MICHIGAN STATE UNIVERSITY TURFGRASS DISEASE MANAGEMENT REPORT FOR 1982

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Snow Mold Fungicide Trials - 1981-82

The 1981-82 snow mold fungicide trials were conducted at the Boyne Highlands Resort on Penncross creeping bentgrass mowed at 1/2". Treatments were applied to 6' x 9' plots in three replications of a random block design on October 30, 1981. The wettable powders and flowables were applied with a small-plot CO_2 sprayer at a volume of 40 gal/acre. The granular applications were pre-weighed and applied by hand. The plot ratings were made on April 29, 1982. (Tables 1,2 and 3)

Helminthosporium (Melting-Out) Fungicide Studies - 1982

The 1982 Helminthosporium melting-out (Helminthosporium vagans) fungicide study was conducted at the Hancock Turfgrass Research Center on the Michigan State University campus on Kenblue Kentucky bluegrass maintained at 1 1/2" height of cut. Fungicides were applied at various intervals as indicated in the data chart with all treatments being applied for the first time on May 10. When fungicide treatments were suspended, the 10 day treatments had been applied 5 times, the 14 day treatments had been applied 4 times, and the 28 day treatments had been applied twice. All treatments were applied with a CO_2 small-plot sprayer at a volume of 40 gal/acre.

The study was set up in a randomized block design consisting of three replications/treatment with a plot size of 3' x 6'. The plots were rated for disease and phytotoxic effects on June 28, 1982. (Table 4)

Table 1

Boyne Highlands Snow Mold Study - 1981-82

Percent area infected with all snow molds (*Typhula incarnata*, *Typhula ishikariensis*, and *Fusarium nivale*)

Ratings taken 4/29/82

Treatment	Rate/1000 ft^2	Repetition				
		I	II	III	AVE	DMR
Calo-Gran	6 lbs	0	0	0	0	A
Calo-Clor	3 oz.	0	0	0	0	A
BAS 43600 + Chipco 26019	8 oz. + 4 oz.	1	0	0	.3	A
Scotts F + F II	2X	5	2	0	2.3	A
Scotts F + F II	1X	0	1	15	5.3	AB
BAS 43600 + Chipco 26019	4 oz. + 4 oz.	10	5	1	5.3	AB
Daconil 2787 FL	16 fl. oz.	10	10	5	8.3	ABC
Terraclor GR	60 oz.	10	15	5	10	ABC
Terraclor WP	8 oz.	20	5	5	10	ABC
Daconil 2787 FL	8 fl. oz.	2	10	30	14	ABCD
Acti-dione RZ	8 oz.	25	15	5	15	ABCD
EL 222	4 lb. ai./A	15	6	30	17	ABCDE
Terraclor WP	4 oz.	20	15	20	18.3	ABCDE
BAS 43600	8 oz.	20	20	30	23.3	ABCDE
EL 222	1 lb. ai./A	25	16	30	23.7	ABCDE
EL 222	3 lb. ai./A	40	30	20	30	BCDEF
Chipco 26019	4 oz.	5	50	35	30	BCDEF
Terraclor GR	30 oz.	20	30	50	33.3	CDEFG
OAC 3890	4 oz.	40	30	40	36.7	DEFGH
EL 222	2.5 lb. ai./A	25	60	25	36.7	DEFGH
EL 222	2 lb. ai./A	15	60	40	38.3	DEFGH
Tersan SP	9 oz.	50	60	7	39	DEFGH
OAC 3890 GR	32 oz.	35	40	50	41.7	EFGH
OAC 3890 GR	16 oz.	50	50	50	50	FGHI
Check	-	70	40	40	50	FGHI
BAS 43600	4 oz.	40	50	60	50	FGHI
Oxamide C	2 lb. N.	75	40	50	55	FGHI
OAC 3890	2 oz.	60	60	50	56.7	GHI
Oxamide FA	2 lb. N.	70	85	30	61.7	HI
Oxamide C	1 lb. N.	80	60	70	70	I
Oxamide FA	1 lb. N.	80	70	70	73.3	I

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

Table 2

Boyne Highlands Snow Mold Study - 1981-82

Percent area infected with Typhula incarnata snow mold

Ratings taken 4/29/82

Treatment	Rate/1000 ft^2	Repetition				
		I	II	III	AVE	DMR
BAS 43600 + Chipco 26019	8 oz. + 4 oz.	0	0	0	0	A
Chipco 26019	4 oz.	0	0	0	0	A
Calo-Gran	6 lbs	0	0	0	0	A
Calo-Clor	3 oz.	0	0	0	0	A
Daconil 2787 FL	8 fl. oz.	2	3*	0	1.7	A
Scotts F + F II	2X	5	0	0	1.7	A
EL 222	4 lb. ai./A.	0	6*	0	2	A
BAS 43600 + Chipco 26019	4 oz. + 4 oz.	5	5	0	3.3	A
Tersan SP	9 oz.	0	10	0	3.3	A
Terraclor WP	8 oz.	0	5	5	3.3	A
Scotts F + F II	1X	0	0	15	5	AB
Daconil 2787 FL	16 f. oz.	7	10*	5*	7.3	AB
Terraclor GR	60 oz.	5	15	5	8.3	AB
EL 222	3 lb. ai./A	0	15	10	8.3	AB
EL 222	1 lb. ai./A	20*	8	0	9.3	ABC
OAC 3890 WP	4 oz.	15*	15	0	10	ABC
Oxamide FA	2 lb. N.	35	0	0	11.7	ABCD
EL 222	2 lb. ai./A	5*	20	10	11.7	ABCD
Terraclor WP	4 oz.	10	15*	10	11.7	ABCD
Acti-dione RZ	8 oz.	25	15	5	15	ABCDE
Oxamide C	2 lb. N.	25	20	0	15	ABCDE
OAC 3890 WP	2 oz.	20	20	10	16.7	ABCDE
BAS 43600	8 oz.	20	20	30	23.3	BCDEF
Oxamide C	1 lb. N.	10	40	30	26.7	CDEF
Terraclor GR	30 oz.	5	30	50	28.3	DEF
OAC 3890 GR	16 oz.	30	30	30	30.0	EF
OAC 3890 GR	32 oz.	30	37.5*	25	30.8	EF
Check	-	50	40	20	36.7	FG
Oxamide FA	1 lb. N.	60	30	30	40	FG
BAS 43600	4 oz.	40	50	60	50	G

