

TURFGRASS DISEASE REPORT FOR 1998
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Brown Patch Field Trial, 1998.

This test was conducted at the Hancock Turfgrass Research Center, E. Lansing, MI on a mixed stand of colonial bentgrass and annual bluegrass. Plots were mowed at 1.5 in, and fertilized monthly with 1 lb nitrogen per 1000 sq ft beginning on 15 May. Fungicide treatments were initiated on 15 June and were applied to 2 ft x 4.5 ft plots arranged in a randomized complete block design with four replications. Applications were made using a hand held CO₂-powered backpack sprayer at 36 psi with a single 8002E flat fan TeeJet nozzle at a rate of 1.1 gal per 1000 sq ft. The entire plot area was inoculated weekly with *R. solani* growing on a sand/cornmeal mixture from 17 June until 16 July using a drop spreader at a rate of 2.5 lb per 1000 sq ft. Each plot was covered with a 1 ft x 2 ft opaque plastic pan in the late afternoon and uncovered each morning for at least 5 days each week. The test area was heavily irrigated beginning in mid June and for the duration of the study. Visual estimations of the % area blighted of the covered portion of each plot was recorded. Data were subjected to analysis of variance and LSD test, p=0.05.

Disease pressure was heavy late in the study. On 27 Jul, more than 94% of the covered area of control plots was infected with brown patch. Near complete suppression of disease for the duration of the study was provided by Daconil Ultrex, Heritage, Echo, Eminent Star, and Prostar + Daconil 2787. AMV 300 did not provide disease suppression when compared to the untreated control. Heritage lost efficacy when applied at 0.4 oz/28 days as compared to 0.2 oz/14 days. The Prostar 70WP provided superior control than did Prostar 50WP. Phytotoxicity was observed after each of the first 2 applications of AMV 300 but not with subsequent applications. Phytotoxicity was not observed for any other treatments.

Table 1. 1998 Brown Patch Ratings

Treatment	Rate per 1000 ft ²	Int. (days) ^c	% Brown patch ^a		
			9-Jul	20-Jul	27-Jul
Daconil Ultrex 82.5WDG	3.8 oz	14	0 g ^b	0.3 j	0.4h
Heritage 50WG	0.2 oz	14	0 g	0 j	0.5 h
Prostar 70WP + Daconil 2787 4.17F1.5 oz + 4.9 fl oz.	14	14	0 g	0 j	0.6 h
Echo 75WDG	4.2 oz	14	1.5 g	2.8 h-j	1.5 h
Eminent Star ES	6 oz	14	0 g	1.8 ij	1.8 h
Spectro 90WDG	8 oz	14	8.8 fg	6.3 h-j	5.5 h
Eminent 125SL	4 fl oz	21	6.5 fg	6.3 h-j	8 gh
Chipco 26GT 2F + 3336 50WP	2 fl oz + 2 oz	14	5.5 fg	10 g-j	11 gh
Prostar 70WP	2.25 oz	21	2.8 g	15.5 g-j	12 gh
Echo 720 6F	4.2 fl oz	14	3.8 g	16.8 g-j	13.1 f-h
WAC 76 W	3.3 oz	14	16.8 fg	18.8 f-j	14.5 f-h
Daconil Weather Stik 6F	4.2 fl oz	14	0.5 g	22.5 e-h	17.5 f-h
3336 50WP	4 oz	14	16.8 fg	21.3 e-i	19.3 f-h
WAC 75 WP	3 oz	14	19.8 e-g	28.8 d-g	26.3 e-g
Heritage 50WG	0.4 oz	28	27 ef	40 de	27.5 e-g
Prostar 50WP	3 oz	21	13.8 fg	37.5 d-f	32.5 ef
3336 4.5F	4 fl oz	14	75 a-c	78.8 ab	72.5 bc
AMV 300 F	1 fl oz	14	57.5 cd	89.8 a	88.5 ab
QST 713	10 g/L	7	76.3 a-c	90 a	90 ab
QST 713	20 g/L	7	82.5 ab	90.8 a	92 ab
QST 713	5 g/L	7	92.5 a	95.8 a	92.5 ab
Untreated Control	---	---	68.8 bc	94.5 a	94.5 a

^a Numbers represent estimated % diseased area of the covered portion of each plot. Means of four replications.

^b Means followed by the same letter do not significantly differ (LSD, p=0.05.)

^c 14 day treatments were applied on 6/15, 7/1, 7/14, and 7/28; 21 day treatments on 6/15, 7/8, and 7/28; and 28 day treatments on 6/15 and 7/14.

Dollar Spot Field Trial, 1998.

