

**TURFGRASS DISEASE MANAGEMENT REPORT
1993-94**

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Snow Mold Fungicide Studies - 1993-94

Studies A & B

Two corporation-sponsored snow mold fungicide studies were conducted during the fall and winter of 1993-94. Study A was established at the Boyne Highlands Resort golf course in Harbor Springs, Michigan and Study B was established on the Tree Tops/Sylvan Resort course in Gaylord, Michigan. 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 10/28/93 and 11/2/93. Study B was applied on 11/3/93 and 11/4/93. Liquid treatments were applied with a CO₂ backpack sprayer at 32 PSI and 48 GPA. Granular treatments were pre-weighed and hand-applied.

Study A was rated on 4/11/94, immediately after snow cover melt-off. The predominant gray snow mold species this year was *Typhula incarnata*, except as noted in the data table (Table 1).

As the data indicates, statistical treatment (Tukeys Honestly Significant Differences Test) separation was modest in study A because of variability in disease levels between replicate plots. The standard treatments (Turficide 400, Chipco 26019 + Dac. 2787, Calo Clor, Calo Gran, etc.) performed well again this year after succumbing to tremendous disease pressure last year. Experimental products such as ICIA 5504, ASC 67153, Fluazinam, etc., also performed well (Table 1).

Study B was rated on 4/12/94, immediately after snow cover melt-off. The predominant gray snow mold in this study was *Typhula ishkariensis*, compared to *T. incarnata* in Study A (Table 2).

As the data indicates, many treatments also gave statistically significant control of snow mold, compared with the untreated control, in this study. As in Study A, variability in disease levels between the replicate plots also reduced statistical treatment separation. In general, the standards (Turficide 400, Chipco 26019 + Dac. 2787, Scts F FII, etc.) and experimentals (ICIA 5504, GSSM 9302, etc.) which performed well in Study A also performed well in Study B. A notable exception, however, is the Calo Clor treatment, which had more disease in the Tree Tops study than we normally observe. Turf greening was observed as noted in the data Tables 1 and 2.

No unexpectable phytotoxicity was observed at the time of rating.