*Plots showing infection by Fusarium patch (Fusarium nivale) as well as Typhula blight (Typhula incarnata).

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

Table 3

Boyne Highlands Snow Mold Study - 1981-82
Percent area infected with Typhula ishikariensis snow mold
Ratings taken 4/29/82

Treatment	Rate/1000 ft^2	Repetition				
		I	II	III	AVE	DMR
BAS 43600	4 oz.	0	0	0	0	A
BAS 43600	8 oz.	0	0	0	0	A
Calo-Gran	6 lbs	0	0	0	0	A
Calo-Clor	3 oz.	0	0	0	0	A
Acti-dione RZ	8 oz.	0	0	0	0	A
BAS 43600 + Chipco 26019	8 oz. + 4 oz.	1	0	0	.3	A
Scotts F + F II	1X	0	1	0	.3	A
Scotts F + F II	2X	0	2	0	.7	A
Daconil 2787 FL	16 fl. oz.	3	0	0	1	A
Terraclor GR	60 oz.	5	0	0	1.7	AB
BAS 43600 + Chipco 26019	4 oz. + 4 oz.	5	0	1	2	AB
Terraclor GR	30 oz.	15	0	0	5	ABC
Terraclor WP	4 oz.	10	0	10	6.7	ABC
Terraclor WP	8 oz.	20	0	0	6.7	ABC
OAC 3890 GR	32 oz.	5	2.5	25	10.8	ABCD
Daconil 2787 FL	8 fl. oz.	0	7	30	12.3	ABCD
Check	-	20	0	20	13.3	ABCD
EL 222	1 lb. ai./A	5	8	30	14.3	ABCD
EL 222	4 lb. ai./A	15	0	30	15	ABCDE
OAC 3890 GR	16 oz.	20	20	20	20	ABCDEF
EL 222	3 lb. ai./A.	40	15	10	21.7	ABCDEF
OAC 3890 WP	4 oz.	25	15	40	26.7	BCDEFG
EL 222	2 lb. ai./A	10	40	30	26.7	BCDEFG
EL 222	2.5 lb. ai./A	25	40	20	28.3	CDEFG
Chipco 26019	4 oz.	5	50	35	30	CDEFG
Oxamide FA	1 lb. N.	20	40	40	33.3	DEFG
Tersan SP	9 oz.	50	50	7	35.7	DEFG
OAC 3890	2 oz.	40	40	40	40	EFG
Oxamide C	2 lb. N.	50	20	50	40	EFG
Oxamide C	1 lb. N.	70	20	40	43.3	FG
Oxamide FA	2 lb. N.	35	85	30	50	G

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

Table 4

Helminthosporium Melting Out Fungicide Study - 1982
Hancock Turfgrass Research Center, MSU

Rating 1(no disease) - 9(90% infection or greater)
Rating taken June 28, 1982

Treatment	Rate/1000 ft + Interval	Repetition				
		I	II	III	AVE	DMR
CGA-64250 (1.125 EC)	4 fl. oz. (14 day sch.)	1*	1*	1*	1	A
CGA-64250 (1.125 EC)	8 fl. oz. (14 day sch.)	1*	1*	1**	1	A
CGA-64250 (1.125 EC)	16 fl. oz. (21 day sch.)	1**	1**	1**	1	A
CGA-64250 (3.6 EC)	8 fl. oz. (14 day sch.)	1**	1***	1***	1	A
BTS 41661[1]	3 oz. ai. (14 day sch.)	1	1	1	1	A
Rizolex	2 gm. ai./m^2 (14 day sch.)	1	1	2	1.3	AB
CGA-64250 (3.6 EC)	4 fl oz. (14 day sch.)	1**	1**	2**	1.3	AB
F-9648R	1X (14 day sch.)	1	2	2	1.7	ABC
F-9648R	2X (14 day sch.)	1	2	2	1.7	ABC
Rizolex	1 gm. ai./m^2 (14 day sch.)	1	2	2	1.7	ABC
Daconil 2787 FL	6 fl. oz. (10 day sch.)	2	1	2	1.7	ABC
CGA-64250 (1.125 EC)	8 fl. oz. (21 day sch.)	1*	1*	3*	1.7	ABC
CGA-64250 (3.6 EC)	2 fl. oz. (14 day sch.)	1	2*	2*	1.7	ABC
Dyrene	6 oz. (14 day sch.)	1	2	2	1.7	ABC
BTS 41661[1]	1.5 oz. ai. (14 day sch.)	2	1	2	1.7	ABC
Rizolex	.5 gm. ai./m^2 (14 day sch.)	2	3	1	2	ABCD
Daconil 2787 FL	3 fl. oz. (10 day sch.)	1	3	2	2	ABCD
CGA-64250 (1.125 EC)	2 fl. oz. (14 day sch.)	1	3*	2	2	ABCD
CGA-64250 (1.125 EC)	4 fl. oz. (21 day sch.)	2	2*	2*	2	ABCD
Chipco 26019	1.5 oz. (14 day sch.)	2	2	2	2	ABCD
Acti-dione RZ	.55 oz. (Fall + Spring - 14 day sch.)	2	2	2	2	ABCD
Acti-dione RZ	.55 oz. (Spring only - 14 day sch.)	2	2	2	2	ABCD
Daconil 2787 FL	6 fl. oz. (14 day sch.)	2	3	2	2.3	ABCD
Prochloraz[1]	1.5 oz. ai. (14 day sch.)	2	2	3	2.3	ABCD
Vorlan	2 oz. (14 day sch.)	2	3	2	2.3	ABCD
BAS 43603 F	.62 oz. ai. (14 day sch.)	3	2	2	2.3	ABCD
BAS 43603 F	.28 oz. ai. (14 day sch.)	2	4	2	2.7	BCD
Daconil 2787 FL	3 fl. oz. (14 day sch.)	1	4	3	2.7	BCD
Chipco 26019	1.5 oz. (28 day sch.)	5	2	1	2.7	BCD
BAS 43603 F	.21 oz. ai. (14 day sch.)	2	3	4	3	CD
Daconil 2787 FL	2 fl. oz. (10 day sch.)	3	4	3	3.3	DE
Acti-dione RZ	.55 oz. (Fall - 1 app. only)	3	5	2	3.3	DE
Acti-dione RZ	.55 oz. (Spring - 1 app. only)	2	3	5	3.3	DE
Daconil 2787 FL	2 fl. oz. (14 day sch.)	4	4	6	4.7	E
Control	-	6	7	7	6.7	F