This test was conducted at the Hancock Turfgrass Research Center, E. Lansing, MI on a creeping bentgrass stand. Plots were mowed at 0.25 in, and fertilized monthly with 0.25 lb nitrogen per 1000 sq ft beginning on 1 Jul. Fungicide treatments were initiated on 31 Jul and were applied to 2 ft x 7.5 ft plots arranged in a randomized complete block design with four replications. Applications were made using a hand held CO₂-powered back pack sprayer at 36 psi with a single 8002E flat fan TeeJet nozzle at a rate of 1 gal per 1000 sq ft.

As the disease ratings in table 2 indicate, in general, products which performed well early in the season were still performing well at the time of the last rating (23 Sep), despite increasing disease pressure in the plot area. This includes most of the standards that are used for dollar spot control. No phytotoxicity was observed, except as noted in the table. Data were subjected to analysis of variance and LSD test, $p=0.05$.

Table 2. 1998 Dollar Spot Ratings

Treatment	Rate ^a	Int. (days) ^d	% Dollar Spot ^b			
			29 Aug	11 Sep	18 Sep	23 Sep
Curalan (EG)	2 oz	21	0 f ^e	0 i	0 f	0 j
Bayleton 50 DF + Chlorothalonil 900.25	oz + 1.67 oz	14	0.2 f	0 i	0 f	0 j
Ch. 26GT	4 fl oz	14	0 f	0 i	0 f	0 j
EXP 80318C	1 fl oz	14	0 f	0 i	0 f	0 j
Banner	1.5 fl oz	21	0.1 f	0 i	0 f	0 j
Echo 90 DF	6 oz	14	0 f	0 i	0 f	0 j
Echo 720	6 fl oz	14	0 f	0 i	0 f	0 j
Heritage + Dac. Ultrex	0.2 oz + 3.9 oz	14	0 f	0 i	0 f	0 j
Daconil Weather Stik	4.125 fl oz	14	0.1 f	0 i	0 f	0 j
Thalonil 4L	6.23 fl oz	14	0 f	0 i	0 f	0 j
Dac. Ultrex	3.9 oz	14	0 f	0 i	0 f	0 j
Eagle	0.6 oz	14	0 f	0.1 i	0 f	0 j
Sentinel 40 WG	0.167 oz	21	0 f	0 i	0 f	0 j
Bayleton 50 DF + Heritage	0.25 oz + 0.2 oz	14	0.1 f	0 i	0 f	0.1 j
Spectro	8 oz	14	0 f	0 i	0 f	0.1 j
Daconil Ultrex	3.8 oz	14	0 f	0 i	0 f	0.1 j
RH-0611	8 oz	14	0 f	0 i	0.1 f	0.1 j
Lynx + Chlorothalonil 90	0.278 oz + 1.67 oz	14	0.1 f	0 i	0 f	0.2 j
EXP 80318C	1 fl oz	21	0.2 f	1.2 hi	.02 f	0.2 j
Lynx + Heritage	0.278 oz + 0.2 oz	14	0.1 f	0.1 i	0.2 f	0.3 j
Daconil Ultrex	3.8 #/A	10	1.1 f	0 i	3 ef	2.0 ij
Eagle	1.2 oz	28	0 f	0 i	1 f	2.8 h-j
Ch. 26 GT + Proxy ^f	4.0 oz + 4.7 fl oz	28	3.0 f	0 i	1.6 f	3.5 g-j
Chlorothalonil 90	1.67 oz	14	3.5 f	0 i	0.8 f	6.3 gh
Ch. 26Gt + Proxy +	4.0 fl oz + 4.7 fl oz					
Ch. Signature 80WG ^f	+ 4.0 oz	28	2.6 f	0.1 i	5.5 ef	7.5 g
IB10353	3.5 #/A	10	18.8 d	12.5 e	21.3 d	17.5 f
AMV 300 ^e	1 fl oz	14	27.5 bc	26.7 b	38.3 b	35 e
Ch. Signature 80WG + Proxy ^f	4.0 oz + 4.7 fl oz	28	20 d	16.3 d	28.3 c	42.5 d
QST 713	5 g/L	7	26.3 c	30 b	40 ab	47.5 c
QST 713	20 g/L	7	26.3 c	28.8 b	31.3 c	47.5 c
QST 713	10 g/L	7	25.5 c	30 b	38.8 ab	50 bc
Heritage	0.2 oz	14	30 b	21.3 c	33.8	52.5 ab
Control	---	---	33.8 a	38.8 a	45 a	55 a

^a Rates are per 1000 sq ft unless otherwise indicated

^b Numbers represent estimated % diseased area of the covered portion of each plot. Means of four replications.

^c Means followed by the same letter do not significantly differ (LSD, $p=0.05$.)

^d 14 day treatments applied on 7/31, 8/14, 8/27, and 9/11; 21 day treatments on 7/31, 8/20, and 9/11; and 28 day treatments on 7/31 and 8/27.

^e Moderately severe phytotoxicity during August, mildly phytotoxic during September.

^f Moderately severe phytotoxicity (chlorosis) during August, mildly phytotoxic during September.