Table 1. Snow Mold Fungicide Study #A - 1993-94

Boyerne Highlands Resort, Harbor Springs, MI

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

Rating Date: April 11, 1994

Treatment	Rate/1000 ft ^{2b}	I ^c	II	III	Avg	Tukeys(.05) ^a
Turficide 400 + IBDU	12 fl. oz. + 0.5 lb. N.	0	0 ^d	0	0	D
Turficide 400 + D. 2787	9 fl. oz. + 6 fl. oz.	0	0	0	0	D
Turficide 400 + D. 2787 + IBDU	9 fl. oz. + 6 fl. oz. + 0.5 lb N.	0 ^d	0	0	0	D
TRA 0028 + TRA 0041	14 fl. oz. + 32 fl. oz.	0	0	0	0	D
Ch. 26019 + D. 2787	8 fl. oz. + 8 fl. oz.	0	0	0	0	D
Ch. 26019 + PCNB + D. 2787	4 fl. oz. + 4 oz. + 8 fl. oz.	0	0 ^d	0	0	D
GSSM 9301	----	0	0	0	0	D
Syl. 309 + D. 2787 + Ch. 26019 (F)	16 fl. oz./100 gal. + 8 fl. oz. + 4 fl. oz.	0	0	0	0	D
Calo Clor	3 oz.	0 ^e	0	0	0	D
ICIA 5504 + D. 2787	0.7 oz. + 8 fl. oz.	0 ^d	0	0	0	D
ICIA 5504 + D. 2787 + PCNB	0.7 oz. + 8 fl. oz. + 8 oz.	0	0	0	0	D
TRA 0025 + TRA 0040	9 oz. + 8 oz.	0.5	0	0	0.2	D
GSSM 9303	----	0.5	0	0	0.2	D
ICIA 5504 + PCNB	0.7 oz. + 8 oz.	0.5	0	0	0.2	D
Fluazinam	2.5 fl. oz.	0	0.5	0	0.2	D
Ch. 26019 (WDG) + D. 2787	2 oz. + 8 fl. oz.	0.5	0	0.5	0.3	D
GSSM 9302	----	0	1	0	0.3	D
Ch. 26019 + D. 2787	4 fl. oz. + 8 fl. oz.	1	0	0.5	0.5	D
Calo Gran	6 lbs.	0.5	0.5	0.5	0.5	D
ASC 67153	8 fl. oz.	0	0.5 ^d	1	0.5	D
Fluazinam	1 fl. oz.	0.5	0.5	0.5	0.5	D
Turficide 400	12 fl. oz.	2	0	0	0.7	CD
Ch. 26019 + PCNB	4 fl. oz. + 8 oz.	0.5	0.5	1	1.3	CD
ANDFG 143	3.2 lbs.	0.5	0.5	1	1.3	CD
Vigoro #7	12.5 lbs.	1	0.5	3	1.5	CD
Fluazinam + D. 2787	1 fl. oz. + 8 fl. oz.	0	0	(5)	1.7	CD
Vigoro #9	12.5 lbs.	2	2	1 ^d	1.7	CD
Ch. 26019 + Prostar	8 fl. oz. + 4.3 oz.	3	2	2	1.8	CD
GSSM 9306	----	3	2	0.5	1.8	CD
Sets F + F II	2x	5	0	1	2.0	CD
Ch. 26019 (F) + Prostar	4 fl. oz. + 4.3 oz.	3	2	2	2.3	BCD
GSSM 9305	----	7	0.5	0.5	2.7	BCD
Vigoro 6	12.5 lbs.	0.5	3 ^d	5	2.8	BCD
Vigoro 8	12.5 lbs.	4	5	0.5	3.2	BCD
TRA 0041	32 fl. oz.	3	5	2	3.3	BCD
D. 2787 + Fungo 85	8 fl. oz. + 1.2 oz.	10	0	0.5	3.5	BCD
D. 2787 + ASC 67103	8 fl. oz. + 16 ml/100 gal.	0	1 ^d	(10) ^d	3.7	BCD
Consyst	6 oz.	9	3	0.5	4.5	BCD
Revere	8 oz.	5	2	7	4.7	BCD
Vigoro 16	12.5 lbs.	5	5	5	5	BCD
Vigoro 5	12.5 lbs.	0.5	0	15	5.2	BCD
Vigoro 15	12.5 lbs.	0.5 ^d	15 ^d	1	5.5	BCD
ICIA 5504	0.7 oz.	2	0.5	15	5.8	BCD
Vigoro 10	12.5 lbs.	7	8 (2)	1	6	BCD
Vigoro 4	12.5 lbs.	2 (3) ^d	0.5	5 (10)	6.8	BCD
ANDFG 142	4 lbs.	2	0.5	20	7.5	BCD
Terraclor	8 oz.	15	0.5	10	8.5	BCD
GSSM 9311	----	20	3	5	9.3	BCD
ANDFG 141	4 lbs.	3	2	25	10	BCD
Vigoro 12	12.5 lbs.	3	20	7	10	BCD
TRA 0040	8 oz.	1	10	20	10.3	BCD
Vigoro 14	12.5 lbs.	3	20	(10)	11	BCD