* Indicates light phytotoxicity.
** Indicates moderate phytotoxicity.
*** Indicates severe phytotoxicity.

[1]Applied in 2X water rate.

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

Dollarspot Fungicide Studies 1982
Hancock Turfgrass Research Center, MSU

Two dollarspot (Sclerotinia homoeocarpa) studies were conducted this year. One was established preventatively on an Emerald creeping bentgrass green and another was established curatively on an annual bluegrass area. Liquid applications were made with a CO_2 small plot sprayer at a volume of 40 gal./acre (except as noted on data sheets). Granular formulations were applied by hand.

Emerald Creeping Bentgrass Study

Treatments were applied preventatively to three replications of 3' x 6' plots in a random block design on an Emerald bentgrass green which was irrigated and fertilized as needed. This area was mowed daily at 1/4" height and clippings were removed.

All treatments were applied on August 3 with subsequent applications being made at the intervals indicated following each treatment on the data table. The last treatments were applied on September 16, at which time the 10 day treatments had been applied 5 times, the 14 day treatments - 4 times, the 21 day treatments - 3 times, the 28 day treatments - twice, and 30 day treatments - twice. The rating was taken on September 23. (Table 5)

Annual Bluegrass Study

Treatments were applied curatively to three replications of 6' x 6' plots in a random block design on an annual bluegrass (Poa annua) plot area which was irrigated and fertilized as needed. This area was mowed three times a week at 5/8" height of cut with clippings returned.

All treatments were applied on August 26 with subsequent treatments being applied at the intervals indicated on the data table. The last treatments were applied on September 14 with the 10 day treatments being applied three times, the 14 and the 21 day treatments - twice, and the 28 and 30 day treatments - once. The ratings were taken on September 23 and on September 29. (Tables 6 and 7)

Anthracnose Fungicide Study - 1982
Glen Gary Golf Club, Sylvania, Ohio

The 1982 anthracnose (Colletotrichum graminicola) fungicide studies were established in two locations, one at Glen Gary Country Club in Sylvania, Ohio, on an irrigated Poa annua (annual bluegrass) fairway mowed at 1/2" height of cut. The study was laid out in three repetitions of a random block design, utilizing 6' x 9' plots. All liquid applications were made with a CO_2 small-plot sprayer, while granular formulations were applied by hand.

Applications were made curatively on July 7 with subsequent applications being made at the intervals indicated on the data chart. The last applications were made on August 5 at which time the 10 day treatments had 4 applications, the 14 day treatements had 3 applications, and the 21 and 30 days treatments had received 2 applications.

The plots were rated on August 5 and August 17. (Tables 8 and 9)

Table 5

Creeping Bentgrass Dollar Spot Fungicide Study - 1982
Hancock Turfgrass Research Center, MSU
Disease rating - number of dollar spots/plot
9/23/82