Summer Decline in Creeping Bentgrass Field Trial, 1998

This test was conducted at the Hancock Turfgrass Research Center, E. Lansing, MI on an experimental research green. Plots were mowed at 1/8 in and fertilized monthly with 0.5 lb nitrogen per 1000 sq ft. Fungicide treatments were applied to 2 ft x 4.5 ft plots arranged in a randomized complete block design with four replications. Applications were made using a hand held CO₂-powered back pack sprayer at 36 psi with a single 8002E flat fan TeeJet nozzle at a rate of 1.1 gal per 1000 sq ft. Treatment applications began on 12 May and all were applied on a 14 day schedule. Turf quality was based on a subjective evaluation of turf density and color where 0 = dead and 10 = excellent. Data were subjected to analysis of variance and LSD test, $p=0.05$.

Chipco Aliette Signature + Chipco 26GT was the only treatment tested that provided significantly better turf quality than the control for the entire duration of the study. Chipco Aliette Signature + Daconil Ultrex exhibited better quality than the control on 4 of the 6 dates readings were taken. Sprays of EXP 80318C were least effective. No phytotoxicity was observed.

Table 3. 1998 Summer Decline in Creeping Bentgrass Turf Quality Ratings.

Treatment	Rate per	Turf quality*					
	1000 ft ²	1 Jul	9 Jul	17 Jul	28 Jul	12 Aug	21 Aug
Chipco Aliette Signature 80WDG + Chipco 26GT 2F	4 oz + 4 fl oz	6.5 a**	7.5 a	7.5 a	8 a	8.5 a	8 a
Chipco Aliette Signature 80WDG + Daconil Ultrex 82.5WDG	4 oz + 3.8 oz	6.5 a	6.8 ab	6.8 ab	7 b	7.8 ab	7.8 ab
Chipco Aliette Signature 80WDG + EXP 80318C 1.67SC	4 oz + 1 fl oz	6 a	6.3 bc	6.8 ab	6.8 b	7 bc	7 bc
Untreated Control	---	5 b	5.5 c	6.3 b	6.5 b	6.5 c	6.3 c

*Turf quality ratings are subjective and based upon turf density and color, where 0 = dead and 10 = excellent. Means of 4 replications.

**Means followed by the same letter do not significantly differ (LSD, $p=0.05$.)

Summer Decline in Annual Bluegrass Field Trial, 1998.

This test was conducted at the Hancock Turfgrass Research Center, E. Lansing, MI. Plots were mowed at 1/2 in and fertilized monthly with 0.5 lb nitrogen per 1000 sq ft. Fungicide treatments were applied to 2 ft x 4.5 ft plots arranged in a randomized complete block design with four replications. Applications were made using a hand held CO₂-powered back pack sprayer at 36 psi with a single 8002E flat fan TeeJet nozzle at a rate of 1.1 gal per 1000 sq ft. All fungicide treatments were initiated on 6 Jul and applied on a 14 day interval. Turf quality evaluations were based on turf density and color where 0 = dead and 10 = excellent. Dollar spot ratings were visual estimations of % plot area with dollar spot symptoms. Data were subjected to analysis of variance and LSD test, $p=0.05$.

Combinations of Chipco Aliette Signature 80 WDG with Chipco 26GT 2F, Daconil Ultrex 82.5 WDG, and EXP 80318C provided significantly better turf quality than untreated controls for the entire duration of the study. Dollar spot developed in Jul and exhibited 91% disease in controls in Aug. All Chipco Aliette Signature combinations tested provided significant dollar spot control when compared to the untreated control, as did the Aliette T&O + Thalonil 4L combination. By 11 Aug, control with a tank mix of Dithane and Chipco Aliette Signature was superior to either product alone, demonstrating the synergy of the two products. No phytotoxicity was observed.

Table 4. 1998 Summer Decline in Annual Bluegrass Turf Quality Ratings

Treatment	Rate/1000 ft ²	Turf quality ¹						
		2 Jul	10 Jul	17 Jul	21 Jul	27 Jul	11 Aug	21 Aug
Chipco Alette Signature 80WDG + Chipco 26GT 2F	4 oz + 4 fl oz	7 a ²	8 a	7.8 a	6.5 a	7.5 a	8 a	7 b
Chipco Alette Signature 80WDG + Daconil Ultrex 82.5WDG	4 oz + 3.8 oz	7 a	8 a	6.8 b	6 ab	7 a	7.8 ab	7.8 a
Chipco Alette Signature 80WDG + EXP 80318C 1.67SC	4 oz + 1 fl oz	6.3 b	7.5 ab	6.8 b	6.5 a	7.3 a	6.8 c	7 b
Chipco Alette Signature 80WDG + Dithane T&O 75WG	4 oz + 8 oz	6.3 b	7.8 a	6.8 b	5.8 a-c	6.8 a	4 d	3.3 c
Dithane T&O 75WG	8 oz	6.3 b	6.5 cd	5.8 c	5 bc	5.5 b	2.3 e	2.3 d
Chipco Alette Signature 80WDG	4 oz	6 bc	6.3 d	5.8 c	5 bc	5 b	1.8 e	2.3 d
Thalonil 4L + Alette T&O 80WDG ³	3.5 fl oz + 4 oz	6 bc	7 bc	7 ab	5.8 a-c	6.8 a	7.3 bc	6.8 b
Untreated Control	---	5.5 c	6 d	5.5 c	4.5 c	5 b	1.8 e	2.5 d

¹Turf quality ratings are subjective and based upon turf density and color, where 0 = dead and 10 = excellent.

