

TURFGRASS DISEASE MANAGEMENT REPORT 1994-95
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Snow Mold Fungicide Studies - 1994-95

Studies A & B

Two corporation-sponsored snow mold fungicide studies were conducted during the fall and winter of 1994-95. Study A was established at the Boyne Highlands Resort in Harbor Springs, MI and study B was established on the Tree Tops/Sylvan Resort in Gaylord, MI. Treatments were applied preventively to three replicate 6' X 9' plots on bentgrass/annual bluegrass fairways mowed at 1/2". Study A was applied between 11/3/94 and 11/7/94 (except as noted on data table) and study B was applied between 10/28/94 and 11/3/94 (except as noted on data table). Liquid treatments were applied with a CO₂ backpack sprayer at 32 PSI and 48 GPA utilizing flat fan 8002E nozzles. Granular treatments were pre-weighed and hand applied.

Study A was rated on 3/23/95, immediately after snow cover melt-off. The predominant snow mold species was *Typhula incarnata* (gray snow mold), except as indicated in Table 1. As the data indicates, disease pressure in the Boyne Highlands study was relatively light this year with the control (untreated) plots averaging only 23% disease. As frequently happens under light disease conditions, statistical separation between the treatment means is limited. This problem is exacerbated by variability in disease pressure across replicate plots within treatments. Trends in the data, however, indicate that the standard treatments for snow mold control, such as Terraclor, PCNB, Calo Clor, Scotts FF II, Daconil 2787 + Ch. 26019, etc... performed well again this year. ICIA 5504 (Heritage), in combination with numerous other products, also performed well in this test. No phytotoxicity, other than the slight yellowing noted in Table 1, was observed.

Study B was rated on 3/24/95, immediately following snow cover melt-off. The predominant snow mold species was pink snow mold (*Microdochium nivale*) with minor levels of gray snow mold (*Typhula ishikariensis*). As the data indicates, disease pressure was very heavy in this trial, with approximately 90% infection in the controls. (Table 1). Under these severe disease conditions, many standard snow mold treatments gave statistically significant disease control compared to the untreated control. These include Terraclor, PCNB, Daconil 2787 + Fungo 85, Scotts FF II, and Chipco 26019 in combination with Terraclor or Dac. 2787 and the experimental ICIA 5504 (Heritage). ICIA 5504 (Heritage), in combinations with Fluazinam, Ch. 26019 + Terraclor, or Terraclor, performed very well in both studies A and B. No phytotoxicity, other than the yellowing noted in Table 1, was observed.

Applications were made at our regular application time (on a calendar-based schedule) in both studies A and B. Following application, we experienced an unusually warm, wet fall, during which the turf may have continued to grow through mid-November in northern Michigan. In retrospect, we might have observed better

disease control with traditional standards, especially the mercuries (Calo Clor and Calo Gran) if the treatments had been applied later than usual. This hypothesis is supported by comparing the Turfcide 400 treatments (12 fl oz) applied early, with the same treatment, applied late (11/12/94), as indicated in both data tables. In both studies, the later application performed better, although the difference were not statistically significant.

Table 1. Snow Mold Fungicide Study A- 1994-95 Boyne Highlands Resort, Harbor Springs, MI

Rating Scale: Percent plot area infected by gray snow mold (*Typhula incarnata*)
Rating Date: 3/23/95

Treatment	Rate/1000 ft ^{2b}	I ^c	II	III	AVE
Ch. 26019(WDG) + PCNB + Dac. Ultrex	2 oz + 4 oz + 4.8 oz	0	0	0	0
Heritage + Ch. 26019(WDG)	0.7 oz + 2 oz	0	0	0	0
Heritage + Fluazinam 500	0.7 oz + 2.5 fl oz	0	0	0	0
Heritage + Bayleton	0.7 oz + 4 oz	0	0	0	0
Heritage + Ch. 26019(WDG) + Terraclor	0.7 oz + 4 oz + 8 oz	0	0	0	0
Heritage + Ch. 26019(WDG) + Dac. 2787	0.7 oz + 4 oz + 8 fl oz	0	0	0	0
Heritage + Terraclor	0.7 oz + 8 oz	0	0	0	0
Heritage + Terraclor + Dac. 2787	0.7 oz + 8 oz + 8 fl oz	0	0	0	0
Prostar + PCNB	3 oz ai + 3 oz ai	0	0	0.5	0.2
Ch. 26019 (FLO) + Dac. 2787	8 fl oz + 8 fl oz	0.3	0	0.3	0.2
Banner(WP) + PCNB	0.94 oz + 6 oz	0	0.5	0	0.2
Banner(WP) + PCNB + Dac. 2787	0.63 oz + 4 oz + 8 fl oz	0	0.3	0.3	0.2
Heritage + Prostar	0.7 oz + 4.3 oz	0.3	0	0.3	0.2
Heritage + Terraneb	0.7 oz + 8 oz	0	0	0.5	0.2
Sentinel + PCNB	0.33 + 4 oz	0	0.3 ^c	0.5	0.3
Banner(WP) + PCNB	1.25 oz + 6 oz	0	1	0	0.3
Sets. FF II	2X	0	0.3 ^d	0.5 ^d	0.3
Vigoro 94-298-2-GS	1 lb/100 ft ²	0	1	0 ^d	0.3
Heritage + Banner	0.7 oz + 4 fl oz	0	0	1	0.3
Ch. 26019(WDG) + Dac. Ultrex	4 oz + 4.8 oz	0	0.5	0.5	0.3
Calo Clor	3 oz	0.3	0	1	0.4
Heritage + Dac. 2787	0.7 oz + 8 fl oz	0.3	0	1	0.4
Vigoro 94-292-6-GS	10 lbs	0.3	0 ^d	1 ^d	0.4
Ch. 26019(FLO) + Dac. 2787	4 fl oz + 8 fl oz	1	0	0.5	0.5
EXP 10452A + Dac. Ultrex	4 oz + 4.8 oz	0	0	2	0.7
Heritage + Ch 26019(WDG)	0.7 oz + 4 oz	1	0	1	0.7
Turfcide 400 (applied 11/12/94)	12 fl oz	0.3 ^e	0	2 ^e	0.8

AMV-6 (applied 11/12/94)	8 fl oz	0.3	0	2	0.8
Vigoro 94-292-2-GS	10 lbs	2 ^d	0	0.5	0.8
ANDFG 190	4 lbs	0	0.3	2	0.8
Thalonil (DF) + Ch. 26019(FLO)	4.75 oz + 4 fl oz	0.5	0.3	2	0.9
Heritage	0.7 oz	1	2	0	1
Vigoro 94-298-1-GS	1 lb/100 ft ²	0.3	0	3 ^d	1.1
Vigoro 94-292-4-GS	10 lbs	1 ^d	0.3	2	1.1
Sentinel + Ch. 26019(FLO)	0.33 oz + 2 fl oz	1	2	0.5	1.2
Defend + Spotrete	16 fl oz + 4 oz	1 ^f	2	2	1.7
Banner(WP) + Dac. 2787	1.25 oz + 8 fl oz	5	0	0	1.7
UBI 9250	107 oz	0	0.5	5	1.8
Sentinel	0.33 oz	1	0	5	2.0
ANDFG 182	6 lbs	3 ^d	1 ^d	2 ^d	2.0
Curalan + Dac. 2787	4 oz + 8 fl oz	2	1	2(3)	2.7
Sets. FF II	1X	3	2	3	2.7
Thalonil(F) + Ch. 26019(FLO)	8 fl oz + 4 fl oz	0.3	2(3)	3	2.8
ANDFG 181	6 lbs	5 ^d	0	5 ^d	3.3
Prostar + Dac. 2787	3 oz ai + 3.2 oz ai	3	0.5	7	3.5
Heritage + Fungo 85	0.7 oz + 2.2 oz	5 ^f	0.5	5	3.5
Heritage + Rubigan AS	0.7 oz + 8 fl oz	5	3	3	3.7
Curalan	4 oz	5	0	5(2)	4
Heritage + Vorlan	0.7 oz + 4 oz	3	7	5	5
Vigoro 94-292-5-GS	10 lbs	0	0	10(5)	5
Ch. 26019(WDG) + Dac. Ultrex	2 oz + 4.8 oz	1	10	5	5.3
Revere	8 oz	3	0	15	6
Defend	24 fl oz	3	1	15	6.3
Banner(WP) + Dac. 2787	0.94 oz + 8 fl oz	5	7	5(2)	6.3
Turfcide 400(applied 11/3/94)	12 fl oz	0.3	0	20	6.8
Calo Gran	6 lbs	2	5	2(13)	7.3
Lesco R100002	5 lbs	10	7	5	7.3
Vigoro 94-297-4C-GS	302 gm/100 ft ²	12	7	3	7.3
Vigoro 94-292-3-GS	10 lbs	0.3 ^d	2	2(18) ^d	7.4
ANDFG 176	2 lbs	5	7	7(8)	9
UBI 9249	160 oz	0	2	25	9
ANDFG 179	4 lbs	12	5	7(3)	9