Treatment	Rate/1000 ft^2 + Interval	Repetition				
		I	II	III	AVE	DMR
Chipco 26019	1.5 oz. (14 day sch.)	0	0	0	0	A
F-9648R	1X (14 day sch.)	0	0	0	0	A
F-9648R	2X (14 day sch.)	0	0	0	0	A
BAS 43603F	.21 oz. ai. (14 day sch.)	0	0	0	0	A
BAS 43603F	.28 oz. ai. (14 day sch.)	0	0	0	0	A
BAS 43603F	.62 oz. ai. (14 day sch.)	0	0	0	0	A
Rizolex	.5 gm. ai./m^2 (14 day sch.)	0	0	0	0	A
Rizolex	1 gm. ai./m^2 (14 day sch.)	0	0	0	0	A
Rizolex	2 gm. ai./m^2 (14 day sch.)	0	0	0	0	A
Vorlan	1 oz. (14 day sch.)	0	0	0	0	A
Vorlan	2 oz. (14 day sch.)	0	0	0	0	A
Tersan 1991	1 oz. (14 day sch.)	0	0	0	0	A
Fungo 50	1 oz. (14 day sch.)	0	0	0	0	A
Cleary 3336	1 oz. (14 day sch.)	0	0	0	0	A
CGA-64250 (1.125 EC)	2 fl. oz. (14 day sch.)	0	0*	0*	0	A
CGA-64250 (1.125 EC)	4 fl. oz. (14 day sch.)	0	0*	0*	0	A
CGA-64250 (1.125 EC)	8 fl. oz. (14 day sch.)	0*	0*	0	0	A
CGA-64250 (3.6 EC)	2 fl. oz. (14 day sch.)	0**	0*	0*	0	A
CGA-64250 (3.6 EC)	4 fl. oz. (14 day sch.)	0*	0*	0**	0	A
CGA-64250 (3.6 EC)	8 fl. oz. (14 day sch.)	0**	0**	0***	0	A
CGA-64250 (1.125 EC)	.5 fl. oz. (14 day sch.)	0	0	0	0	A
Daconil 2787 FL + Tersan 1991	3 fl. oz. + 1 oz. (21 day sch.)	0	0	0	0	A
CGA-64250 (1.125 EC)	4 fl. oz. (21 day sch.)	0*	0*	0*	0	A
CGA-64250 (1.125 EC)	8 fl. oz. (21 day sch.)	0	0**	0*	0	A
CGA-64250 (1.125 EC)	16 fl. oz. (21 day sch.)	0**	0**	0**	0	A
CGA-64250 (1.125 EC)	1 fl. oz. (21 day sch.)	0	0	0	0	A
Bayleton	1 oz. (30 day sch.)	0	0	0	0	A
Bayleton	2 oz. (30 day sch.)	0	0	0	0	A
Bayleton	6.25 lbs. (GR) (30 day sch.)	0	0	0	0	A
Daconil 2787 FL	6 fl. oz. (14 day sch.)	0	0	1	.3	A
Daconil 2787 FL	2 fl. oz. (10 day sch.)	24	8	8	13.3	A
Chipco 26019	1.5 oz. (28 day sch.)	46	36	10	30.7	A
Daconil 2787 FL	3 fl. oz. (14 day sch.)	32	34	32	32.7	A
Prochloraz[1]	1.5 oz. ai. (14 day sch.)	0	23	160	61	AB
BTS 41661[1]	1.5 oz. ai. (14 day sch.)	12	280	42	111.3	B
BTS 41661[1]	3 oz. ai. (14 day sch.)	40	300	400	246.7	C
Acti-dione TGF	.34 oz. (14 day sch.)	350	180	260	263.3	C
Check	-	360	320	230	303.3	C

*Light phytotoxicity
**Moderate phytotoxicity
***Severe phytotoxicity

[1]Applied in 2X water rate.

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

Table 6

Annual Bluegrass Dollar Spot Fungicide Study -1982
Hancock Turfgrass Research Center, MSU
Disease rating scale - 1(no disease)-9(90% infection or greater)
Rated 9/23/82

Treatment	Rate/1000 ft^2 + Inverval	Repetition				
		I	II	III	AVE	DMR
Daconil 2787 + Tersan 1991	3 fl. oz. + 1 oz. (21 day sch.)	1	1	1	1	A
F-9648R	2X (14 day sch.)	2	1	1	1.3	AB
Bayleton	2 oz. (30 day sch.)	2	1	1	1.3	AB
Prochloraz**	1.5 oz. ai. (14 day sch.)	2	1	1	1.3	AB
CGA-64250 (1.125 EC)	.5 fl. oz. (14 day sch.)	3	1	1	1.7	ABC
F-9648R	1X (14 day sch.)	2	1	2	1.7	ABC
Bayleton	1 oz. (30 day sch.)	1	2	2	1.7	ABC
Bayleton (GR)	6.25 lbs. (30 day sch.)	1	2	3	2	ABCD
Daconil 2787 FL	6 fl. oz. (14 day sch.)	3	1	2	2	ABCD
Tersan 1991	1 oz. (14 day sch.)	2	3	1	2	ABCD
Vorlan	2 oz. (14 day sch.)	3	1	2	2	ABCD
Fungo 50	1 oz. (14 day sch.)	1	3	2	2	ABCD
BAS 43603F	.21 oz. ai. (14 day sch.)	3	2	1	2	ABCD
BAS 43603F	.28 oz. ai. (14 day sch.)	3	1	2	2	ABCD
Chipco 26019	1.5 oz. (14 day sch.)	3	3	1	2.3	ABCD
Vorlan	1 oz. (14 day sch.)	4	2	2	2.7	ABCD
CGA-64250 (1.125 EC)	1 fl. oz. (21 day sch.)	2	3	3	2.7	ABCD
BAS 43603F	.62 oz. ai. (14 day sch.)	4	1	3	2.7	ABCD
Cleary 3336	1 oz. (14 day sch.)	5	2	2	3	BCD
Daconil 2787 FL	3 fl. oz. (14 day sch.)	5	4	1	3.3	CD
Chipco 26019	1.5 oz. (28 day sch.)	3	3	4	3.3	CD
Daconil 2787 FL	2 fl. oz. (10 day sch.)	4	5	2	3.7	DE
AD-TGF + AD-RZ	.34 oz. + .55 oz. (14 day sch.)	4	4	3*	3.7	DE
BTS 41661**	3 oz. ai. (14 day sch.)	6	5	5	5.3	EF
BTS 41661**	1.5 oz. ai. (14 day sch.)	5	7	6	6	F
Check	-	9	8	7	8	G

*Yellowing evident.
**Applied in 2X water rate.