Means of 4 replications.

²Means followed by the same letter do not significantly differ (LSD, p=0.05.)

Table 5. 1998 Dollar Spot Rating on Annual Bluegrass

Treatment and rate/1000 sq ft	Rate	% Dollar spot ¹		
		10 Jul	17 Jul	11 Aug
Chipco Alette Signature 80WDG + EXP 80318C 1.67SC	4 oz + 1 fl oz	1 bc ²	0.4 c	0.1 c
Chipco Alette Signature 80WDG + Chipco 26GT 2F	4 oz + 4 fl oz	0.4 c	0.1 c	0.5 c
Chipco Alette Signature 80WDG + Daconil Ultrex 82.5WDG	4 oz + 3.8 oz	0.8 bc	1.6 bc	0.5 c
Thalonil 4L + Alette T&O 80WDG ³	3.5 fl oz + 4 oz	0.8 bc	0.6 c	1.8 c
Chipco Alette Signature 80WDG + Dithane T&O 75WG	4 oz + 8 oz	1.1 bc	1.9 bc	25 b
Dithane T&O 75WG	8 oz	2 b	4 bc	86.3 a
Chipco Alette Signature 80WDG	4 oz	5.5 a	11.9 ab	87.5 a
Untreated Control	---	6.8 a	15 a	91.3 a

¹Dollar spot ratings are % plot area showing disease symptoms. Means of 4 replications.

²Means followed by the same letter do not significantly differ (LSD, p=0.05.)

³Blending agent (Combine (95% ai)) added at a rate of 3 pts/100 gal.

Summer Patch Fungicide Field Trial, 1998.

This test was conducted at the Dearborn County Club, Dearborn, MI on an irrigated annual bluegrass fairway. The plots were mowed at 1/2" and fertilized monthly at 1/2# nitrogen/1000 sq ft. Fungicide treatments were initiated preventively on May 6 when the soil temperature reached 65 F at a 2" soil depth (except as noted in data table). A second application was made 30 days later on Jun 8 (except as noted in data table). Treatments were applied utilizing a CO2 backpack sprayer equipped with 800E flat-fan nozzles. Application volume was 100 GPA.

By the August 17 rating, disease pressure in the plot area was moderately severe, but the standard fungicides (Eagle, Sentinel, Banner, Heritage, and 3336 WP) were still providing good disease control. By the end of August, fungicide residues were diminishing and summer patch control was deteriorating in the standard treatments. This is reflected in the Sept 8 ratings. Disease pressure was also abating in the control plots by Sept 9. The result was no significant statistical difference between the treatments (Table 6.) Phytotoxicity was observed following application of the May 6 application of the Sentinel treatment. The superintendent of the golf course used Primo at reduced rates on this fairway in order to reduce annual bluegrass seedhead production and overall growth. Though no phytotoxicity was observed from this application, the May 6 application of Sentinel on this Primo-treated turf produced a significant burn. The June 8 application of Sentinel produced only mild phytotoxicity since the Primo effect was abating. No other phytotoxicity was observed this season.

Table 6. 1998 Summer Patch Ratings

Treatment	Rate/1000 ft ²	Spray Int.	% Summer Patch ^a		
			27 Jul	17 Aug	8 Sep
Heritage	0.2 oz	65 F + 30 days	1.5 e	1.8 e	13 a
Banner MAXX	4 fl oz	65 F + 30 days	1.8 e	5 de	16.8 a
Clearys 3336 WP	8 oz	14 days	7 c-e	8 c-e	11.8 a
Eagle	1.2 oz	65 F + 30 days	3.5 de	4 e	13 a
Sentinel	0.33 oz	65 F + 30 days	2.8 de	6.3 de	11.5 a
EXP80318C	0.5 oz	65 F + 30 days	10 b-d	17.3 bc	16.8 a
EXP80318C	1.5 oz	65 F + 30 days	14.3 a-c	15 b-d	16.3 a
Control	—	—	17.5 a	27.5 a	20 a
EXP80318C	1 oz	65 F + 30 days	14.8 ab	21 ab	25 a

^a Means of 4 replications.

^c Means followed by the same letter do not significantly differ (LSD, p=0.05.)

