125 oz ai	21 day	0	2	6	2.7	B
Spotless	.125 lb ai/A	21 day	0	0	8	2.7	B
ICIA523 + X-77	6 gm ai + .05% v/v	21 day	0 ^c	0 ^b	9 ^b	3.0	B
Spotless	1 lb ai/A	21 day	0	0	9	3.0	B
Bayleton	1 oz	21 day	6	3	0	3.0	B
SDS-66534	4.3 fl oz	21 day	0	6	5	3.7	B
Spotless	.25 lb ai/A	21 day	0	5	6	3.7	B
Dac 2787	6 fl oz	14 day	4	0	7	3.7	B
Vorlan	1 oz	21 day	7	2	4	4.3	B
H6573 + DPX-965	.06 oz ai + 1 oz ai	21 day	0	1	12	4.3	B
Dac 2787 + SDS 66533	1.5 fl oz + .5 fl oz	7 day	4	0 ^b	9	4.3	B
RH-3866	.25 oz ai	14 day	0	10	3	4.3	B
Banner	1 fl oz	21 day	0	0	14	4.7	B
HWG-1608	.125 oz ai	21 day	2	0	12	4.7	B
SAN-832	31 gm ai	21 day	10	0 ^b	4	4.7	B
SAN-619	1.5 gm ai	21 day	0 ^b	0 ^c	15 ^b	5.0	B
Dac 2787 + SDS-66533	6 fl oz + 2 fl oz	21 day	2 ^b	0 ^b	16	6.0	B
H6573 + Tersan 1991	.25 oz ai + 1 oz ai	21 day	0	0	20	6.7	B
SAN-832	46.5 gm ai	28 day	22	0 ^b	0	7.3	B
H6573	.06 oz ai	21 day	1	17	5	7.7	B
SDS 66518	3.5 oz	21 day	3	21	4	9.3	B

Table 7. Curative Dollar Spot Fungicide Trial - 1988 (cont.)

Treatment	Rate/1000 ft ²	Interval	I	II	III	Ave	DMR(.05) ^e
SDS-66534	2.1 fl oz	14 day	4	0	25 ^b	9.7	B
SAN-619	1.5 gm ai	28 day	4 ^c	2 ^b	32 ^b	12.7	B
CH26019 + LS 84.606	1 oz ai + .05 oz ai	21 day	48	0	0	16.0	B
SDS-66608 ^d	3.7 oz	14 day	0 ^b	0 ^b	55	18.3	B
		2 appl only					
Dac 2787	6 fl oz	21 day	11	0	46	19.0	B
ICIA-523 + X-77	3 gm ai + .05% v/v	21 day	5 ^b	0	74 ^b	26.3	B
DPX-965	1 oz ai	21 day	17	2	65	28.0	B
Tersan 1991	1 oz ai	21 day	45	131	37	71.0	A
Control	----	----	42	45	167	84.7	A

a = treatments followed by the same letter are not significantly different at the 5% level

b = indicates mild phytotoxicity

c = indicates moderately severe phytotoxicity

d = SDS-66608 treatments at all levels were phytotoxic only for 7-10 days following application.
Phytotoxicity was expressed as a greening response with no foliar necrosis

with a CO₂ small-plot sprayer at 30 PSI and 48 gal/A. All granular materials were pre-weighed and applied by hand. The non-fertilizer based treatments were given supplemental fertilizer at the rate of .33 lb N/1000 ft²/mo in order to provide sufficient fertility to promote recovery. No other fertilizer or fungicide applications were made to the overall plot area during the season.

Applications were made to study #1 on May 12 and June 13 and to study #2 on May 19 and June 17 (except as noted on data tables). Numerous patches from the previous season were present in all plots at the time of treatment, although the disease was not active.

Turf recovery as a result of fungicide treatment was somewhat disappointing this year. The turf entered a slow growth stage during the May-July heat and drought with minimal regrowth occurring in treated disease patches. When natural rainfall returned in August, the fertilizer-based treatments promoted rapid regrowth in disease patches but recovery remained poor in the fungicide-treated plots. Soil tests revealed a severe phosphorus deficiency in the plot areas despite the use of a complete maintenance fertilizer (18-5-9) at 1/3 #N/1000 ft²/mo. It is likely that this deficiency, along with the drought, led to diminished recovery in the fungicide plots during the summer period of maximum fungicide efficacy and into the fall when the disease reactivated (Oct.-Nov.) in the plot areas. Reactivation was defined as the formation of new patches or the presence of red leaf tissue in the outer border of existing patches.