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

Table 7

Annual Bluegrass Dollar Spot Fungicide Study -1982
Hancock Turfgrass Research Center, MSU
Disease rating scale - 1(no disease)-9(90% infection or greater)
Rated 9/29/82

Treatment	Rate/1000 ft^2 + Inverval	Repetition				
		I	II	III	AVE	DMR
Chipco 26019	1.5 oz. (14 day sch.)	1	1	1	1	A
F-9648R	1X (14 day sch.)	1	1	1	1	A
F-9648R	2X (14 day sch.)	1	1	1	1	A
Bayleton	2 oz. (30 day sch.)	1	1	1	1	A
BAS 43603F	.28 oz. ai. (14 day sch.)	1	1	1	1	A
Prochloraz**	1.5 oz. ai. (14 day sch.)	1	1	1	1	A
Vorlan	1 oz. (14 day sch.)	1	1	1	1	A
Fungo 50	1 oz. (14 day sch.)	1	1	1	1	A
CGA-64250 (1.125 EC)	1 fl. oz. (21 day sch.)	1	1	1	1	A
Bayleton	1 oz. (30 day sch.)	2	1	1	1.3	AB
Bayleton (GR)	6.25 lbs. (30 day sch.)	2	1	1	1.3	AB
BAS 43603F	.62 oz. ai. (14 day sch.)	2	1	1	1.3	AB
Daconil 2787 FL	6 fl. oz. (14 day sch.)	2	1	1	1.3	AB
Tersan 1991	1 oz. (14 day sch.)	2	1	1	1.3	AB
CGA-64250 (1.125 EC)	.5 fl. oz. (14 day sch.)	2	1	1	1.3	AB
Daconil 2787 + Tersan 1991	3 fl. oz. + 1 oz. (21 day sch.)	2	1	1	1.3	AB
BAS 43603F	.21 oz. ai. (14 day sch.)	3	1	1	1.7	AB
Vorlan	2 oz. (14 day sch.)	2	1	2	1.7	AB
Cleary 3336	1 oz. (14 day sch.)	3	1	1	1.7	AB
Chipco 26019	1.5 oz. (28 day sch.)	2	2	2	2	AB
Daconil 2787 FL	3 fl. oz. (14 day sch.)	5	2	1	2.7	BC
Acti-dione TGF	.34 oz. (14 day sch.)	4*	3	4	3.7	CD
Daconil 2787 FL	2 fl. oz. (10 day sch.)	5	6	2	4.3	D
BTS 41661**	1.5 oz. ai. (14 day sch.)	7	8	5	6.7	E
BTS 41661**	3 oz. ai. (14 day sch.)	7	7	6	6.7	E
Check	-	9	8	7	8	F

*Yellowing evident.
**Applied in 2X water rate.

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

Table 8

Glen Gary Anthracnose Fungicide Study - 1982

Disease Rating - % plot area infected
8/5/82

Treatment	Rate/1000 ft^2 + Interval	Repetition				
		I	II	III	AVE	DMR
F-9648R	2X (21 day sch.)	5	5	5	5	A
Tersan 1991	1 oz. (21 day sch.)	0	5	20	8.3	A
Bayleton	2 oz. (30 day sch.)	0	15	20	11.7	AB
F-9648R	1X (21 day sch.)	10	25	10	15	ABC
Bayleton[1]	1 oz. (one app. only)	10	20	25	18.3	ABCD
Bayleton	1 oz. (30 day sch.)	10	25	25	20	ABCDE
CGA-64250 (1.125 EC)	.5 oz. (21 day sch.)	5	10	45	20	ABCDE
CGA-64250 (1.125 EC)	1 oz. (21 day sch.)	5	45	15	21.7	ABCDEF
Duosan	4 oz. (21 day sch.)	10	30	25	21.7	ABCDEF
Tersan 1991 + Daconil 2787	1 oz. + 3 fl. oz. (21 day sch.)	25	25	20	23.3	ABCDEF
Fungo 50	1 oz. (21 day sch.)	10	35	40	28.3	BCDEFG
Prochloraz[3]	1.5 oz. ai. (21 day sch.)	25	35	30	30	BCDEFGH
Cleary 3336	1 oz. (21 day sch.)	25	40	25	30	BCDEFGH
BTS 41661[3]	3 oz. ai. (21 day sch.)	35	35	25	31.7	CDEFGH
Daconil 2787 FL	2 fl. oz. (10 day sch.)	35	30	35	33.3	CDEFGHI
Bayleton (GR)[4]	6.25 lbs. (one app. only)	25	40	45	36.7	DEFGHIJ
BAS 43603F	.62 oz. ai. (21 day sch.)	15	45	50	36.7	DEFGHIJ
Daconil 2787 FL	6 fl. oz. (14 day sch.)	45	35	35	38.3	EFGHIJ
BTS 41661[3]	1.5 oz. ai. (21 day sch.)	35	40	45	40	FGHIJK
Daconil 2787 FL	3 fl. oz. (14 day sch.)	30	50	40	40	FGHIJK
BAS 43603F	.21 oz. ai. (21 day sch.)	55	30	50	45	GHIJKL
Daconil 2787 FL	1.5 oz. (14 day sch.)	35	55	50	46.7	GHIJKL
Acti-dione TGF[2]	.34 oz. (1 app. only)	40	45	60	48.3	HIJKL
Actidione TGF + Acti-dione RZ	.34 oz. + .55 oz. (14 day sch.)	20	65	60	48.3	HIJKL
Vorlan	2 oz. (21 day sch.)	40	60	45	48.3	HIJKL
BAS 43603 F	.28 oz. ai. (21 day sch.)	50	70	35	51.7	IJKL
Vorlan	1 oz. (21 day sch.)	50	50	65	55	JKL
Oximide	1/2 lb. N. (30 day sch.)	50	60	55	55	JKL
Check	-	55	70	50	58.3	KL
Acti-dione RZ	.55 oz. (14 day sch.)	50	70	60	60	L
Oximide	1 lb. N. (30 day sch.)	50	65	70	61.7	L

[1]Bayleton applied 7/7 to cure plots of anthracnose, AD-TGF applied on 7/21. No phytotoxicity.