1997-98 Snow Mold Fungicide Field Trials

Studies A & B

Two corporation-sponsored snow mold fungicide studies were conducted during the fall and winter of 1997-98. Study A was applied on the Boyne Highlands Resort in Harbor Springs, MI on Oct. 31, 1997 (except as noted in the data table), and study B was applied on the Tree Tops/Sylvan Resort in Gaylord, MI on Oct. 30, 1997 (except as noted in the data table). Treatments were applied preventively to three replicate 6' X 9' creeping bentgrass (*Agrostis palustris*) / annual bluegrass (*Poa annua*) fairway plots where the turf was maintained at approximately 1/2" height of cut. Liquid treatments were applied with a CO₂ back-pack sprayer at a pressure of 36 PSI and a volume of 100 GPA. Granular products were pre-weighed and hand applied.

Study A was rated following snow cover melt-off on March 29, 1998 (Table 7). The predominant snow mold was gray snow mold, caused by *Typhula incarnata* and *Typhula ishkariensis*. There was insufficient *Microdochium* patch infection to warrant a separate rating.

Study B was rated on March 30, 1998. The predominant snow mold disease in this study was gray snow mold (*T. incarnata*, *T. ishkariensis*). In instances where there was sufficient *Microdochium* patch to warrant a separate rating, the percentage of disease/plot attributable to *Microdochium* patch is indicated in the data table (Table 8).

As the data in Table 7 indicate, disease pressure was quite heavy in the Boyne Highlands study this year. The various PCNB formulations (Turfcide 400, Penstar FLO, Defend, Revere 4000, Scts FF II) performed well, whether alone, or in combination with other products. The standard combination of CH 26GT and Daconil Ultrex performed moderately well this year, but the addition of Turfcide 400 to the combination greatly improved the disease control performance. The addition of Signature to the CH 26GT + Daconil Ultrex combination also improved the performance, at least when split applications were made. No phytotoxicity or turf quality differences were observed.

Table 7. Snow Mold Disease Ratings taken on Mar 29, 1998 at Boyne Highlands Resort, Harbor Springs, MI.
Rating Scale: % plot area infected with gray snow mold (*Typhula sp.*)