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EXP 10452A	4 oz	1	1	25	9
Heritage + Curalan	0.7 oz + 2 oz	7	0	20	9
Heritage + Dithane M-45	0.7 oz + 6 oz	5	10	10(2)	9
Vigoro 94-297-4A-GS	151 gm/100 ft ²	7	7 ^d	15	9.7
Banner (WP) + CGA 173506	1.25 oz + 0.5 oz	1	0.5	30	10.5
ANDFG 187	4 lbs	10	10	12	10.7
Vigoro 94-292-1-GS	10 lbs	2 ^d	12(3)	5(15)	12.3
ANDFG 180	2 lbs	12	7(3)	5(15)	14
Prostar	3 oz ai	3	10	30	14.3
ANDFG 178	4 lbs	7	3	15(20)	15
ANDFG 186	4 lbs	20	7	10(10)	15.7
Banner(WP)	0.94 oz	2	10	25(10)	15.7
Vigoro 94-298-4-GS	324 gm/100 ft ²	40	10	1	17
Vigoro 94-297-4B-GS	227 gm/100 ft ²	12	7	35	18
Lesco R100012	1.67 lbs	30(5)	12	7(5)	19.7
ANDFG 189	4 lbs	2	0	60	20.7
ANDFG 185	3.33 lbs	10	7 ^d	22(3)	20.7
Banner(WP) + CGA 173506	0.94 oz + 0.5 oz	0	2	55(5)	20.7
Turfcide 10G	160 oz	25	20(5)	15(5)	23.3
ANDFG 188	4 lbs	15	5	40(10)	23.3
Consyst	9 oz	50	10	2(10)	24
Dac. 2787 + Fungo 85	8 fl oz + 1.2 oz	2	20	50	24
Lesco R100009	5 lbs	35(5)	10	25(5)	26.7
Control	--	20	7(5)	40(10)	27.3
ANDFG 184	3.33 lbs	15	1	60(15)	30.3
Lesco R100011	2.5 lbs	30	20	45	31.7
Vigoro 94-298-3-GS	1 lb/100 ft ²	35	0.5	60(5)	33.5
ANDFG 177	2 lbs	7	25(5)	45(20)	34
Consyst	6 oz	65	5	35	35
	Cleary 3336 + Spotrete	2 oz + 8 oz	20	60	25
A-E	ANDFG 183	3.33 lbs	35	30	85
A-D	AMV-30 (applied 11/12/94)	20 oz	15	70(5)	55(10)
ABC	Lesco R100010	5 lbs	35	35	85
AB					
Vigoro 94-292-7-GS	10 lbs	40	55(10)	60(10)	58.3

*Treatments followed by the same letter are not significantly different from each other at 5% level (Tukeys's Honestly Significant Differences test).

^bRates are formulation/1000 ft², unless indicated as active ingredient (ai), or otherwise.

^cNumbers inside parentheses represent percent of plot area infected by pink snow mold (*Microdochium nivale*). Total percent plot area infected is sum of both numbers.

^dSlight greening effect noted.

^eTurf slightly yellowed.

^f*Typhula ishikariensis*.

Table 2. Snow Mold Fungicide Study B - 1994-95 Tree Tops/Sylvan Resort, Gaylord, MI

Rating Scale: Percent plot area infected by pink snow mold (*Microdochium nivale*) primarily, and gray snow mold (*Typhula ishikariensis*) secondarily.

Rating Date: 3/24/95

Treatment	Rate/1000 ft ^{2b}	I	II	III	AVG
Turfcide 400 (applied 11/12/94)	12 fl oz	0.3 ^c	0 ^c	0.5	0.3
Heritage + Ch. 26019(WDG) + Terraclor	0.7 oz + 4 oz + 8 oz	1	0	0	0.3
AMV-6 (applied 11/12/94)	8 fl oz	1	0 ^c	0.3 ^c	0.4
Heritage + Dac. 2787 + Terraclor	0.7 oz + 8 fl oz + 8 oz	2	0	0	0.7
Heritage + Terraclor	0.7 oz + 8 oz	1	0.5	1	0.8
Consys	9 oz	3 ^f	0	0	1
Heritage + Fluazinam 500	0.7 oz + 2.5 fl oz	7	1	2	3.3
Heritage + Fungo 85	0.7 oz + 2.2 oz	12	2	0.5 ^c	4.8
Heritage + Rubigan AS	07 oz + 8 fl oz	10	7	0.5	5.8
Revere	8 oz	20	1	0.5 ^c	7.2
Ch. 26019(WDG) + PCNB + Dac. Ultrex	2 oz + 4 oz + 4.8 oz	20	0.3	3	7.8
Banner(WP) + PCNB + Dac. 2787	0.63 oz + 4 oz + 8 fl oz	20	2	5	9.0
Scts. FF II	2X	10	12	5	9.0
Dac. 2787 + Fungo 85	8 fl oz + 1.2 oz	7 ^f	20 ^f	0.5	9.2
Lesco R100002	5 lbs	25	3	3 ^c	10.3
Consys	6 oz	30 ^f	1 ^f	3 ^c	11.3
Turfcide 400(applied 10/30/94)	12 fl oz	20	5	10	11.7
Scts. FF II	1X	30 ^c	1 ^c	5 ^c	12.0
Heritage + Banner	0.7 oz + 4 fl oz	25	10	2	12.3
Cleary 3336 + Spotrete(WDG)	2 oz + 8 oz	35 ^f	1 ^f	10 ^c	15.3
Heritage + Ch. 26019(WDG) + Dac. 2787	0.7 oz + 4 oz + 8 fl oz	12	35	3	16.7
Banner(WP) + PCNB	1.25 oz + 6 oz	12	20	20	17.3
Curalan + Dac. 2787	4 oz + 8 fl oz	25	10	20	18.3
Heritage + Dac. 2787	0.7 oz + 8 fl oz	25	20	15	20
ANDFG 190	4 lbs	35	10	40	28.3
Ch. 26019(FLO) + Dac. 2787	8 fl oz + 8 fl oz	20	75	2	32.3
ANDFG 184	3.33 lbs	50	40	12	34

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Heritage + Vorlan	0.7 oz + 4 oz	40	5	60	35
Vigoro 94-297-4C-GS	302 gm/100 ft ²	35	50	20	35
Vigoro 94-298-1-GS	1 lb/100 ft ²	35	7	65	35.7
Banner(WP) + PCNB	0.94 oz + 6 oz	25	20	65	36.7
ANDFG 183	3.33 lbs	60	10	40	36.7
ANDFG 186	4 lbs	40	45	25	36.7
ANDFG 185	3.33 lbs	35	65	15	38.3
Ch. 26019(WDG) + Dac. Ultrex	2 oz + 4.8 oz	95	20	5	40
Heritage + Ch. 26019(WDG)	0.7 oz + 2 oz	35	40	50	41.7
Prostar + PCNB	3 oz ai + 3 oz ai	50	40	40 ^c	43.3
Calo Clor	3 oz	75 ^c	45 ^c	10 ^d	43.3
Thalonil(F) + Ch. 26019(FLO)	8 fl oz + 4 fl oz	70	50	12	44
Heritage	0.7 oz	45	30 ^c	60	45
Heritage + Terraneb	0.7 oz + 8 oz	30	85	20	45
UBI 9249	160 oz	85	10	40 ^c	45
Banner(WP) + CGA 173506	0.94 oz + 0.5 oz	45	70	30	48.3
Vigoro 94-297-46-GS	227 gm/100 ft ²	35	80	30	48.3
Heritage + Bayleton	0.7 oz + 4 oz	80	3	65	49.3
Heritage + Dithane (M-45)	0.7 + 6 oz	35	40	75	50
Heritage + Ch. 26019(WDG)	0.7 oz + 4 oz	40	75	35	50
Heritage + Curalan	0.7 oz + 2 oz	50 ^f	35	70	51.7
Vigoro 94-297-4A-GS	151 gm/100 ft ²	85	20	50	51.7
Defend + Spotrete (WDG)	16 fl oz + 4 oz	55	65	35	51.7
Defend	24 fl oz	50	50	60	53.3
ANDFG 187	4 lbs	65	35	60	53.3
Heritage + Prostar	0.7 oz + 4.3 oz	35	40	85	53.3
Vigoro 94-298-3-GS	1 lb/100 ft ²	75	60	30	55
Thalonil (DF) + Ch. 26019(FLO)	4.75 oz + 4 fl oz	65	80	20	55
Vigoro 94-298-4-GS	324 gm/100 ft ²	65	40	60	55
Ch. 26019(FLO) + Dac. 2787	4 fl oz + 8 fl oz	60	85	25	56.7
Banner(WP) + CGA 173506	1.25 oz + 0.5 oz	45	70 ^f	60	58.3
Vigoro 94-292-5-GS	10 lbs	40	75	65	60
Vigoro 94-298-2-GS	1 lb	45	70	70	61.7
Vigoro 94-292-6-GS	10 lbs	60	95	35	63.3
Vigoro 94-292-3-GS	10 lbs	90	100	10	66.7