Treatment	Rate/1000 ft ^{2b}	I ^c	II	III	Avg	Tukeys(.05) ^a
Banner	16 gm. ai.	35	1	0	12	BCD
Consyst	9 oz.	4	35	0.5	13.3	BCD
GSSM 9312	----	20	0.5	20	13.5	BCD
CGA 173506 + Banner	7 gm. ai. + 8 gm. ai.	15	25	1	13.7	BCD
Vigoro 13	12.5 lbs.	7	1	45	17.7	A-D
ANDFG 135	4 lbs.	7	25	24 (1)	19	A-D
CGA 173506 + Banner	10 gm. ai. + 8 gm. ai.	35	1	25	20.3	A-D
ANDFG 136	4 lbs.	17	5	40	21.7	A-D
ANDFG 139	4.16 lbs.	5	35	23 (2)	21.7	A-D
Syl. 309 + Penstar	8 fl. oz/100 gal. + 8 oz.	50	3	15	22.7	A-D
GSSM 9304	----	5	65	3	24.3	A-D
GSSM 9309	----	7	0 (5)	2	24.7	A-D
Scts. F + F II	1x	15	15	45	25	A-D
ANDFG 137	4 lbs.	10	15	50	25	A-D
ANDFG 138	4 lbs.	40 ^d	15	20	25	A-D
CGA 173506 + Banner	7 gm. ai. + 16 gm. ai.	30	2	45	25.7	A-D
ANDFG 144	3.2 lbs.	35	7	40	27.3	A-D
Vigoro 3	12.5 lbs.	10 (15)	35	25	28.3	A-D
ANDFG 140	4.16 lbs.	7	30	40 (10)	29	A-D
GSSM 9307	----	20	1	60 (10)	30.3	A-D
CGA 173506 + Banner	3.5 gm. ai. + 16 gm. ai.	40	25	30	31.7	A-D
EXP 10452A	4 oz.	50 (5)	5	35	31.7	A-D
UCC 4044	120 oz.	25 (2)	20	50 (5)	34	A-D
GSSM 9310	----	35 (5)	2	20 (40)	34	A-D
CGA 173506	14 gm. ai.	65	35	3	34.3	A-D
GSSM 9308	----	40	40	23 (2)	35	A-D
CGA 173506	----	50	5	65	40	A-D
UCC 4040	80 oz.	5 (2)	65	50	40.7	A-D
Syl. 309	8 oz/100 gal.	43 (2)	8 (2)	20	41.7	A-D
Vigoro 11	12.5 lbs.	35	40	55	43.3	A-D
CGA 173506 + Banner	3.5 gm. ai. + 8 gm. ai.	40	35	60	45	A-D
CGA 173506	10 gm. ai.	30	45	65	46.7	A-D
ANDFG 133	4 lbs.	65	4	65 (10)	48	A-D
Control	----	70	3 (2)	65	53.3	A-D
ANDFG 145	1.93 lbs.	50	30	80	53.3	A-D
ANDFG 146	1.93 lbs.	85	4	80	56.3	A-D
Vigoro 2	12.5 lbs.	5 (10)	3 (2)	53 (7)	56.7	A-D
Syl. 309	16 oz/100 gal.	83 (2)	30	50 (5)	56.7	A-D
GSSM 9313	----	85	45	50	60	ABC
Banner	8 gm. ai.	35	70	73 (2)	60	ABC
CGA 173506	3.5 gm. ai.	75	35	70 (5)	61.7	AB
ANDFG 134	4 lbs.	65	80	80	75	A

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

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

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

^dSlight greening effect noted.

^eSlight phytotoxicity noted.

Table 2. Snow Mold Fungicide Study B - 1993-94

Tree Tops/Sylvan Resort, Gaylord, MI

Rating Scale: Percent plot area infected by gray snow mold (*Typhula ishikariensis*).
 Rating Date: April 12, 1994