Treatment Name	Rate (2 gal/1000 sq ft) ^a	I	II	III	Mean	LSD ^b
Defend 4F +	8 fl oz* +					
3336 WP + Dac. Ultrex + Defend 4F	4 oz + 5 oz + 9 fl oz	0	0	0	0.00	S
Heritage + Revere 4000 ^c	0.4 oz + 12 fl oz	0	0	0	0.00	S
Heritage + Revere 4000 ^c	0.4 oz + 12 fl oz (4 gal)	0	0	0	0.00	S
Heritage + Revere 4000 ^c	0.7 oz + 12 fl oz (4 gal)	0	0	0	0.00	S
Exp Granule B	4 lbs	0	0	0	0.00	S
Defend 4F +	8 fl oz* +					
Defend 4F + WAC 71	9 fl oz + 12 oz	0.2	0	0	0.07	S
Heritage + Revere 4000 ^c	0.7 oz + 12 fl oz	0	0	0.2	0.07	S
WAC 71 +	8 oz* +					
Defend 4F	12 fl oz	0.2	0	1	0.40	S
3336 WP + Dac. Ultrex +	4 oz* + 3.8 oz* +					
Defend 4F + Dac. Ultrex + 3336 WP	9 fl oz + 5 oz + 4 oz	0	0.2	2	0.73	S
3336 WP + Dac. Ultrex +	4 oz* + 3.8 oz* +					
Defend 4F	12 fl oz	1	1	0.2	0.73	S
3336 WP + Dac. Ultrex +	4 oz* + 3.8 oz* +					
Defend 4F + WAC 71	9 fl oz + 12 oz	0.2	0	2	0.73	S
WAC 71 +	8 oz* +					
3336 WP + Dac. Ultrex + Defend 4F	4 oz + 5 oz + 9 fl oz	0.2	1	1	0.73	S
WAC 71 +	8 oz* +					
Defend 4F + WAC 71	9 fl oz + 12 oz	0.2	1	1	0.73	S
Turficide 400 + Dac. Ultrex + CH 26GT	12 fl oz + 5 oz + 8 fl oz	2	0	0.2	0.73	S
Scotts FFII	103.8 oz	3	0	0	1.00	S
CH 26GT + Dac. Weather Stik +	4 fl oz + 5.5 fl oz +					
Turficide 400	4 fl oz	2	0	3	1.67	RS
Signature + CH 26GT + Dac. Ultrex +	4 oz* + 4 fl oz* + 5 oz* +					
Signature + CH 26GT + Dac. Ultrex	4 oz + 4 fl oz + 5 oz	2	3	0	1.67	RS
Scotts FFII + Scotts Fungicide X	51.9 oz + 115.4 oz	3	0	2	1.67	RS
ANDFG 204-97	6.66 lbs	3	0	3	2.00	RS
Defend 4F +	8 fl oz* +					
WAC 71	12 oz	2	2	3	2.33	RS
UBI 4143	160 oz	5	2	1	2.67	RS
Exp Granule A	4 lbs	2	5	1	2.67	RS
ANDFG 205-97	6.66 lbs	2	2	7	3.67	Q-S
UBI 9249	160 oz	7	2	3	4.00	Q-S
Defend 4F +	8 fl oz* +					
Defend 4F	12 fl oz	7	5	0.2	4.07	Q-S
ANDFG 207-97	6.66 lbs	7	5	1	4.33	Q-S
CH 26GT + Dac. Weather Stik +	4 fl oz + 5.5 fl oz +					
Turficide 400	8 fl oz	15	1	0.5	5.50	P-S
Defend 4F + Dac. Ultrex + 3336 WP	9 fl oz + 5 oz + 4 oz	12	3	3	6.00	P-S
Dac. Ultrex + CH 26GT	5 oz + 8 fl oz	7	10	3	6.67	P-S
Fore WP + Terraclor WP	6 oz + 8 oz	15	3	2	6.67	P-S
Penstar FLO + Scotts FF II	12 fl oz + 6.3 fl oz	10	10	0.5	6.83	O-S
Defend 4F + WAC 71	9 fl oz + 12 oz	10	7	5	7.33	O-S
Thalonil 4 L + CH 26GT	8 fl oz + 8 oz	10	7	5	7.33	O-S
Thalonil 90 DF + CH 26GT	4.6 oz + 8 fl oz	15	7	0.5	7.50	O-S
Turficide 400	12 fl oz	15	7	3	8.33	O-S
CH 26GT + Turficide 400	4 fl oz + 8 fl oz	5	20	2	9.00	O-S
Vigoro 97-042	6.7 lbs	20	5	3	9.33	O-S
Fore WP + Terraclor WP	8 oz + 8 oz	15	10	7	10.67	N-S
Defend 4F	12 fl oz	25	7	5	12.33	N-S
UBI 9279 + Turficide 400	7.3 oz + 6 fl oz	10	20	10	13.33	M-S
XP-7	8 lbs	20	15	5	13.33	M-S
Vigoro 97-042	5 lbs	25	15	0.2	13.40	M-S
ANDFG 206-97	6.66 lbs	25	15	3	14.33	M-S
FL# 971556 (CGA)	6 fl oz	35	10	3	16.00	L-S
CH 26GT + Dac. Weather Stik	4 fl oz + 5.5 fl oz	15	20	15	16.67	K-S
A 1556	24 oz	25	15	30	23.33	J-P
L-0008	4 lbs	35	15	20	23.33	J-P
FL# 971557 (CGA)	6 fl oz	40	12	20	24.00	J-P
XP-7	6 lbs	35	35	3	24.33	J-P
Turficide 75WG	8 oz	50	20	7	25.67	J-O
WAC 71 +	8 oz* +					
WAC 71	12 oz	30	30	25	28.33	J-N
3336 WP + Dac. Ultrex +	4 oz* + 3.8 oz* +					

WAC 71	12 oz	20	35	40	31.67	J-M
Fore WP	8 oz	65	25	10	33.33	I-K
A 1556	6 oz	55	30	30	38.33	G-J
Terragard 50W	4 oz	60	60	35	51.67	F-I
A 1556	1.5 oz	65	50	40	51.67	F-I
A 1556	3 oz	75	40	40	51.67	F-I
UBI 4044	160 oz	70	55	35	53.33	F-H
WAC 71	12 oz	80	25	65	56.67	E-G
Terragard 50W	2 oz	65	25	80	56.67	E-G
Scotts Fungicide X	115.4 oz	75	70	75	73.33	B-E
Control	—	95	50	90	78.33	A-D
AND Check Fertilizer	6.66 lbs	95	85	85	88.33	AB

*Treatments applied on Oct. 16 only.

^aAll treatments applied on Oct 30 unless otherwise indicated.

^bTreatments followed by the same letter are not significantly different at the 5% level (LSD).

^cSubstituted Turfcide 400 for Revere 4000 at Boyne.

Table 8. Snow Mold Disease Ratings taken on Mar 30, 1998 at Tree Tops Resort, Gaylord, MI. Rating Scale: % plot area infected with gray snow mold (*Typhula* sp.) and *Microdochium* patch (*Microdochium nivale*). Parenthesis indicate percent of total infection represented by *M. nivale*.