[2]AD-TGF applied at .34 oz. to plots with anthracnose infections on 7/21. No phytotoxicity.

[3]Applied in a 2X water rate.

[4]Applied on 7/16.

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

Table 9

Glen Gary Anthracnose Fungicide Study - 1982

Disease Rating - % plot area infected
8/17/82

Treatment	Rate/1000 ft^2 + Interval	Repetition				
		I	II	III	AVE	DMR
Tersan 1991	1 oz. (21 day sch.)	0	0	2	.7	A
Bayleton	2 oz. (30 day sch.)	0	0	5	1.7	A
Bayleton	1 oz. (30 day sch.)	0	5	2	2.3	A
F-9648R	1X (21 day sch.)	0	10	0	3.3	A
F-9648R	2X (21 day sch.)	0	5	10	5	AB
CGA-64250 (1.125 EC)	1 fl. oz. (21 day sch.)	0	15	0	5	AB
Bayleton[1]	1 oz. (one app. only)	2	10	5	5.7	ABC
BTS 41661[3]	3 oz. ai. (21 day sch.)	5	10	2	5.7	ABC
Duosan	4 oz. (21 day sch.)	5	15	5	8.3	ABCD
Bayleton (GR)=4	6.25 lbs. (one app. only)	5	5	20	10	ABCDE
CGA-64250 (1.125 EC)	.5 fl. oz. (21 day sch.)	2	5	25	10.7	ABCDE
Prochloraz[3]	1.5 oz. ai. (21 day sch.)	10	25	10	15	ABCDE
Tersan 1991 + Daconil 2787	1 oz. + 3 fl. oz. (21 day sch.)	15	25	10	16.7	ABCDEF
Cleary 3336	1 oz. (21 day sch.)	15	40	0	18.3	ABCDEF
Fungo 50	1 oz. (21 day sch.)	2	15	40	19	ABCDEF
Daconil 2787 FL	2 oz. (10 day sch.)	20	20	35	25	BCDEF
BTS 41661[3]	1.5 oz. ai. (21 day sch.)	15	30	35	26.7	CDEFG
Daconil 2787 FL	3 fl. oz. (14 day sch.)	20	30	30	26.7	CDEFG
Daconil 2787 FL	6 fl. oz. (14 day sch.)	25	20	40	28.3	DEFG
BAS 43603F	.62 oz. ai. (21 day sch.)	15	35	40	30	EFGH
Vorlan	2 oz. (21 day sch.)	50	50	10	36.7	FGHI
Daconil 2787 FL	1.5 oz. (14 day sch.)	35	60	45	46.7	GHIJ
BAS 43603F	.28 oz. ai. (21 day sch.)	50	60	30	46.7	GHIJ
Acti-dione TGF[2]	.34 oz. (14 day sch.)	40	40	70	50	HIJ
Oximide	1/2 lb. N. (30 day sch.)	50	60	40	50	HIJ
BAS 43603 F	.21 oz. ai. (21 day sch.)	60	30	60	50	HIJ
Oximide	1 lb. N. (30 day sch.)	35	60	60	51.7	IJ
Vorlan	1 oz. (21 day sch.)	50	60	70	60	J
Acti-dione RZ	.55 oz. (14 day sch.)	60	70	50	60	J
Actidione TGF + Acti-dione RZ	.34 oz. + .55 oz. (14 day sch.)	50	70	75	65	J
Check	-	70	70	60	66.7	J

[1]Bayleton applied 7/7, plots cured of anthracnose damage, then AD-TGF at .34 oz. applied 7/21, 8/5. No phytotoxicity observed.

[2]AD-TGF applied at .34 oz. to plots with anthracnose damage evident on 7/21 and 8/5. No phytotoxicity observed.

[3]Applied in a 2X water rate.

[4]Applied on 7/16.

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

Fusarium Blight Fungicide Studies - 1982
Hancock Turfgrass Research Center, MSU

The 1982 Fusarium blight fungicide studies were conducted on the Hancock Turfgrass Research Center on the Michigan State University campus on an irrigated, lightly fertilized Fylking Kentucky bluegrass research area which was maintained at a 1 1/2" height of cut.

Various Bayleton + Urea combination treatments were applied preventatively on June 15 and July 15. Other treatments, including Chipco 26019, BTS 41661, Prochloraz, CGA-64250, BAS 43603F, Fungo 50, and Tersan 1991 were applied preventatively on July 15 and, thereafter, according to contract.

Results:

Though Fylking Kentucky bluegrass has, in the past, shown a susceptibility to Fusarium blight disease, no Fusarium blight developed in our plot area this season.

Daconil 2787 FL Fungigation Study - 1982
Hancock Turfgrass Research Center, MSU

Establishment:

The 1982 fungigation study was established on an irrigated annual bluegrass (Poa annua) block at the Hancock Turfgrass Research Center on the Michigan State University campus.

Undiluted Daconil 2787 (FL) was injected directly into the irrigation line in the pump house at a rate of approximately 3 gallons/hr using a Hydro-Flo Chem-Injector single piston pump (Hydro-Flo Corp., 112 Maple Ave., Dublin, PA 18917). Injections were made into a line with a water capacity of 3600 gallons/hr. The fungigation treatment was applied through 4 Nelson pop-up irrigation heads, each of which was applying approximately 15 gallons/minute. This resulted in a dilution factor of approximately 1:1200. The fungicide was applied at a rate of 7 quarts/acre, the maximum label rate for fairway applications. Treatments were applied on June 9, June 22, July 8, July 20, August 6 and August 20.