ANDFG 182	6 lbs	70	45	95	70
EXP 10452A + Dac. Ultrex	4 oz + 4.8 oz	50	70	95	71.7
Banner(WP) + Dac. 2787	0.94 oz + 8 fl oz	85	95	35	71.7
Ch. 26019(WDG) + Dac. Ultrex	4 oz + 4.8 oz	50	75	95	73.3
Lesco R100010	5 lbs	85	75	60	73.3
UBI 9250	107 oz	80	65 ^c	75 ^c	73.3
Banner(WP) + Dac. 2787	1.25 oz + 8 fl oz	95	75	50	73.3
ANDFG 181	6 lbs	75	80	70	75
Lesco R100011	2.5 lbs	80	65	85	76.7
Lesco R100009	5 lbs	95	45	90	76.7
Vigoro 94-292-2-GS	10 lbs	60	80	90	76.7
EXP 10452A	4 oz	95	45	95	78.3
Vigoro 94-292-1-GS	10 lbs	70	98	70	79.3
ANDFG 188	4 lbs	95	50	95	80
Curalan	4 oz	60	90	95	81.7
Calo Gran	6 lbs	80 ^c	85 ^c	85	83.3
Sentinel + Ch. 26019(FLO)	0.33 oz + 2 fl oz	98	98	60	85.3
Sentinel + PCNB	0.33 oz + 4 oz	80	95	85	86.7
Vigoro 94-292-7-GS	10 lbs	95	100	75	90
Turfcide 10 G	160 oz	95	95	80	90
ANDFG 180	2 lbs	80	95	95	90
Banner(WP)	0.94 oz	95	90	85	90
ANDFG 189	4 lbs	85	90	98	91
Control	--	90	98	85	91
ANDFG 176	2 lbs	100	85	90	91.7
ANDFG 178	4 lbs	98	98	85	93.7
Vigoro 94-292-4-GS	10 lbs	85	98	100	94.3
ANDFG 177	2 lbs	100	98	85	94.3
Prostar + Dac. 2787	3 oz ai + 3.2 oz ai	95	95	95	95
Lesco R100012	1.67 lbs	98	95	95	96
Sentinel	0.33 oz	100	95	95	96.7
ANDFG 179	4 lbs	95	98	100	97.7
AMV-30 (applied 11/12/94)	20 oz	98	100	100	99.3
Prostar	3 oz ai	98	100	100	99.3

*Treatments followed by same letter are not significantly different from each other at 5% level (Tukeys Honestly Significant Difference Test).

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^bRates are formulations per 1000 ft², unless indicated as active ingredient (ai), or otherwise.

^cTurf mildly yellowed.

^dTurf moderately yellowed.

^e*Typhula incarnata*.

^f*Typhula ishkariensis*.

Kentucky Bluegrass Melting-Out Fungicide Study - 1995

Hancock Turfgrass Research Center

The 1995 melting-out (*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 inch height of cut. The plot area was fertilized dormant in late fall of 1995 at 1 lb nitrogen/1000 ft², on 5/27/95 at 0.25 lb nitrogen/1000 ft², and on 6/7/95 at 0.125 lb nitrogen/1000 ft². Application procedures were as previously described in this report (see snow mold report).

Preventive treatments were applied initially on May 5, with subsequent applications being made at intervals listed on the data table (Table 3). At the time of the June 14 rating, the 14 day treatments had been applied three times and the 21 day treatments were applied twice.

As the data (Table 3) indicates, most of the treatments gave significant control of melting-out disease, compared to the untreated control. No phytotoxicity was observed.

Table 3. Melting-Out Fungicide Study - 1995 Hancock Turfgrass Research Center, MSU, E. Lansing, MI

Rating Scale: 1 = 10% or less of leaves infected, 9 - 90% or more of leaves infected.

Rating Date: June 14 1995

Treatment	Rate/1000 ft ^{2b}	Applic. Interval	I	II	III	IV
IB-11924	6 fl oz	14 day	1	1	1	1
IB-10222	4 fl oz	14 day	1	1	1	1
Thalonil (F)	6 fl oz	14 day	1	1	1	1
CH. 26019 (FLO)	6 fl oz	21 day	1	1	1	1
Thalonil (DF)	3.5 oz	14 day	1	1	2	1
Curalan	1 oz	21 day	2	2	2	1
RCO2	0.3 oz ai	14 day	3	3	4	5
RCO1	0.15 oz ai	14 day	3	5	4	4
Control	--	--	5	4	6	5

^aTreatments followed by same letter are not significantly different from each other at the 5% level (Tukeys Honestly Significance Differences Test).

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

Summer Patch Fungicide Studies - 1995

Fungicide studies for the preventive control of summer patch (*Magnaporthe poae*) on annual bluegrass were initiated when the soil temperature reached 65°F at a 2" depth at the Hancock Turfgrass Research Center on the MSU campus in E. Lansing, MI. Studies were established on irrigated, annual bluegrass (*Poa annua*) fairways on two golf courses in Michigan where disease was present in past years. All treatments were applied prior to disease occurrence, with re-application taking place at the intervals listed in the data tables (Tables 4&5). Application equipment and procedures were as previously described in this report (refer to snow mold report). The fairways were maintained at 1/2 inch height of cut and were fertilized at 1/2 lb N/mo. (except for treatments containing fertilizer). Application intervals and frequencies were occasionally altered from contract protocols in order to conform to our standard recommendation for preventive control of summer patch in Michigan. Initial applications were made when the soil temperature reached 65° F at a 2" depth. A second application was made one month later, or as indicated in the data tables.

Some phytotoxicity was observed in these studies this year, as indicated in the data tables.

Summer Patch Fungicide Study #1, Dearborn Country Club, Dearborn, MI.

The summer patch study at Dearborn C.C. was initiated on May 15, with most treatments being re-applied on 6/12, except as noted on the data table (Table 4). A few treatments were initiated when the soil temperature reached 75° F at a 2 inch depth (6/19) and were re-applied 30 days later (7/17).

Disease pressure at Dearborn was slow to develop, but eventually reached moderately severe levels. The disease rating was taken on Sept. 11. Because September was unusually cool this year, this rating coincided with the peak of disease pressure. As Table 4 indicates, a number of treatments gave significant disease control compared to the fertilized control. Among the best treatments were Heritage combinations, Bayleton (3 applications) applied initially at 65°F, and Heritage and Banner, alone, applied at 75° F. Clearys 3336 performed well applied as a curative (with significant disease already present) on 8/31 and 9/5. Sentinel at the 0.25 of rate, applied at 65° F, also performed respectably, although some disease was evident in these plots.

As indicated in Table 4, a number of combination treatments proved phytotoxic to the turf in the Dearborn study. The same degree of phytotoxicity was not consistently observed in the same treatments in the Twin Beach study. The Dearborn fairway on which the study was located had received an early Embark application for annual bluegrass seedhead suppression which discolored and stunted the turf temporarily. Despite an apparent full recovery by the time our treatments were applied, the turf proved very susceptible to renewed damage from some of our treatments, especially the Heritage + Rubigan treatments and combination treatments containing plant growth regulators. Interestingly, whereas the Heritage + Rubigan combination treatments initially burned severely at both locations, once the turf recovered, disease control was excellent for the remainder of the season. It should be noted that contract protocols requested the wettable powder (50% active ingredient) Rubigan formulation which, at a 2 oz./1000 ft² application rate, provides an unusually high use rate of Rubigan. This may be the reason a severe burn was observed in both studies with this combination treatment.