Treatment Name	Rate (2 gal/1000 sq ft) ^a	I	II	III	Mean	LSD ^b
3336 WP + Dac. Ultrex + Defend 4F + WAC 71	4 oz* + 3.8 oz* + 9 fl oz + 12 oz	0	0	0	0.0	V
Defend 4F + Defend 4F + WAC 71	8 fl oz* + 9 fl oz + 12 oz	0.2	0	0	0.0	V
WAC 71 + 3336 WP + Dac. Ultrex + Defend 4F	8 oz* + 4 oz + 5 oz + 9 fl oz	0.2	0	0	0.0	V
CH 26GT + Dac. Weather Stik + Turfcide 400	4 fl oz + 5.5 fl oz + 4 fl oz	0	1(1)	1	0.7	UV
Signature + CH 26GT + Dac. Ultrex + Signature + CH 26GT + Dac. Ultrex Defend 4F +	4 oz* + 4 fl oz* + 5 oz* + 4 oz + 4 fl oz + 5 oz 8 fl oz* +	0	2(1)	0.2	0.1	UV
3336 WP + Dac. Ultrex + Defend 4F	4 oz + 5 oz + 9 fl oz	0	2	1	1.0	UV
CH 26GT + Dac. Weather Stik + Turfcide 400	4 fl oz + 5.5 fl oz + 8 fl oz	0	0	3	1.0	UV
3336 WP + Dac. Ultrex + Defend 4F + Dac. Ultrex + 3336 WP	4 oz* + 3.8 oz* + 9 fl oz + 5 oz + 4 oz	0	0	5	1.7	T-V
Defend 4F + WAC 71	9 fl oz + 12 oz	7	0	0	2.3	S-V
Defend 4F + Dac. Ultrex + 3336 WP	9 fl oz + 5 oz + 4 oz	7	0	1	2.7	S-V
WAC 71 + Defend 4F + WAC 71	8 oz* + 9 fl oz + 12 oz	5	1	2	2.7	S-V
WAC 71 + Defend 4F	8 oz* + 12 fl oz	0.2	10	0	3.4	S-V
3336 WP + Dac. Ultrex + Defend 4F	4 oz* + 3.8 oz* + 12 fl oz	1	1	10	4.0	S-V
Defend 4F + WAC 71	8 fl oz* + 12 oz	10	0	3	4.3	S-V
Heritage + Revere 4000	0.4 oz + 12 fl oz (4 gal)	3	10	2(2)	5.0	R-V
Heritage + Revere 4000	0.7 oz + 12 fl oz	3	3	10	5.3	Q-V
Turfcide 400 + Dac. Ultrex + CH 26GT	12 fl oz + 5 oz + 8 fl oz	0	20	0	6.7	P-V
Exp Granule B	4 lbs	15(5)	3	3	7.0	O-V
Thalonil 4 L + CH 26GT	8 fl oz + 8 oz	10(10)	5(5)	7	7.3	O-V
Thalonil 90 DF + CH 26GT	4.6 oz + 8 fl oz	20(20)	1	3(3)	8.0	N-V
Heritage + Revere 4000	0.4 oz + 12 fl oz	7	7	20	11.3	L-V
Heritage + Revere 4000	0.7 oz + 12 fl oz (4 gal)	2	3	30	11.7	L-V
Scotts FFII	103.8 oz	15(8)	0	20	11.7	L-V
Dac. Ultrex + CH 26GT	5 oz + 8 fl oz	12(12)	15(15)	10(10)	12.3	K-V
ANDFG 207-97	6.66 lbs	25	0	15	13.3	J-V
Penstar FLO + Fluid Fungicide	12 fl oz + 6.3 fl oz	20	5	20	15.0	J-V
CH 26GT + Turfcide 400	4 fl oz + 8 fl oz	20(20)	15(7)	15(10)	16.7	J-V
Defend 4F + Defend 4F	8 fl oz* + 12 fl oz	2	40	15(15)	19.0	J-V
Defend 4F	12 fl oz	30	20	10(2)	20.0	J-V
Turfcide 400	12 fl oz	40	10	10	20.0	J-V
ANDFG 205-97	6.66 lbs	45(5)	7	15	22.3	I-V
Exp Granule A	4 lbs	40(30)	20	20(15)	26.7	H-V
Fore WP + Terraclor WP	8 oz + 8 oz	0.2	20	60	26.7	H-V