Treatment	Rate/1000 ft ^{2b}	I	II	III	Avg	Tukeys(.05) ^a
GSSM 9305	----	0	0	0.5	0.2	C
Turficide 400	12 fl. oz.	0.5	0	0.5	0.3	C
TRA 0028 + TRA 0041	14 fl. oz. + 32 fl. oz.	0.5	0.5	0	0.3	C
GSSM 9304	----	0	0	1	0.3	C
D. 2787 + Fungo 85	8 fl. oz. + 1.18 oz.	0.5	0	0.5	0.3	C
ICIA 5504 + D. 2787 + PCNB	0.7 oz. + 8 fl. oz. + 8 oz.	0	0.5	0.5	0.3	C
Turficide 400 + D. 2787 + IBDU	9 fl. oz. + 6 fl. oz. + 0.5 lb N.	0	0.5	1	0.5	BC
TRA 0041	32 fl. oz.	0.5	0	1	0.5	BC
Ch. 26019 + PCNB + D. 2787	4 fl. oz. + 4 oz. + 8 fl. oz.	0.5	0	1	0.5	BC
GSSM 9301	----	0	0.5	1	0.5	BC
Consyst	9 oz.	0.5	0.5	0.5	0.5	BC
ICIA 5504 + PCNB	0.7 oz. + 8 oz.	0	1	0.5	0.5	BC
Terraclor	8 oz.	0	0	2	0.7	BC
Ch. 26019 (F) + PCNB	4 fl. oz. + 8 oz.	1	0.5	0.5	0.7	BC
CGA 173506 + Banner	10 gm. ai. + 8 gm. ai.	0.5	1	0.5	0.7	BC
GSSM 9312	----	0.5	0.5	1	0.7	BC
Consyst	6 oz.	0	0.5	2	0.8	BC
GSSM 9303	----	0.5	1	1	0.8	BC
Turficide 400 + IBDU	12 fl. oz. + 0.5 lb N.	1	1	1	1	BC
TRA 0025 + TRA 0040	9 oz. + 8 oz.	0.5	0.5	2	1	BC
Ch. 26019 + D. 2787	4 fl. oz. + 8 fl. oz.	0.5	0.5	2	1	BC
Revere	8 oz.	0.5	0.5	2	1	BC
Sylgard 309 + Penstar	8 oz/100 gal. + 8 oz.	0.5	2	0.5	1	BC
Sets F + F II	1x	0	1	2	1	BC
GSSM 9302	----	0.5	2	1	1.2	BC
Vigoro 12	12.5 lbs.	0.5	0	3	1.2	BC
ANDFG 144	3.2 lbs.	0.5	0	3	1.2	BC
Vigoro 15	12.5 lbs.	0.5	0	3	1.2	BC
Turficide 400 + D. 2787	9 fl. oz. + 6 fl. oz.	0.5	0.5	3	1.3	BC
Sets. F+F II	2x	0.5	2	2	1.5	BC
CGA 173506 + Banner	7 gm. ai. + 16 gm. ai.	3	1	1	1.7	BC
TRA 0040	8 oz.	3	0	3	2	BC
GSSM 9311	----	0.5	3	3	2.2	BC
CGA 173506 + Banner	7 gm. ai. + 8 gm. ai.	5	0	3	2.7	BC
Ch. 26019 + D. 2787	8 fl. oz. + 8 fl. oz.	10	0	0.5	3.5	BC
ICIA 5504 + D. 2787	0.7 oz. + 8 fl. oz.	0.5	0.5	10	3.7	BC
Sylgard 309 + D. 2787 + Ch. 26019	16 oz/100 gal. + 8 fl. oz. + 4 fl. oz.	7	1	3	3.7	BC
CGA 173506	14 gm. ai.	5	0	7	4	BC
GSSM 9307	----	3	10	2	5	BC
CGA 173506	10 gm. ai.	10	0.5	7	5.8	BC
ANDFG 145	1.93 lbs.	1	7	10	6	BC
Vigoro 14	12.5 lbs.	1	7	10	6	BC
Fluazinam	1 fl. oz.	20	0.5	3	7.8	BC
Fluazinam + D. 2787	1 fl. oz. + 8 fl. oz.	25	2	1	9.3	BC
Vigoro 16	12.5 lbs.	25	0.5	5	10.2	BC

Treatment	Rate/1000 ft ^{2b}	I	II	III	Avg	Tukeys(.05) ^a
Ch. 26019 + Prostar	8 fl. oz. + 4.3 oz.	15	7	10	10.7	BC
Fluazinam	2.5 fl. oz.	0.5	30	2	10.8	BC
Vigoro 5	12.5 lbs.	0.5	2	39	10.8	BC
Calo Clor	3 oz.	25	0.5	10	11.8	BC
ANDFG 139	4.16 lbs.	20	1	15	12	BC
Vigoro 11	12.5 lbs.	2	15	20	12.3	BC
D. 2787 + ASC 67103	8 fl. oz. + 16 ml.	5	25	10	13.3	BC
CGA 173506 + Banner	3.5 gm. ai. + 16 gm. ai.	25	0.5	15	13.5	BC
GSSM 9306	----	40	1	2	14.3	BC
ANDFG 133	4 lbs.	20	1	25	15.3	BC
ASC 67153	8 fl. oz.	10	0	40	16.7	ABC
Ch. 26019 (WDG) + D. 2787	2 oz. + 8 fl. oz.	50	0.5	1	17.2	ABC
GSSM 9313	----	50	0.5	2	17.5	ABC
CGA 173506 + Banner	3.5 gm. ai. + 8 gm. ai.	25	20	10	18.3	ABC
GSSM 9308	----	20	20	15	18.3	ABC
Vigoro 9	12.5 lbs.	10	20	25	18.3	ABC
CGA 173506	7 gm. ai.	30	20	7	19	ABC
ICIA 5504	0.7 oz.	40	1	25	22	ABC
Vigoro 8	12.5 lbs.	25	1	40	22	ABC
GSSM 9309	----	25	20	25	23.3	ABC
Calo Gran	6 lbs.	2	0.5	80	27.5	ABC
Ch. 26019 + Prostar	4 fl. oz. + 4.3 oz.	40	10	35	28.3	ABC
ANDFG 140	4.16 lbs.	30	7	50	29	ABC
ANDFG 143	3.2 lbs.	0.5	2	90	30.8	ABC
ANDFG 142	4 lbs.	75	15	10	33.3	ABC
Vigoro 13	12.5 lbs.	0	30	75	35	ABC
ANDFG 137	4 lbs.	35	20	50	35	ABC
VCC 4044	120 oz.	0	30	75	35	ABC
Banner	8 gm. ai.	30	60	20	36.7	ABC
GSSM 9310	----	35	35	40	36.7	ABC
Vigoro 10	12.5 lbs.	5	40	65	36.7	ABC
ANDFG 141	4 lbs.	65	15	35	38.3	ABC
ANDFG 138	4 lbs.	40	30	45	38.3	ABC
Banner	16 gm. ai.	50	25	45	40	ABC
ANDFG 136	4 lbs.	45	1	80	42	ABC
Vigoro 7	12.5 lbs.	90	3	35	42.7	ABC
UCC 4040	80 oz.	65	25	40	43.3	ABC
Sylgard 309	16 oz/100 gal.	70	0	75	48.3	ABC
Vigoro 6	12.5 lbs.	95	20	35	50	ABC
ANDFG 146	1.93 lbs.	25	65	65	51.7	ABC
ANDFG 134	4 lbs.	85	45	45	58.3	ABC
Vigoro 2	12.5 lbs.	75	45	60	60	ABC
ANDFG 135	4 lbs.	90	20	80	63.3	ABC
CGA 173506	3.5 gm. ai.	80	75	35	63.3	ABC
Sylgard 309	16 oz/100 gal.	98	20	75	64.3	ABC