Summer Patch Fungicide Study #2, Twin Beach Country Club, West Bloomfield, MI.

The summer patch study at the Twin Beach Country Club was initiated on May 16, with most treatments being re-applied on June 19, except as noted on data Table 4. A few treatments were initiated when the soil temperature reached 75 F at a two inch depth on June 19, and were re-applied 30 days later, on July 17 (Table 4.)

Disease pressure in the Twin Beach study peaked at moderately severe levels in early September. As in the Dearborn study, the Heritage and Rubigan combinations provided excellent disease control through the Sept. 6 rating date, but the level of phytotoxicity was unacceptable. The Banner, Rubigan, and Sentinel standards also provided good disease control, although phytotoxicity was observed in the Sentinel + plant growth regulator treatments for a brief period following the May 16 and June 19 applications.

Table 4. Summer Patch Fungicide Study #1- 1995 Dearborn Country Club, Dearborn, MI

Rating Scale:

Percent plot area infected by summer patch (*Magnaporthe poae*).

Rating Date:

Sept. 11, 1995

Treatment	Rate/1000 ft ^{2b}	Applic. Interval	I	II	III
Heritage	0.4 oz	75° + 30 days	0	0	0
Heritage + Rubigan (WP)	0.4 oz + 2 oz	65° + 30 days	0 ^h	0 ^f	0 ^g
Heritage + Rubigan (WP)	0.2 oz + 2 oz	65° + 30 days	0 ^g	3 ^h	2 ^h
Heritage	0.2 oz	75° + 30 days	2	1	5
Cleary 3336	8 oz	applied 8/21 and 9/5 curatively	5 ^e	2	5
Heritage + Banner	0.4 oz + 4 fl oz	65° + 30 days	3	5	5
Banner	4 fl oz	75° + 30 days	7	5	3
Sentinel & Primo ^e	0.25 oz & 0.09 lb ai/A	65° + 30 days & 6/5 + 8/7	3 ^f	7	5 ^g
Bayleton	2 oz (3 apps.)	65° + 30 days + 30 days	5	5	5
Sentinel & Cutless ^f	0.25 oz & 0.25 lb ai/A	65° + 30 days & 6/5 + 8/7	12 ^f	2 ^g	3 ^f
Heritage + Bayleton	0.4 oz + 2 oz	65° + 30 days	5	10	10
Heritage	0.4 oz	65° + 30 days	15	7	3
Rubigan AS	4 fl oz	65° + 30 days	20	5	2
Sentinel	0.25 oz	65° + 30 days	12	12 ^f	5 ^g
Rubigan AS	4 fl oz	75° + 30 days	12	5	12
Heritage + Bayleton	0.2 oz + 2 oz	65° + 30 days	12	15	3
Scts. S-6128	1.25 lbs	14 day	15	2	15
Lynx	1 oz (3 apps.)	65° + 30 days + 30 days	7	20	15
Scts. S-6115	1.33 lbs	14 day	12	20	12
Sentinel & Turf Enhancer	0.25 oz & 0.125 lb ai/A	65° + 30 days & 6/5 + 8/7	30 ^f	12 ^g	2 ^g
Lynx	1.5 oz	65° + 30 days	10	5	35
Heritage + Banner	0.2 oz + 4 fl oz	65° + 30 days	5	30	15
Cutless ^e	0.25 lb ai/A	6/5 + 8/7	3	15	35
Primo ^e	0.09 lb ai/A	6/5 + 8/7	15	20	30
Sentinel	0.167 lb ai/A	65° + 30 days	20	15	35
RH-0611	6 oz	65° + 30 days	25	20	25
Sentinel + Cleary 3336	0.167 oz + 2 oz	65° + 30 days	25	20	25
Bayleton	2 oz	75° + 30 days	20	25	30
Eagle + Fore	0.6 oz + 4.5 oz	65° + 30 days	30	25	25

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Bayleton	1 oz	65° + 30 days	40	15	25
IB 11924 ^d	2.75 fl oz	applied 6/5 + 7/5	35	20	25
Embark ^e	0.0625 lb ai/A	6/5 + 8/7	2	35	50
IB 11924	6 fl oz	65° + 30 days	20	35	35
Bayleton	2 oz	65° + 30 days	30	30	35
Fluazinam 500	0.5 fl oz	65° + 30 days	40	20	35
Bayleton + Panasea Plus	1 oz & 4 fl oz	65° + 30 days & 21 days	40	20	35
Heritage	0.2 oz	65° + 30 days	30	35	35
Control (Unfert.)	--	--	15	50	35
Fluazinam 500	1 fl oz	65° + 30 days	20	35	50
Turf Enhancer ^e	0.125 lb. ai/A	6/5 + 8/7	35	30 ^f	40
Sentinel & Embark ^e	0.25 oz & 0.0625 lb ai/A	65° + 30 days & 6/5 + 8/7	35	35 ^f	35 ^f
Panasea Plus	4 fl oz	21 days	50	35	35
Control (Fertilized)	--	--	35	35	50
Clearys 3336	2 oz	65° + 30 days	40	50	35
Menafee Humate	250 lbs./A	app. 5/22, 6/5, 6/19, 7/5	40	40	50
Menafee Humate	400 lbs./A	app. 5/22, 6/5, 6/19, 7/5	30	45	65
Herbruck's Fert.	0.25 lb N.	14 days	40	35	65

^aTreatments followed by same letter are not significantly different from each other at the 5% level. (Tukeys Honestly Significant Difference Test).

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

^cPre-treatment disease ratings (percent area infected): Rep. I = 40%, Rep. II = 40%, Rep. III = 40%.

^dIB 11924 applied at reduced rate, at request of corporate sponsor, on 6/5 and 7/5.

^ePlant growth regulators applied initially on 6/5 and re-applied on 8/7.

^fMild phytotoxicity on 6/29.

^gModerately severe phytotoxicity on 6/29

^hSevere phytotoxicity on 6/29

Table 5. Summer Patch Fungicide Study #2 - 1995 Twin Beach Golf Club, West Bloomfield, MI

Rating Scale:

Percent plot area infected by summer patch (*Magnaporthe poae*).

Rating Date:

Sept. 6, 1995

Treatment	Rate/1000 ft ^{2b}	Applic. Interval	I	II	III	Avg
Heritage + Rubigan (WP)	0.2 oz + 2 oz	65° + 30 days	1 ^e	3 ^f	2 ^e	2.0
Rubigan AS	4 fl oz	75° + 30 days	5	0	5	3.3
Heritage + Rubigan (WP)	0.4 oz + 2 oz	65° + 30 days	7 ^f	2 ^f	3 ^f	4.0
Sentinel & Cutless	0.25 oz + .25 lb ai/A	65° + 30 days & monthly	5	7 ^h	3	5.0
Sentinel & Primo	0.25 oz + 0.09 lb ai/A	65° + 30 days & monthly	7 ^h	2 ^h	7 ^h	5.3
Banner	4 fl oz	75° + 30 days	2	10	5	5.7
Lynx	1.5 oz	65° + 30 days	10	7	5	7.3
Sentinel	0.167 oz	65° + 30 days	12	2	10	8.0