Two ratings were taken in each study during the active disease period in the fall. Study #1 was rated by the number of patches/plot (Table 8) while study #2 was rated as percent area infected/plot (Table 9) because distinct patches were less discernible in this study. In an effort to report visually obvious differences between treatments in turfgrass color, density and regrowth into old disease patches, we have included a data table (Table 10) which ranks the treatments in trial #2 from highest to lowest quality. This rating ignores disease incidence, although a comparison of Tables 18 and 19 will show a fairly strong correlation between turfgrass quality and disease incidence.

No phytotoxicity was observed in either study #1 or #2 at the times the ratings were taken.

Table 8. Necrotic Ring Spot Study #1 - 1988

Glen Haven Condominiums, Novi, MI

Number of patches per plot

Rating date: 11/3/88

Treatment	Rate/1000 ft ²	Interval	I	II	III	Ave	DMR(.05) ^a
Turf Restore w/o microbes ^c	20 lb, 15 lb, 10 lb	May, June, Sept	2 ^b	2	4 ^b	2.7	G
Prochloraz + SN99731	4.5 fl oz + 1 oz	May, June	2	2 ^b	9	4.3	FG
Fertilizer (10-4-4) ^c	1 lb N	Monthly	2 ^b	4 ^b	13 ^b	6.3	EFG
Dac 2787 + SDS66533	6 fl oz + 4 fl oz	May, June	7	2	10	6.3	EFG
Turf Restore ^c	20 lb, 15 lb, 10 lb	May, June, Sept	6	1 ^b	13	6.7	DEFG
H6573	.25 oz ai	May, June	2	9	12	7.7	CDEFG
Flutolanil + SN596	2 oz + 1 oz	May, June	12	5	11	9.3	BCDEFG
H6573 + Tersan 1991	.25 oz ai + 1 oz ai	May, June	6	1	22	9.7	BCDEFG
Bayleton	2 oz	May, June	7	10	13	10.0	BCDEFG
Spotless	1 lb ai/A	May, June	14	0 ^b	16	10.0	BCDEFG
Ch26019 + LS84.606	1 oz ai + .05 oz ai	May, June	6	7	17	10.0	BCDEFG
SDS66534	4.3 fl oz	May, June	9	7	15	10.3	BCDEFG
Bayleton + Turf Restore ^c	2 oz + 5 lb	May, June, Monthly	5	17	11	11.0	ABCDEFG
H6573 + Tersan 1991	.125 oz ai + 1 oz ai	May, June	5	13	15	11.0	ABCDEFG
Rubigan	3.75 fl oz	May, June	7	16	11	11.3	ABCDEFG
Rubigan	1.75 fl oz	May, June	23	4	8	11.7	ABCDEFG
Ch26019	2 oz ai	May, June	2	13	20	11.7	ABCDEFG
Banner	4 fl oz	May, June	4	23	8	11.7	ABCDEFG
Spotless	.25 lb ai/A	May, June	8	20	9	12.3	ABCDEFG
Tersan 1991	2 oz	July	12	15	10	12.3	ABCDEFG
Banner	2 fl oz	May, June	5	23	10	12.7	ABCDEFG
Dac 2787 + SDS66533	3 fl oz + 1 fl oz	May, June	9	17	13	13.0	ABCDEFG
Spotless	.5 lb ai/A	May, June	9	11	19	13.0	ABCDEFG
Flutolanil + SN99731	2 oz + 1 oz	May, June	14	13	13	13.3	ABCDEFG
H6573	.125 oz ai	May, June	9	15	16	13.3	ABCDEFG
HWG1608	.5 oz ai	May, June	9	17	15	13.7	ABCDEFG
HWG1608	.25 oz ai	May, June	15	7	20	14.0	ABCDEFG
Flutolanil	4 oz	May, June	15	18	9	14.0	ABCDEFG
Bayleton	1 oz	May	10	13	19	14.0	ABCDEFG
Banner	4 fl oz	May	5	14	23	14.0	ABCDEFG
Tersan 1991	2 oz	June, July	7	18	17	14.0	ABCDEFG
ICIA523 + X-77	8 gm ai + .05% v/v	May, June	3	18	21	14.0	ABCDEFG
ICIA523 + X-77	6 gm ai + .05% v/v	May, June	11	14	18	14.3	ABCDEFG
Prochloraz	4.5 fl oz	May, June	11	19	14	14.7	ABCDEF
Faeriefungin	1000 ppm	Monthly	8	16	20	14.7	ABCDEF
SDS66534	2.1 fl oz	May, June	11	16	18	15.0	ABCDEF
H6573 + Tersan 1991	.06 oz ai + 1 oz ai	May, June	21	10	14	15.0	ABCDEF
H6573	.06 oz ai	May, June	9	18	18	15.0	ABCDEF
Spotless	.125 lb ai/A	May, June	18	15	13	15.3	ABCDEF
Tersan 1991	2 oz	June	16	15	15	15.3	ABCDEF
Tersan 1991	1 oz ai	May, June	11	16	19	15.3	ABCDEF