In order to provide a comparison of fungigation versus sprayer application, part of the annual bluegrass study was sprayed with Daconil 2787 FL at 7 qts/acre using a CO_2 small-plot sprayer operating at 20 gallons/acre. The dilution of fungicide to water in this case was approximiately 1:12.

This research area was irrigated as needed and fertilized at a total rate of 1 1/2 lb N/1000 ft^2 during the 1982 season.

The study was rated for dollarspot (Sclerotinia homoeocarpa) incidence on August 2, August 30, and September 10. Anthracnose (Colletotrichum graminicola) disease is normally a problem on annual bluegrass fairways, however, no significant anthracnose pressure developed in this study, therefore, no data was available.

Results:

Daconil 2787 can be applied through irrigation systems and give effective disease management of Sclerotinia dollarspot. It also gave satisfactory management of anthracnose although the disease pressure was not as severe this year.

Table 10

Daconil 2787 Fungigation Study - 1982
Hancock Turfgrass Research Center, MSU
Dollar spot rating scale - 1(no disease)-9(90% infection or greater)

Treatment	Rate/acre	Repetition				
		I	II	III	AVE	DMR
Rating of August 2						
Conventional sprayer application	7 qts/acre	1	1	1	1	
Fungigation application	7 qts/acre	2	2	2	2	
Control	-	4	4	4	4	
Rating of August 30						
Conventional sprayer application	7 qts/acre	1	1	1	1	
Fungigation application	7 qts/acre	2	2	2	2	
Control	-	6	6	6	6	
Rating of September 10						
Conventional sprayer application	7 qts/acre	1	1	1	1	
Fungigation application	7 qts/acre	2	2	2	2	
Control	-	7	7	7	7	

UpJohn Acti-Dione TGF - Fertilizer Study - 1982
Hancock Turfgrass Research Center, MSU

Establishment

The UpJohn Acti-done TGF + fertilizer study was established on a Poa annua (annual bluegrass) research area which was mowed at 5/8" height of cut and irrigated as needed. Treatments were initiated on May 27 and were re-applied on a 14 day schedule through September 16 (9 applications). Applications were made to three replications of 6' x 9' plots in a randomized block design using a CO_2 small-plot sprayer at a volume of 40 gallons/acre. The study received no supplemental nitrogen during the test period.

Ratings for dollarspot incidence were taken on July 23, August 30, and September 29. (Table 11)

Results:

Acti-done TGF applied on a 14 day schedule did not give effective management of Sclerotinia dollarspot even though the treatments were begun before the disease was evident. Several nitrogen carriers were included to help reduce the phytotoxicity, help improve turf quality and improve disease management. There was no significant difference among nitrogen carriers in improving disease management. The plots were too severely infected to accurately rate phytotoxic effect or improved turf quality.

Table 11

UpJohn Acti-Dione TGF Study - 1982
Hancock Turfgrass Research Center, MSU
Dollar spot rating scale - 1(no disease)-9(90% infection or greater)

Treatment	Rate/1000 ft^2	Repetition				
		I	II	III	AVE	DMR
	Rating of July 23					
AD-TGF + Urea	.34 oz. + 20.9 gm.	2	2	2	2	A
AD-TGF + Amm. Sulf.	.34 oz. + 45.4 gm	2	2	2	2	A
AD-TGF	.34 oz.	3	2	2	2.3	A
AD-TGF + Amm. Nit.	.34 oz. + 27.2 gm.	2	3	2	2.3	A
AD-TGF + Fe. Amm. Cit.	.34 oz. + 127.1 gm.	3	4	2	3	A
AD-TGF + Formolene	.34 oz. + 31.8 gm.	2	5	3	3.3	A
Control	-	7	2	4	4.3	A
	Rating of August 30					
AD-TGF	.34 oz.	4	4	4	4	A
AD-TGF + Urea	.34 oz. + 20.9 oz.	4	3	5	4	A
AD-TGF + Amm. Nit.	.34 oz. + 27.2 oz.	4	5	3	4	A
AD-TGF + Amm. Sulf.	.34 oz. + 45.4 gm.	5	4	4	4.3	A
AD-TGF + Fe. Amm. Cit.	.34 oz. + 127.1 gm.	6	6	4	5.3	AB
AD-TGF + Formolene	.34 oz. + 31.8 gm.	6	7	6	6.3	B
Control	-	9	8	7	8	C
	Rating of September 29					
AD-TGF	.34 oz.	7	7	8	7.3	A
AD-TGF + Urea	.34 oz. + 20.9 gm.	7	7	8	7.3	A
AD-TGF + Amm. Nit.	.34 oz. + 27.2 gm.	8	7	7	7.3	A
AD-TGF + Amm. Sulf.	.34 oz. + 45.4 gm.	8	7	8	7.7	A
AD-TGF + Formolene	.34 oz. + 31.8 gm.	7	8	8	7.7	A
AD-TGF + Fe. Amm. Cit.	.34 oz. + 127.1 gm.	9	8	8	8.3	AB
Control	-	9	9	9	9	B

Rizolex Fungicide - Turfgrass Disease Control Studies - 1982
Hancock Turfgrass Research Center, MSU

Establishment:

The efficacy of the fungicide Rizolex against turf diseases was studied on Kenblue Kentucky bluegrass and on Poa annua (annual bluegrass) throughout the 1982 season.

Treatments on Kentucky bluegrass were initiated with the Helminthosporium (Melting-Out) study described previously. These Rizolex treatments were simply continued on a 14 day schedule thoughout the season while the plots were monitored for phytotoxicity and additional disease development. Treatments were begun on May 10 and continued through September 21 (10 applications).