Rubigan AS	4 fl oz	65° + 30 days	7	12	5	8.0
Sentinel & Turf Enhancer	0.25 oz + 0.125 lb ai/A.	65° + 30 days & monthly	7	0	20 ^h	9.0
Sentinel	0.25 oz	65° + 30 days	5	12	15	10.7
Scts. S-6115	1.33 lb	14 days	5	10	20	11.7
Heritage	0.4 oz	75° + 30 days	12	25	0	12.3
Bayleton	2 oz	75° + 30 days	12	25	7	14.7
Sentinel + Cleary 3336	0.167 oz + 2 oz	65° + 30 days	10	25	10	15.0
Heritage + Bayleton	0.2 oz + 2 oz	65° + 30 days	15	7	25	15.7
Clearys 3336	8 oz	one curative applic. on 8/22	12(5) ^c	7(5)	30(10)	16.3(6.7)
Bayleton + Panasea Plus	1 oz + 4 fl oz	65° + 30 days & 21 days	20	25	5	16.7
Lynx	1 oz (3 apps.)	65° + 30 days + 30 days	15	15	25	18.3
Heritage + Banner	0.4 oz + 4 fl oz	65° + 30 days	15	20	20	18.3
Turf Enhancer	0.125 lbs ai/A	monthly	25 ^h	15 ^h	15 ^h	18.3
Scts. S-6128	1.25 lb	14 days	15	25	20	20.0
Bayleton	2 oz (3 apps.)	65° + 30 days + 30 days	15	12	35	20.7
Sentinel & Embark	0.25 oz + 0.0625 lb ai/A	65° + 30 days & monthly	35 ^e	12 ^e	15 ^e	20.7
Heritage	0.2 oz	75° + 30 days	25	15	25	21.7
Bayleton	1 oz	65° + 30 days	12	30	25	22.3
Heritage + Bayleton	0.4 oz + 2 oz	65° + 30 days	7	30	40	25.7
RH-0611	6 oz	65° + 30 days	25	25	30	26.7
Heritage + Banner	0.2 oz + 4 fl oz	65° + 30 days	20	40	20	26.7
Primo	0.09 lb ai/A	monthly	30	35	15	26.7
Eagle + Fore	0.6 oz + 4.5 oz	65° + 30 days	15	35	35	28.3
Heritage	0.4 oz	65° + 30 days	35	15	35	28.3
Cutless	0.25 lb ai/A	monthly	40	25	25 ^h	30.0
Bayleton	2 oz	65° + 30 days	40	10	40	30.0
Clearys 3336	2 oz	65° + 30 days	40	35	15	30.0
IB 11924 ^d	2.75 fl oz	applied 6/5 and 7/5	30	20	45	31.7
Heritage	0.2 oz	65° + 30 days	15	35	55	35.0
Menafee Humate	250 lb./A	5/22, 6/5, 6/19, 7/5	25	40	40	35.0
Control (fertilized)	--	--	35(30)	35(25)	35(30)	35.0(28)
Herbrucks Fert.	0.5 lb N.	monthly	50	15	40	35.0
Panasea Plus	4 fl oz	21 day	35	45	35	38.3
IB 11924	6 fl oz	65° + 30 days	40	40	35	38.3
Fluazinam 500	0.5 fl oz	65° + 30 days	40	40	35	38.3

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Menafee Humate	400 lb./A	5/22, 6/5, 6/19, 7/5	30	30	65	41.7
Fluazinam 500	1 fl oz	65° + 30 days	35	40	55	43.3
Control (unfertilized)	--	--	60	20	50	43.3
Embark	0.062 lb ai/A	monthly	50 ^a	70 ^a	60 ^a	60.0

^aTreatments followed by the same letter are not significantly different from each other at the 5% level (Tukeys Honestly Significant Differences Test).

^bRates are formulation, unless indicated as active ingredient (ai).

^cRatings in parentheses represent disease levels on Sept. 11, following a second Clearys 3336 application on 9/5.

^dIB 11924 applied at reduced rate at request of corporate sponsor, on 6/5 and 7/5.

^eMild phytotoxicity observed throughout much of summer.

^fModerately severe phytotoxicity observed throughout much of summer.

^gMild phytotoxicity and turf stunting observed briefly, following each monthly Embark application.

^hMild to moderately severe phytotoxicity observed on 6/29/95, but abated shortly thereafter.

Anthracnose Fungicide Study - 1995

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

The 1995 anthracnose (*Colletotrichum graminicola*) study was conducted on an irrigated annual bluegrass fairway area at the Hancock Turfgrass Research Center on the MSU campus. Treatments were applied curatively to 6' x 9' plots in three replications of a randomized block design using equipment and procedures as previously described in this report. The treatments were initiated on Aug. 3, 1995 and re-applied according to the intervals listed in the data table (Table 6). At the time of the rating (Sept. 2) all treatments had been applied twice.

The plots were fertilized at a 3/4 lb N./1000 ft²/mo. during the study duration.

Although the study was conducted for only one month, due to cool weather and a loss of disease pressure after Labor day, we did observe statistically significant differences in disease control between many of the fungicide treatments and the untreated controls (Table 6). Particularly surprising was the level of disease control and turf quality observed in the Aliette + Fore treatment plots. As expected, the systemic fungicides (Sentinel, Banner, Fungo 85, Rubigan) also provided good disease control, although Rubigan and Bayleton seemed to under perform the other systemics in this curative test. No phytotoxicity was observed in this study.

Table 6. Anthracnose Fungicide Study - 1995 Hancock Turfgrass Research Center

Rating Scale:

Percent plot area infected by anthracnose.

Quality Rating (parenthesis):

(0) = worst, (10) = best. (7) = acceptable

Rating Date:

Sept. 2, 1995

Treatment	Rate/1000 ft ²	Interval	I	II	III	Avg	Tukeys(.05) ^a
Sentinel	0.25 oz	28 day	5(8)	3(8)	7(8)	5.0(8)	F
Aliette + Fore ^b	4 oz + 13 fl oz	14 day	3(8)	7(7)	7(7)	5.7(7.3)	EF
Banner	2 fl oz	28 day	12(7)	5(8)	3(8)	6.7 (7.7)	EF
Fungo 85	0.6 oz	14 day	5(8)	10(7)	7(7)	10.0 (7.3)	DEF
EXP 10704A + Dac. Ultrex ^b	4 oz + 3 oz	14 day	10(7)	5(7)	15(6)	10.0(6.7)	DEF
EXP 10704A + EXP 10682A ^b	4 oz. + 3.5 fl oz	14 day	12(7)	15(7)	7(7)	11.3(7)	DEF
EXP 10704A + Ch. 26019 (WP) ^b	4 oz + 2 oz	14 day	12(7)	10(7)	20(6)	14.0(6.7)	DEF
Rubigan (WP)	1.5 lb./A	28 day	25(6)	15(7)	3(6)	14.3 (6.3)	DEF
Rubigan (WP)	2.72 lb./A	28 day	25(6)	12(7)	10(7)	15.7(6.7)	C-F
EXP 10704A + EXP 10682A ^b	4 oz + 7.2 fl oz	14 day	25(6)	7(8)	25(6)	19.0(6.7)	C-F
Rubigan AS	2 fl oz	28 day	25(6)	15(7)	25(6)	21.7(6.3)	C-F
Bayleton	2 oz	28 day	30(5)	30(6)	20(6)	26.7(5.7)	B-F
S-6115	1.33 lbs	14 day	25(6)	25(6)	35(5)	28.3(5.7)	B-E
S-6128	1.25 lbs	14 day	30(4)	40(5)	25(6)	31.7(5)	BCD
Control (fertilized)	--	--	35(6)	40(5)	40(4)	38.3(5)	ABC
Control (unfertilized)	--	--	40(4)	60(3)	40(4)	46.7(3.7)	AB
Latron CS-7	0.25% v/v	14 day	40(5)	60(4)	65(3)	55.0(4)	A

^aTreatments followed by same letter are not significantly different from each other at the 5% level (Tukeys Honestly Significant Difference Test).

^bLatron CS-7 added to these treatments at 0.25% v/v.
Brown Patch Fungicide Study - 1995

Hancock Turfgrass Research Center

The brown patch fungicide study at the turf research center on the MSU campus was established on an irrigated creeping bentgrass fairway turf which was fertilized at 1 lb N per 1000 ft.² per month to promote brown patch disease. The fungicide treatments were applied preventively beginning on 6/29/95, with subsequent applications being made at the intervals cited in the data table (Table 7). Uniform disease development was promoted by inoculating the plots with *R. solani* growing on rye seed or in a cornmeal sand mixture. Following inoculation, aluminum pie plates were used to cover the inoculation sites in order to maintain the high humidity needed for disease development.

As the data in table 7 indicates one month after initial applications, most of the treatments gave significant disease control, compared to the untreated controls. Variability between replications limited statistical differentiation between effective treatments, but the data trends indicated that chlorothalonil (Daconil Ultrex, Thalonil) lived up to its reputation as a very effective standard control for brown patch. Sentinel also performed well.

No phytotoxicity was observed in this study this year.

Pythium Blight Fungicide Studies - 1995

Hancock Turfgrass Research Center

This *Pythium* blight study was established on the same fairway area, and culturally maintained in the same manner as the Hancock brown patch study described above. The plots were inoculated with *Pythium* strains from Pat Sanders at Penn. State University, using the pie plate technique described above. Fungicide treatments were initiated on 6/29/95, with subsequent applications being made at the intervals listed in the data table (Table 8).

As the data indicates, all the fungicide treatments gave statistically significant control of *Pythium* blight. The relatively poor disease control observed in the Subdue treatment may be attributable to Subdue-resistance in the *Pythium* strains used to inoculate the study. No phytotoxicity was observed in this study.