Table 8. Necrotic Ring Spot Fungicide Study #1 - 1988 (cont.)

Treatment	Rate/1000 ft ²	Interval	I	II	III	Ave	DMR(.05) ^a
Dac 2787 + SDS66533	6 fl oz + 2 fl oz	May, June	21	14	12	15.7	ABCDEF
Rubigan	1.75 fl oz	May	7	21	19	15.7	ABCDEF
DPX 965	1 oz ai	May, June	7	30	10	15.7	ABCDEF
LS84.606	.05 oz ai	May, June	10	19	19	16.0	ABCDEF
Bayleton	1 oz	May, June	9	16	23	16.0	ABCDEF
Lesco Fungicide	6 oz	May, June	16	21	12	16.3	ABCDEF
Faeriefungin	500 ppm	Monthly	8	28	17	17.7	ABCDE
Rubigan	3.75 fl oz	May	18	23	13	18.0	ABCDE
ICIA523 + X-77	4 gm ai + .05% v/v	May, June	11	24	19	18.0	ABCDE
Bayleton	1 oz	June	9	20	25	18.0	ABCDE
H6573 + DPX 965	.125 oz ai + 1 oz ai	May, June	14	18	24	18.7	ABCD
Control	----	----	7	27	22	18.7	ABCD
Bayleton	2 oz	May	13	24	22	19.7	ABC
Rubigan	1.75 fl oz	June	16	28	15	19.7	ABC
Rubigan	3.75 fl oz	June	27	13	19	19.7	ABC
Banner	2 fl oz	May	14	26	19	19.7	ABC
H6573 + DPX 965	.06 oz ai + 1 oz ai	May, June	20	20	20	20.0	AB
Banner	4 fl oz	June	9	24	27	20.0	AB
Bayleton	2 oz	June	12	27	24	21.0	AB
Faeriefungin	1000 ppm	May, June	10	26	28	21.3	AB
Banner	2 fl oz	June	9	23	36	22.7	A

a = treatments followed by the same letter are not significantly different at the 5% level