WAC 71 + WAC 71	8 oz* + 12 oz	30(30)	35(20)	20(20)	28.3	H-V
3336 WP + Dac. Ultrex + WAC 71	4 oz* + 3.8 oz* + 12 oz	3(3)	60(40)	25(20)	29.3	H-U
WAC 71	12 oz	35(5)	20(20)	35(30)	30.0	H-T
ANDFG 206-97	6.66 lbs	50(10)	30	10	30.0	H-T
ANDFG 204-97	6.66 lbs	30	30	40	33.3	G-R
CH 26GT + Dac. Weather Stik	4 fl oz + 5.5 fl oz	65(65)	2	35(35)	34.0	G-Q
Fore WP + Terraclor WP	6 oz + 8 oz	5	30	70	35.0	F-P
Turfcide 75WG	8 oz	50	35	25	36.7	F-N
Vigoro 97-042	6.7 lbs	50(5)	35	25(25)	36.7	F-N
XP-7	8 lbs	35	65	15	38.3	F-M
Fore WP	8 oz	40	5	70	38.3	F-M
Scotts FFII + Scotts Fungicide X	51.9 oz + 115.4 oz	40(15)	40	40(10)	40.0	F-L
Vigoro 97-042	5 lbs	75(5)	7	40	40.7	F-K
FL# 971557 (CGA)	6 fl oz	95(70)	30(5)	35(35)	53.3	E-H
Terragard 50W	4 oz	90(75)	12(10)	80(70)	60.7	C-G
XP-7	6 lbs	50	40	95(70)	61.7	C-G
UBI 4143	160 oz	90(5)	35(30)	65(60)	63.3	B-F
UBI 9249	160 oz	90(30)	80(10)	20(17)	63.3	B-F
UBI 9279 + Turfcide 400	7.3 oz + 6 fl oz	85(35)	75(25)	65(60)	75.0	A-E
L-0008	4 lbs	98(30)	65(20)	65(35)	76.0	A-E
Terragard 50W	2 oz	95(70)	95(25)	60(35)	83.3	A-D
A 1556	24 oz	95(40)	65(45)	90(45)	83.3	A-D
A 1556	3 oz	100(70)	85(60)	80(40)	88.3	A-D
UBI 4044	160 oz	95(30)	98(50)	85(60)	92.7	A
A 1556	6 oz	98(60)	90(45)	98(80)	95.3	A
Scotts Fungicide X	115.4 oz	98(70)	95(50)	95(40)	96.0	A
Andersen's Check Fertilizer	6.66 lbs	100(70)	90(10)	100(70)	96.7	A
Control		100(75)	98(40)	98(45)	98.7	A
FL# 971556 (CGA)	6 fl oz	100(60)	98(45)	100	99.3	A
A 1556	1.5 oz	100(70)	100(50)	100(60)	100	A

*Treatments applied on Oct. 16 only.

^aAll treatments applied on Oct 30 unless otherwise indicated.

^bTreatments followed by the same letter are not significantly different at the 5% level (LSD).

Take All Patch Field Trial, 1998

Study A

This test was conducted at the Whittaker Woods Golf Club in New Buffalo, MI, on an irrigated creeping bentgrass fairway. Plots were mowed at ½" and fertilized monthly at 0.33 lb N/1000 sq ft. Take all patch was active in the plot area in mid-May, so curative treatments were initiated on May 28. Treatments were applied to diseased 6' x 9' plots in 4 replications using a CO₂ backpack sprayer as previously described in the report. Spray volume was 100 GPA and all treatments were allowed to dry on the foliage. All treatments were re-applied on June 26, except as noted in the data tables. The fall treatments (as indicated in Table 9) were applied on Aug 13 and Sep 6.

Study B

Because take all patch often becomes active in the cool, wet weather of the fall, the same treatments described in study A (except 3336 WP) were applied preventively to new plots on Aug 12, 1998 using the same procedures described above. Though expressing no disease symptoms, the plots used for these preventive treatments were each known to be infected from previous plot mapping. The treatments were re-applied on Sep 6, 1998.

Curative diseases ratings in study A were taken on Jun 26 and Jul 14. Because disease pressure in the plot area had abated by Jul 14, on the Jun 26 recovery data is reported (Table 9). This data describes disease activity in the treated plots after only one curative application (May 28).

As the disease and recovery data in Table 9 indicate, only the 3336 WP promoted recovery that was significantly different from the untreated controls and the other treatments. Our past research has indicated that the benzimidazole (thiophanate) fungicides are fast-acting curative treatments for patch diseases, so the rapid recovery observed in the 3336 WP treated plots was not surprising. Had disease pressure been sustained in the plot area, it is likely that Banner Maxx, Heritage, etc would also have promoted turf recovery that was statistically significant from the untreated controls. Unfortunately, this data gives us no insight into the preventive efficacy of these compounds against take all patch. No phytotoxicity was observed in this study this year.

Table 9. Whittaker Woods Take All Patch, 1998. Rating Scale: Percent plot area expressing symptoms

Rating Date:		June 26, 1998	
Treatment	Rate/1000 ft ²	Mean % Take All	Mean % Recovery
3336 WP	8 oz	0.5 b	87 a
Banner MAXX	4 fl oz	3.5 ab	57 a-c
Heritage	0.4 oz	3.8 ab	80 ab
CGA 279202	0.15 oz	4 ab	0 a-c
EXP 80318C	1 fl oz	6.8 a	50 a-d
EXP 80318C	0.5 fl oz	7 a	40 a-d
Control	—	7.3 a	70 b-d
CGA 279202	0.2 oz	7.5 a	40 a-d
CGA 279202 +	0.2 oz +		
Banner MAXX	2 fl oz	8 a	50 cd
CGA 279202	0.3 oz	8.8 a	0 d