Table 7. Brown Patch Fungicide Study - 1995
Hancock Turfgrass Research Center, Michigan State University, E. Lansing, MI

Rating Scale:

Percent inoculated are infected by brown patch (*Rhizoctonia solani*)

Rating Date:

July 31, 1995

Treatment	Rate/1000 ft ²	Interval	I	II	III	IV	Avg	Tuke ys(.05))*
Thalonil (4L)	6.0 fl oz	14 days	0	0	0	0	0	A
IB10222	4.0 fl oz	14 days	0	1	0	0	.3	A
Sentinel	0.33 oz	21 days	1	0	0	0	.3	A
IB11521	6.0 fl oz	14 days	0	0	5	0	1.3	A
Thalonil	3.5 oz	14 days	0	0	5	0	1.3	A
Daconil Ultrex	3.8 oz	14 days	5	0	0	0	1.3	A
Rubigan AS + Prostar	0.75 fl oz + 2.0 oz	21 days	1	0	5	0	1.5	A
RCO2	0.30 oz ai	14 days	0	1	5	0	1.5	A
Rizolex	4.0 oz	14 days	0	1	5	5	2.8	A
Rubigan AS + Prostar	1.5 fl oz + 3.0 oz	21 days	0	1	10	0	2.8	A
Rizolex	2.5 oz	14 days	1	0	5	--	3.7 ^c	AB
Prostar	2.0 oz	21 days	0	0	5	20	6.3	ABC
Chipco 26019 (WP)	2.0 oz	14 days	0	10	1	20	7.8	ABC
Fore	6.0 oz	14 days	0	0	35	0	8.8	ABC
IB11924	2.75 fl oz	14 days	5	1	10	30	11.5	A-D
Eagle alter. w/ Chipco 26019 (WP)	0.6 oz & 2.0 oz	21 days	10	0	5	35	12.5	A-D
Prostar	3.0 oz	21 days	0	30	20	0	12.5	A-D
RCO1	0.15 oz ai	14 days	0	1	0	50	12.8	A-D
Rubigan AS + Prostar	0.38 fl oz + 1 oz	21 days	5	5	10	40	15.0	A-E
Fore + Chipco 26019 (WP)	6.0 oz + 2.0 oz	21 days	35	1	25	0	15.3	A-E
Twosome	3.0 oz	21 days	20	20	10	20	17.5	A-E
Sentinel	0.25 oz	21 days	5	10	20	50	21.3	A-F
Rubigan AS	1.5 fl oz	21 days	10	50	20	20	25.0	A-G
V-10028	27.33g	7 days	10	50	15	30	26.3	A-G
Eagle	0.6 oz	21 days	30	35	45	10	30.0	A-H
V-10028	54.67g	7 days	30	30	25	40	31.3	A-H

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Curalan	2.0 oz	14 days	40	15	20	50	31.3	A-H		
S-6128	1.25 lb	14 days	40	70	30	50	47.5	B-H		
Rubigan AS	0.75 fl oz	21 days	25	90	30	50	48.8	C-H		
S-6115	1.33 lb	14 days	50	10	90	65	53.8	D-H		
Menefee Humate	400 lb./acre	2 apps. (monthly)	50	20	95	65	57.5	E-H		
Menefee Humate	250 lb./acre	2 apps. (monthly)	60	90	45	60	63.8	FGH		
Control (fert.)	1/2 lb. N	14 days	60	75	60	70	66.3	GH		
Control (unfert.)	----	----			75	40	80	90	71.3	H

*Treatments followed by the same letter are not significantly different at the 5% level (Tukeys Honestly Significant Differences Test).

^bRates are formulation unless listed as active ingredient (a.i.)

^cTreatment average calculated by statistical analysis software utilizing customary procedures for missing data values (Rep. IV)

Table 8. Pythium Blight Fungicide Study - 1995
 Hancock Turfgrass Research Center
 Michigan State University, E. Lansing, MI 48824

Rating Scale: Percent inoculated area infected by *Pythium* blight (*Pythium* sp.)
 Rating Date: July 31, 1995

Treatment	Rate/1000 ft ²	Interval	I	II	III	IV	Avg	Tukeys(.05) ^a
Fluazinam 500	1.0 fl oz	14 days	0	0	0	0	0	A
Fluazinam 500	0.5 fl oz	7 days	5	5	5	15	7.5	A
Aliette WDG	6.0 oz	14 days	10	15	5	0	7.5	A
Subdue	2.0 fl oz	14 days	5	10	80	40	33.8	A
Menefee Humate	250 lb./acre	2 apps (monthly)	80	85	80	90	83.8	B
Menefee Humate	400 lb./acre	2 apps (monthly)	75	90	90	80	83.8	B
Control (fert.)	--	--	95	75	80	90	85.0	B

^aTreatments followed by the same letter are not significantly different at the 5% level (Tukeys Honestly Significant Differences Test).

^bRates are formulation.

Dollar Spot Fungicide Trial - 1995

Hancock Turfgrass Research Center
Michigan State University, E. Lansing, MI

The 1995 dollar spot (*Sclerotinia homoeocarpa*) fungicide trial was conducted on an irrigated Emerald creeping bentgrass green at the Hancock Turfgrass Research Center on the MSU campus in E. Lansing, MI. The green was maintained at 1/4" height of cut and was fertilized at 1/2 lb N./mo. Treatments were initially applied to mildly diseased 2' x 9' plots in four replications of a random block design on 7, 14, 21, or 28 day schedules as indicated on the data tables (Tables 9 & 10), beginning on 7/29/95. By the last rating date (10/28/95), the 7 day treatments had been applied 9 times, the 14 day treatments had been applied 5 times, the 21 day treatments had been applied three times, and the 28 day treatments were applied three times. The dollar spot strains in this test location are benzimidazole-resistant.

As data tables 9 and 10 indicate, most treatments gave statistically significant dollar spot control, compared to the fertilized and unfertilized controls. By the latest rating data (9/28/95), most of the standard dollar spot fungicides exhibited none, or very little disease, and were statistically insignificant from each other.

No phytotoxicity was observed in this study this year.

Table 9. Dollar Spot Fungicide Study - 1995
Hancock Turfgrass Research Center
Michigan State University, East Lansing, MI

Rating Scale:	0 = no disease, 10 = 100% of plot diseased. (10) = best quality, (0) = worst quality, (7.5) = acceptable quality							
Rating Date:	9/4/95							
Treatment	Rate/1000 ft ^{2b}	Interval	I ^d	II	III	IV	Avg	
Ch. 26019 (WP)	2.0 oz	14 days	0(8)	0(8)	0(8)	0(8)	0(8.0)	
RCO1	0.15 oz ai	14 days	0(7)	0(8)	0(8)	0(8)	0(7.8)	
RCO2	0.30 oz ai	14 days	0(7)	0(8)	0(7)	0(8)	0(7.5)	
Lynx + Dac. Ultrex	0.5 oz + 1.84 oz	14 days	0(8)	0(8)	0(9)	0(8)	0(8.3)	
Bayleton + Dac. Ultrex	0.5 oz + 1.84 oz	14 days	0(8)	0(8)	0(8)	0(8)	0(8.0)	
6.0 fl oz	14 days	0(8)	0(8)	0(9)	0(9)	0(8.5)	I	
2.75 fl oz	14 days	0(8)	0(8)	0(8)	0(8)	0(8.0)	I	
4.0 fl oz	14 days	0(8)	0(8)	0(8)	0(9)	0(8.3)	I	
6.0 fl oz	14 days	0(9)	0(9)	0(9)	0(8)	0(8.8)	I	
2.7 lb ai/A	21 days	0(7)	0(8)	0(7)	0(7)	0(7.3)	I	
Eagle alternated with Ch. 26019 (WDG)	0.6 oz & 2.0 oz	21 days	0(7)	0(7)	0(7)	0(7)	0(7.0)	
EXP10682A	7.0 oz	21 days	0(7)	0(8)	0(8)	0(8)	0(7.8)	
Dac. 2787	6.0 fl oz	14 days	0(8)	0(8)	0(8)	1C(8)	0.3(8.0)	
Banner (GL) + Ch. 26019 (FLO)	0.3 fl oz + 2.0 fl oz	21 days	0(7)	0(8)	0(7)	1C(8)	0.3(7.5)	
Banner (MC) + Ch. 26019 (FLO)	5.0 fl oz + 1.0 oz	21 days	0(8)	1 ^c (8)	0(8)	0(8)	0.3(8.0)	