Treatments on Poa annua (annual bluegrass) were made on a 14 day schedule beginning on June 18 and ending on September 21 (7 applications). The following data was generated from dollarspot (Sclerotinia homoecarpa) infection which increased thoughout the season.

Both experiments were set up in three replications in a randomized block design. Treatments were applied with a CO_2 small-plot sprayer at a volume of 40 gallons/acre.

The studies were fertilized lightly throughout the season and irrigated as necessary to prevent wilt. The Poa annua test area was mowed at 5/8" height of cut while the bluegrass was mowed at 1 1/2".

Results:

Rizolex at the 1 and 2 gm ai rate gave effective disease management of Sclerotinia dollarspot, improved turf quality and was not phytotoxic to the turf. (Table 12)

Ciba Geigy -Phytoxicity Study - 1982
Hancock Turfgrass Research Center, MSU

Establishment:

A late-season Vangard (CGA-64251 1.1 EC) and Banner (CGA-64250 1.1 EC) phytotoxicity study was established at the Hancock Turfgrass Research Center on the Michigan State campus on Emerald creeping bentgrass. Treatments were applied as described previously in the Emerald creeping bentgrass dollarspot study report beginning on October 5. Subsequent applications were made at 7 day or 14 day intervals as indicated on the data chart through October 27, at which time the 7 day treatments had been applied four times and the 14 day treatments were applied twice.

Results:

The fall Vangard-Banner phytotoxicity study results supported the summer findings when phytoxicity was encountered with Banner (CGA-64250 1.1 EC) on creeping bentgrass, Poa annua (annual bluegrass) and Kentucky bluegrass. It would appear that both products rather consistently damage turfgrasses when repeatedly applied at these rates. Due to the onset of turf dormancy, the levels of phytoxicity observed in this study may vary slightly from those encountered on actively growing turf. (Table 13)

Table 12

Rizolex Fungicide-Annual Bluegrass Disease Study - 1982
Hancock Turfgrass Research Center, MSU
Dollar spot rating scale - 1(no disease)-9(90% infection or greater)

Treatment	Rate/m^2	Repetition				
		I	II	III	AVE	DMR
	Rating of July 23					
Rizolex	1 gm. ai.	1	1	1	1	A
Rizolex	2 gm. ai.	1	1	1	1	A
Rizolex	.5 gm. ai.	2	1	1	1.3	A
Control	-	5	3	2	3.3	B
	Rating of August 30					
Rizolex	1 gm. ai.	1	1	1	1	A
Rizolex	2 gm. ai.	1	1	1	1	A
Rizolex	.5 gm. ai.	2	2	2	2	A
Control	-	7	7	4	6	B
	Rating of September 29					
Rizolex	2 gm. ai.	1	1	1	1	A
Rizolex	1 gm. ai.	2	1	1	1.3	A
Rizolex	.5 gm. ai.	3	3	3	3	B
Control	-	9	9	8	8.6	C

Table 13

Ciba Geigy - Phytotoxicity Study - 1982
Hancock Turfgrass Research Center, MSU

Rating of 10/27/82 - Weekly treatments applied three times
- Bi-weekly (14 day) treatments applied twice

Treatment	Rate/1000 ft^2	Repetition I	II	III
CGA-64251 (1.1 E)	2 fl. oz. (weekly)	-	-	-
CGA-64251 (1.1 E)	4 fl. oz. (weekly)	-	L	M
CGA-64251 (1.1 E)	8 fl. oz. (weekly)	M	M	M
CGA-64250 (1.1 E)	2 fl. oz. (weekly)	-	-	-
CGA-64250 (1.1 E)	4 fl. oz. (weekly)	-	-	-
CGA-64250 (1.1 E)	8 fl. oz. (weekly)	M	L	M
CGA-64251 (1.1 E)	2 fl. oz. (bi-weekly)	L	-	-
CGA-64251 (1.1 E)	4 fl. oz. (bi-weekly)	L	-	L
CGA-64251 (1.1 E)	8 fl. oz. (bi-weekly)	L	-	-
CGA-64250 (1.1 E)	2 fl. oz. (bi-weekly)	-	-	-
CGA-64250 (1.1 E)	4 fl. oz. (bi-weekly)	-	-	-
CGA-64250 (1.1 E)	8 fl. oz. (bi-weekly)	L	-	L
Check	-	-	-	-

Rating of 11/2/82 - Weekly treatments applied three times
- Bi-weekly (14 day) treatments applied twice

Treatment	Rate/1000 ft^2	Repetition I	II	III
CGA-64251 (1.1 E)	2 fl. oz. (weekly)	L	M	M
CGA-64251 (1.1 E)	4 fl. oz. (weekly)	M	M	S
CGA-64251 (1.1 E)	8 fl. oz. (weekly)	S	S	S
CGA-64250 (1.1 E)	2 fl. oz. (weekly)	L	L	L
CGA-64250 (1.1 E)	4 fl. oz. (weekly)	M	L	M
CGA-64250 (1.1 E)	8 fl. oz. (weekly)	M	L	S
CGA-64251 (1.1 E)	2 fl. oz. (bi-weekly)	M	L	M
CGA-64251 (1.1 E)	4 fl. oz. (bi-weekly)	S	L	M
CGA-64251 (1.1 E)	8 fl. oz. (bi-weekly)	M	L	M
CGA-64250 (1.1 E)	2 fl. oz. (bi-weekly)	L	L	L
CGA-64250 (1.1 E)	4 fl. oz. (bi-weekly)	M	L	M
CGA-64250 (1.1 E)	8 fl. oz. (bi-weekly)	M	L	L
Check	-	-	-	-

Note: L = light phytotoxicity
M = moderate phytotoxicity
S = severe phytotoxicity