Treatment	Rate/1000 ft ^{2b}	I	II	III	Avg	Tukeys(.05) ^a
EXP 10452A	4 oz.	95	85	20	66.7	ABC
Vigoro 4	12.5 lbs.	95	15	95	68.3	AB
Control	----	90	75	85	83.3	A
Vigoro 3	12.5 lbs.	95	95	75	88.3	A

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

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

Kentucky Bluegrass Melting-Out Fungicide Study - 1994

Hancock Turfgrass Research Center

The 1994 melting-out (*Dreschlera poae*) fungicide trial was conducted at the Hancock Turfgrass Research Center on the MSU campus in East Lansing, MI on irrigated Kenblue Kentucky bluegrass (*Poa pratensis*) turf maintained at 1 1/2" height of cut. The plot area was fertilized dormant in late fall of 1993 at 1 lb. nitrogen/1000 ft² and with .25 lb. actual nitrogen/1000 ft² on 5/24/94. Application procedures were as previously described in this report.

Treatments were applied preventively on May 4, with subsequent applications being made at the intervals listed on the data table (Table 3). By the time of the 6/15/94 rating, the 14 day treatments had been applied three times and the 21 and 28 day treatments had been applied twice.

As the data indicate (Table 3), disease levels were moderate this year with the controls averaging about 45% of maximum disease levels. Statistically, all of the treatments gave significant disease control, compared to the untreated control. No phytotoxicity was observed.

Table 3. Kentucky Bluegrass Melting-Out Fungicide Study - 1994

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

Rating scale: 1 = no disease, 9 = 90% or more of leaves infected

Rating date: 6/15/94

Treatment	Rate/1000ft ^{2b}	Interval	I	II	III	IV	Avg	Tukeys (.05) ^a
Ch. 26019	4 fl. oz.	21 day	1	1	1	1	1.0	A
ASC 67098-Z	3.6 oz.	14 day	1	1	1	1	1.0	A
ASC 67098-X	2.5 oz.	14 day	1	1	1	2	1.3	A
RH-0611	10 oz.	14 day	1	2	1	1	1.3	A
Fore	6.4 fl. oz.	14 day	1	1	1	2	1.3	A
Curalan	2 oz.	28 day	1	1	2	2	1.5	A
D. 2787	6 fl. oz.	14 day	1	2	1	2	1.5	A
Dac. 825	3.8 oz.	14 day	1	2	1	2	1.5	A
Fluazinam	1 fl. oz.	14 day	2	2	1	2	1.8	A
Control	--	--	4	4	4	5	4.3	B

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

^bRates listed are formulation.

Summer Patch Fungicide Studies - 1994

Fungicide studies for the preventive control of summer patch (*Magnaporthe poae*) on annual bluegrass were initiated when soil temperatures reached 65° F at a 2" soil depth at the Hancock Turfgrass Research center on the MSU campus in East Lansing, MI. Studies were established on irrigated, annual bluegrass (*Poa annua*) fairways on two golf courses in