5.0 fl oz + 1.0 oz	21 days	0(7)	0(8)	1 ^c (7)	0(8)	0.3(7.5)	HI
5.0 fl oz + 0.75 oz	21 days	0(8)	1 ^c (8)	0(9)	0(9)	0.3(8.5)	HI
3.5 oz	21 days	0(8)	1 ^c (8)	0(7)	0(8)	0.3(7.8)	HI
3.8 oz	14 days	0(7)	1 ^c (9)	1 ^c (7)	0(8)	0.5(7.8)	GHI
3.5 oz	14 days	0(8)	1 ^c (7)	1 ^c (8)	1 ^c (7)	0.7(7.5)	F-I
1.35lb. ai/A + 2.7lb. ai/A	21 days	1 ^c (7)	1(6)	0(9)	1 ^c (8)	0.7(7.5)	F-I
0.9 fl oz + 1.25 oz	21 days	1(7)	1 ^c (8)	0(7)	1 ^c (8)	0.7(7.5)	F-I
3.0 fl oz	21 days	1 ^c (8)	1 ^c (7)	1 ^c (7)	0(7)	0.7(7.3)	F-I
1.0 oz	21 days	1 ^c (7)	1(7)	1 ^c (7)	0(7)	0.7(7.0)	F-I
2.0 oz	21 days	1 ^c (7)	1 ^c (8)	1 ^c (8)	0(7)	0.7(7.5)	F-I
Sentinel	0.167 oz	28 days	1 ^c (7)	0(7)	1 ^c (8)	1 ^c (7)	0.7(7.3)
Spectro C	5.0 oz	14 days	1 ^c (8)	1 ^c (8)	1(7)	1 ^c (7)	1.0(7.5)
S-6115	1.33 lb	14 days	1(7)	1(6)	1(7)	1(6)	1.0(6.5)
S-6128	1.25 lb	14 days	1(7)	1(6)	1 ^c (7)	1(7)	1.0(6.8)
Lynx + Prostar	1.0 oz + 2.0 oz	21 days	1 ^c (8)	1(6)	1(7)	1 ^c (7)	1.0(7.0)
1.35lb. ai/A + 4lb. ai/A	21 days	1 ^c (7)	1(6)	1 ^c (7)	1 ^c (7)	1.0(6.8)	E-I
0.3 fl oz	21 days	1(7)	1(7)1	1 ^c (7)	1 ^c (7)	1.0(7.0)	E-I
0.31 oz	21 days	1(6)	1(6)	1(7)	1(6)	1.0(6.3)	E-I
0.31 oz + 1.25 oz	21 days	1 ^c (7)	1(7)	1 ^c (7)	1(7)	1.0(7.0)	E-I

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0.6 oz	21 days	1 ^c (7)	1(7)	1 ^c (7)	1(7)	1.0(7.0)	E-I
)	
21 days	1 ^c (8)	1 ^c (8)	1 ^c (7)	1 ^c (7)	1.0(7.5)	E-I	
)		
21 days	1(7)	1 ^c (7)	1(6)	1(7)	1.0(6.8)	E-I	
)		
21 days	1(7)	1(6)	1(6)	1(7)	1.0(6.5)	E-I	
)		
21 days	1(6)	1(6)	1 ^c (7)	1 ^c (8)	1.0(6.8)	E-I	
)		
21 days	1 ^c (8)	1 ^c (7)	1 ^c (8)	1 ^c (7)	1.0(7.5)	E-I	
)		
21 days	1 ^c (7)	1 ^c (7)	1 ^c (7)	1 ^c (8)	1.0(7.3)	E-I	
)		
21 days	1(7)	2(6)	1(7)	1(7)	1.3(6.8)	E-I	
)		
21 days	2(6)	1 ^c (7)	1(7)	1 ^c (7)	1.3(6.8)	E-I	
)		
21 days	2(6)	1(7)	1 ^c (8)	1 ^c (7)	1.3(7.0)	E-I	
)		
14 days & monthly	1(7)	2(7)	1 ^c (7)	1(7)	1.3(7.0)	E-I	
)		
7 days	4(5)	1(6)	1 ^c (7)	1(6)	1.8(6.0)	D-I	
)		
7 days	3(5)	1(6)	1(6)	2(5)	1.8(5.5)	D-I	
)		
21 days	2(6)	2(5)	2(6)	1(6)	1.8(5.8)	D-I	
)		
14 days	2(6)	2(5)	2(5)	2(6)	2.0(5.5)	C-I	
)		
21 days	2(5)	2(6)	2(5)	3(5)	2.3(5.3)	B-H	
)		
21 days	2(5)	3(5)	3(5)	1 ^c (7)	2.3(5.5)	B-H	
)		
21 days	3(6)	2(5)	2(6)	3(5)	2.5(5.5)	A-G	
)		
21 days	3(5)	4(4)	2(5)	2(6)	2.8(5.0)	A-F	

21 days	2(5)	6(3)	2(6)	2(6)	3.0(5.0)	A-E	
21 days	2(4)	3(6)	5(3)	3(5)	3.3(4.5)	A-E	
---	3(5)	4(5)	5(3)	3(5)	3.8(4.5)	A-D	
---	4(4)	5(3)	3(5)	3(4)	3.8(4.0)	A-D	
monthly	4(4)	7(2)	2(5)	3(4)	4.0(3.8)	ABC	
Prostar	3.0 oz	21 days	5(3)	6(4)	4(5)	3(4)	4.5(4.0)

*Treatment disease averages followed by same letter are not significantly different from each other at the 5% level (Tukeys Honestly Significant Differences Test).

^bRates are formulation unless indicated as active ingredient (ai) or otherwise.

^cPlot has fewer than 10 small dollar spots.

^dRatings in parentheses indicate turf quality.

Table 10. Dollar Spot Fungicide Study - 1995
Hancock Turfgrass Research Center
Michigan State University, E. Lansing, MI

Rating Scale: 0 = no disease, 10 = 100% of plot diseased
(10) = best quality, (0) worst quality. (7.5) = acceptable quality
Rating Date: Sept. 28, 1995

Treatment	Rate/1000 ft ^{2b}	Interval	I ^d	II	III	IV
Ch. 26019 (FLO)	3 fl oz	21 day	0(7)	0(7)	0(7)	0(8)
Ch. 26019 (WDG)	2 oz	21 day	0(8)	0(8)	0(8)	0(8)
EXP 10682A	3.5 oz	21 day	0(7)	0(8)	0(8)	0(8)
EXP 10682A	7 oz	21 day	0(7)	0(8)	0(8)	0(8)
Curalan	1 oz	21 day	0(8)	0(7)	0(8)	0(8)
Twosome	3 fl oz	21 day	0(8)	0(8)	0(8)	0(7)
Thalonil(F) + Lynx	5 fl oz + 0.75 oz	21 day	0(8)	0(8)	0(9)	0(8)
Thalonil(F) + Bayleton	5 fl oz + 0.75 oz	21 day	0(7)	9(8)	0(7)	0(8)
Thalonil(F) + Banner	5 fl oz + 0.5 fl oz	21 day	0(8)	0(8)	0(8)	0(8)
Banner(MC) + Ch. 26019(FLO)	0.9 fl oz + 2 fl oz	21 day	0(8)	0(8)	0(8)	0(8)
Banner(GL) + Ch. 26019(FLO)	0.3 fl oz + 2 fl oz	21 day	0(7)	0(8)	0(8)	0(8)
Curalan	2.7 lb ai/A	21 day	0(8)	0(7)	0(8)	0(8)
Dac. 2787	6 fl oz	14 day	0(9)	0(9)	0(9)	0(9)
Ch. 26019 (WP)	2 oz	14 day	0(8)	0(8)	0(8)	0(8)
RC01	0.15 oz ai	14 day	0(7)	0(8)	0(8)	0(8)
RC02	0.3 oz ai	14 day	0(7)	0(8)	0(8)	0(8)
Lynx + Dac. Ultrex	0.5 oz + 1.84 oz	14 day	0(9)	0(8)	0(9)	0(8)
Bayleton + Dac. Ultrex	0.5 oz + 1.84 oz	14 day	0(8)	0(8)	0(8)	0(8)
Thalonil (4L)	6 fl oz	14 day	0(9)	0(9)	0(9)	0(8)
IB 11924	2.75 fl oz	14 day	0(8)	0(8)	0(8)	0(9)
IB 10222	4 fl oz	14 day	0(8)	0(9)	0(8)	0(9)
Dac. Ultrex	3.8 oz	14 day	0(8)	0(9)	0(8)	0(8)
IB 11521	6 fl oz	14 day	0(9)	0(9)	0(9)	0(8)
Spectro C	5 oz	14 day	0(8)	0(8)	0(8)	0(8)
Dac. 2787 & Primo	6 fl oz + 0.09 lb ai/A	14 days & monthly	0(8)	0(8)	0(9)	0(8)
Thalonil(DF)	3.5 oz	14 days	0(9)	0(8)	1 ^c (9)	0(8)