b = plots exhibiting good color and density

c = no supplemental fertility applied to these treatments,

Table 9. Necrotic Ring Spot Trial #2 - 1988

Glen Haven Condominiums, Novi, MI

Percent plot area infected

Rating date: 11/18/88

Treatment	Rate/1000 ft ²	Interval	I	II	III ^e	Ave	DMR(.05) ^a
Turf Restore w/o microbes ^d	10 lb	Monthly	3 ^b	5 ^b	5 ^b	4.3	M
Turf Restore ^d	10 lb	Monthly	5 ^b	10 ^b	5 ^b	6.7	LM
Sustane ^{cd}	1 lb N	Monthly	10 ^b	15 ^b	5 ^b	10.0	KLM
Turf Restore ^d	20 lb, 15 lb, 10 lb	May, June, Sept	10	20	5	11.6	JKLM
Rubigan	3.75 fl oz	May, June	30	20	15	21.7	IJKLM
Fertilizer (10-4-4) ^d	1 lb N	Monthly	25	25	20	23.3	HIJKLM
Rubigan	.938 oz ai	July, Aug, Sept	45	15	15	25.0	GHIJKLM
Bayleton	1 oz	June	30	35	10	25.0	GHIJKLM
Ch26019 + LS84.606	.25oz ai + .0125oz ai	May, June	50	10	20	26.7	GHIJKL
Ch26019 + LS84.606	.25oz ai + .0125oz ai	July, Aug, Sept	40	35	7	27.3	FGHIJKL
Biogroundskeeper + Fert. (10-4-4) ^d	2 oz + .5 lb N	Monthly	30	30	25	28.3	FGHIJKL
Ch26019 + LS84.606	.5 oz ai + .025 oz ai	May, June	50	20	25	31.7	EFGHIJK
Rubigan	.938 oz ai	May, June	50	20	25	31.7	EFGHIJK
Rubigan	1.75 fl oz	May	50	35	10	31.7	EFGHIJK
Rubigan	1.75 fl oz	June	55	25	15	31.7	EFGHIJK
HWG1608	.5 oz ai	May, June	40	40	20	33.3	DEFGHIJ
Banner	2 fl oz	June	50	25	25	33.3	DEFGHIJ
Banner	4 fl oz	June	55	20	25	33.3	DEFGHIJ
Rubigan	1.75 fl oz	May, June	35	25	40	33.3	DEFGHIJ
Ch26019 + LS84.606	1 oz ai + .05 oz ai	May, June	55	40	10	35.0	CDEFGHI
Rubigan	3.75 fl oz	June	55	30	20	35.0	CDEFGHI
LS84.606	.025 oz ai	May, June	40	25	45	36.7	CDEFGHI
Ch26019	2 oz ai	May, June	55	40	15	36.7	CDEFGHI
LS84.606	.025 oz ai	July, Aug, Sept	50	35	25	36.7	CDEFGHI
Banner	4 fl oz	May	55	35	20	36.7	CDEFGHI
HWG1608	.25 oz ai	May, June	50	30	35	38.3	BCDEFGHI
Bayleton	2 oz	June	45	50	20	38.3	BCDEFGHI
Ch26019	1 oz ai	July, Aug, Sept	55	30	35	40.0	BCDEFGHI
Tersan 1991	2 oz	June, July	40	45	35	40.0	BCDEFGHI
Control	----	----	45	50	25	40.0	BCDEFGHI
Ch26019 + LS84.606	.5 oz ai + .025 oz ai	July, Aug, Sept	50	40	35	41.7	BCDEFGHI
Ch26019 + LS84.606	1 oz ai + .05 oz ai	July, Aug, Sept	55	15	55	41.7	BCDEFGHI
Banner	2 fl oz	May, June	50	30	45	41.7	BCDEFGHI
Banner	4 fl oz	May, June	65	45	20	43.3	BCDEFGHI
Rubigan	3.75 fl oz	May	65	40	25	43.3	BCDEFGHI
Biogroundskeeper + N ^d	2 oz + .5 lb N	Monthly	50	60	20	43.3	BCDEFGHI
Sustane ^{cd}	.5 lb N	Monthly	50	35	45	43.3	BCDEFGHI
Banner	2 fl oz	May	45	35	55	45.0	BCDEFGH
Bayleton	2 oz	May	70	15	50	45.0	BCDEFGH
Tersan 1991	2 oz	July	65	50	25	46.7	ABCDEFG

Table 9. Necrotic Ring Spot Trial #2 - 1988 (cont.)

Treatment	Rate/1000 ft ²	Interval	I	II	III	Ave	DMR(.05)
Bayleton	1 oz	May	65	50	35	50.0	ABCDEF
Greenspeed + Biogroundskeeper ^d	8 oz + 2 oz	Monthly	65	45	40	50.0	ABCDEF
Bayleton	2 oz	May, June	65	30	60	51.7	ABCDE
Bayleton	1 oz	May, June	60	45	50	51.7	ABCDE
Tersan 1991	2 oz	June	65	55	40	53.3	ABCDE
Biogroundskeeper ^d	2 oz	Monthly	60	60	45	55.0	ABCD
Greenspeed ^d	8 oz	Monthly	55	55	55	55.0	ABCD
Biogroundskeeper + K ^d	2 oz + .25 lb	Monthly	65	50	55	56.7	ABC
Biogroundskeeper + P + K ^d	2 oz +.25 lb +.25 lb	Monthly	50	65	65	60.0	AB
Greenspeed ^d	4 oz	Monthly	75	70	60	68.3	A
Biogroundskeeper + P ^d	2 oz + $\frac{1}{2}$ lb	Monthly	80	80	45	68.3	A

a = treatments followed by the same letter are not significantly different at the 5% level

b = good turf density and color

c = initial Sustain treatments applied on 6/29/88

d = treatments received no supplemental fertility

e = Rep.III was mistakenly fertilized by condominium maintenance firm resulting in ratings which are better than might otherwise be expected