Curalan + Dac. Ultrex	1.35 lb ai/A + 4 lb ai/A	21 days	0(7)	1 ^c (8)	0(8)	0(8)
Banner(MC) + Dac. Ultrex	0.9 fl oz + 1.25 oz	21 days	0(7)	0(9)	0(8)	1 ^c (8)
Eagle alternated w/ Ch. 26019(WDG)	0.6 oz & 2 oz	21 days	0(0)	1 ^c (7)	0(7)	0(8)
Curalan + Fungo 85	1.35 lb ai/A + 2.7 lb ai/A	21 days	1 ^c (7)	1 ^c (9)	0(8)	0(8)
EXP 10702A	3 fl oz	21 day	0(8)	1 ^c (9)	1 ^c (8)	0(8)
Sentinel	0.167 oz	28 day	1 ^c (7)	1 ^c (7)	0(9)	1 ^c (8)
Rubigan AS	1.5 fl oz	21 day	1 ^c (7)	1 ^c (7)	0(7)	1 ^c (8)
Banner(GL) + Dac. Ultrex	0.3 fl oz + 1.25 oz	21 day	1 ^c (6)	0(8)	1 ^c (7)	1 ^c (7)
S-6115	1.33 lb	14 day	1(6)	1(6)	1(7)	1 ^c (7)
S-6128	1.25 lb	14 day	1(7)	1 ^c (7)	1 ^c (7)	1 ^c (7)
Banner(GL)	0.3 fl oz	21 day	1(7)	1 ^c (7)	1 ^c (7)	1 ^c (8)
Banner (WP)	0.31 oz	21 day	1(6)	1 ^c (6)	1(7)	1(7)
Banner(WP) + Dac. Ultrex	0.31 oz + 1.25 oz	21 day	1 ^c (7)	1 ^c (7)	1 ^c (7)	1 ^c (7)
Eagle	0.6 oz	21 day	1 ^c (7)	1 ^c (7)	1(7)	1 ^c (7)
Bayleton + Prostar	1 oz + 2 oz	21 day	1 ^c (8)	1(7)	1 ^c (7)	1 ^c (7)
Rubigan AS	0.75 fl oz	21 day	1(7)	1(7)	1 ^c (6)	1 ^c (7)
Rubigan AS+ Prostar	0.75 fl oz + 2 oz	21 day	1(6)	1(6)	1(6)	1 ^c (7)
Rubigan AS + Prostar	1.5 fl oz + 2 oz	21 day	1 ^c (7)	1(7)	1 ^c (7)	1 ^c (7)
Lynx + Prostar	1 oz + 2 oz	21 day	1 ^c (7)	2(6)	1(6)	1 ^c (7)
Banner(MC)	0.9 fl oz	21 day	2(6)	1(7)	1 ^c (7)	1 ^c (7)
V-10028	27.3 gm.	7 day	4(5)	1(6)	1 ^c (7)	1(6)
NAF-53	1.5 fl oz	21 day	2(6)	3(5)	2(6)	0(8)
V-10028	54.7 gm.	7 day	3(5)	1(6)	2(5)	3(5)
NAF-53	0.75 fl oz	21 day	2(5)	2(5)	2(6)	3(5)
Dac. Ultrex	1.25 oz	21 day	3(5)	2(5)	1(6)	3(6)
Rubigan AS + Prostar	0.38 fl oz + 1 oz	21 day	3(6)	3(5)	2(6)	2(6)
NAF-53	0.38 fl oz	21 day	3(4)	3(4)	2(5)	2(6)
Cleary 3336	2 oz	14 day	3(5)	3(5)	3(5)	3(5)
Prostar	2 oz	21 day	3(5)	2(6)	5(3)	4(4)
Primo	0.09 lb ai/A	monthly	4(4)	5(3)	3(5)	4(4)
Control(fert.)	--	--	4(3)	4(5)	5(3)	3(5)
Prostar	3 oz	21 day	5(3)	5(3)	4(3)	5(3)

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Control (unfert.)

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5(3)

6(3)

4(3)

5(4)

^aTreatment disease rating averages followed by same letter are not significantly different from each other at the 5% level.

^bRates are formulation per 1000 ft² unless indicated as active ingredient (ai) or otherwise.

^cPlot has fewer than 10 small dollar spots.

^dRatings in parentheses indicate turf quality.

Compounds Tested in 1994-95 Season

<u>Product Trade Name</u>	<u>formulation</u>	<u>Manufacturer</u>
Aliette WDG	80 WDG	Rhone-Poulenc
AMV 6	NA	Amvac Chem. Co
AMV 30	NA	Amvac Chem. Co
ANDFG 176 - ANDFG 190	NA	The Andersons
Banner	1.1 EC	Ciba Geigy Corp.
Banner (GL)	NA	Ciba Geigy Corp.
Banner (MC)	NA	Ciba Geigy Corp.
Banner (WP)	NA	Ciba Geigy Corp.
Bayleton	25 DF	Miles Corp.
Calo-Clor	90 WP	O.M. Scotts & So
Calo-Gran	2.7 G	O.M. Scotts & So
CGA-0173506	NA	Ciba Geigy Corp.
Chipco 26019 FLO	25 F	Rhone Poulenc
Chipco 26019 WDG	50 WDG	Rhone Poulenc
Chipco 26019 (WP)	50 WP	Rhone Poulenc
Cleary 3336	50 WP	WP.A. Cleary Ch
Consyst	67 WP	Regal Chemical C
Curalan	50 DF	BASF Corp.
Cutless	50 W	Dow Elanco
Daconil 2787	4.17 F	ISK Biotech
Daconil Ultrex	82.5 WDG	ISK Biotech
Defend	2 F	WP.A. Cleary Ch
Dithane M-45	80 WP	Rohm & Haas
Eagle	40 WP	Rohm & Haas

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Embark	2 S	PBI/Gordon
EXP 10452A	NA	Rhone Poulenc
EXP 10682A	NA	Rhone Poulenc
EXP 10702A	NA	Rhone Poulenc
EXP 10704A	NA	Rhone Poulenc
Fluazinam 500	500 F	ISK Biotech
Fore	80 W	Rohm & Haas
Fungo 85	85 DF	O.M. Scotts & So
Herbruck's Fertilizer	10-2-10	Herbrucks
Heritage	50 WDG	Zeneca Ag Prods.
IB 10222	NA	ISK Biotech
IB 11521	NA	ISK Biotech
IB 11924	NA	ISK Biotech
Latron CS-7	Surfactant	Rohm & Haas
Lesco R100002-Lesco R100012	NA	Lesco
Lynx	25DF	Miles, Inc.
Menafee Humate	Soil conditioner	Earthgreen Prods.
NAF-53	2 EC	Dow Elanco
Panasea Plus	N/A	Emerald Isle
PCNB	75 WP	Amvac Chem. Co
Primo	1 EC	Ciba Geigy Corp.
Prostar	50 WP	Nor-Am
RC01	NA	Regal Chemical C
RC02	NA	Regal Chemical C
Revere	75 WDG	Lesco

RH-0611	62.3 WP	Rohm & Haas
Rizolex	75 WP	Sandoz Agro, Inc.
Rubigan AS	1.1 F	Dow Elanco
Rubigan (WP)	50 WP	Dow Elanco
S-6115	NA	O.M. Scotts & So
S-6128	NA	O.M. Scotts & So
Scotts Fertilizer & Fungicide II (FF II)	14-3-3 fert., 15.4% PCNB	O.M. Scotts & So
Sentinel	40 WDG	Sandoz Agro, Inc.
Spotrete	75 WDG	W.A. Cleary Che
Subdue	2E	Ciba Geigy Corp.
Terraclor	75 WP	Uniroyal Chem.
Thalonil (DF)	90 DF	Terra
Thalonil (F)	4 F	Terra
Turfcide 10 G	10 GR	Uniroyal Chem.
Turfcide 400	4 F	Uniroyal Chem.
Turf Enhancer	2 SC	O.M. Scotts & So
UBI 9249	NA	Uniroyal Chem.
UBI 9250	NA	Uniroyal Chem.
V-10028	NA	Valent
Vigoro 94-292-1-GS, etc.	NA	Vigoro
Vorlan	50 DF	O.M. Scotts & So