

Table 19. Necrotic Ring Spot Quality Ratings 2004
Location: Hancock Turf Research Center, E. Lansing, MI.
Rating Scale: 1-10, where 1=poor, 6=acceptable, and 10=best.

Treatment and Rate/1000 sq ft	Interval (Days)	Mean ^{a,b}	Mean ^{a,b}	Mean ^{a,b}
		8/20	9/10	10/6
Ringer Turf Restore (10-2-6) 1 lb N/mo	28	7.0 a	8.3 a	8.0 a
Insignia 0.9 oz	65 + 28	6.3 b	6.8 b	7.0 b
Heritage 0.4 oz	65 + 28	6.3 b	6.5 b	7.0 b
Banner Maxx 4 fl oz	65 + 28	6.0 b	6.5 b	7.3 b
Insignia 0.5 oz	65 + 28	6.0 b	6.3 bc	6.8 b
Emerald 0.18 oz	65 + 28	6.0 b	5.8 cd	5.8 c
Fertilized control 1/2 lb N/mo	28	5.8 bc	5.5 de	5.8 c
Unfertilized control	---	5.3 c	5.0 e	5.0 c

^a Mean of 4 replicate plots.

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

Dollar Spot Timing Study

Two dollar spot timing studies were set up with fungicide treatments being made early in the season. They were conducted on an annual bluegrass/perennial ryegrass fairway (0.5" height of cut) and a creeping bentgrass green (0.150" height of cut). Both studies were set in randomized complete block designs and consisted of 4 replicate 2' x 6' plots with 1' alleys. Treatments were applied using a CO₂ backpack sprayer at 36 PSI and 2 gal/1000 sq ft using a single 8002E Tee Jet flat fan nozzle. Plots were fertilized as needed. Treatments were applied on the dates listed in Table 20. Plots were rated for percent area blighted by dollar spot (see Table 20.) Data were analyzed using ANOVA and means separated with LSD (p=0.05).

In the fairway study, disease pressure was good. The Emerald treatments applied 5 and 3 times throughout the study had little to no dollar spot though the August 20 rating date. All 3 of the Emerald treatments tested in this study and the Banner Maxx at 1.75 oz applied on May 15 and June 16 provided significant dollar spot control compared to the control though August 20. No phytotoxicity was observed in the study. Unfortunately, little to no disease developed in the study on the creeping bentgrass green so no data are available for that study.

Table 20. Dollar Spot Timing Study 2004

Location: Hancock Turfgrass Research Center, E. Lansing, MI.

Rating Scale: Percent plot area blighted by dollar spot.

Treatment and Rate/1000 sq ft	Interval (Days)	8/3	8/12	8/20
		Mean ^{a,b}	Mean ^{a,b}	Mean ^{a,b}
Emerald 0.18 oz	6/15, 7/16, 7/29, 8/16, 9/15	0.0 f	0.0 e	0.1 e
Emerald 0.18 oz	7/1, 8/2, 9/1	1.1 ef	1.1 e	0.2 e
Emerald 0.18 oz	May 15, June 16	0.3 ef	4.9 de	5.4 de
Banner Maxx 1.75 fl oz	May 15, June 16	1.5 c-f	7.3 c-e	9.3 c-e
Banner Maxx 3 fl oz	May 15, June 16	0.3 ef	8.0 c-e	10.5 b-e
Banner Maxx 3 fl oz	15-May	1.3 de	14.3 a- d	11.5 b-e
Triticonazole 1 fl oz	15-May	2.1 c-f	11.3 b-e	13.8 a-d
Chipco 26GT 4 fl oz	15-May	1.3 d-f	14.3 a-d	14.5 a-d
Bayleton 1 oz	15-May	2.5 b-f	17.5 a-d	16.8 a-d
Banner Maxx 1.75 fl oz	15-May	3.5 a-f	18.8 a-c	18.8 a-c
Control		6.0 ab	26.3 a	21.3 a-b

^aMean of 4 replications.^bTreatment means followed by the same letter do not significantly differ (LSD, p=0.05).**Preventive Dollar Spot (*Rutstroemia floccosum*) on Creeping Bentgrass**

This study was set up on a creeping bentgrass/annual bluegrass putting green in four replications of a randomized complete block design. The plots measured 2' x 6' with 6" alleys. Spray treatments were applied using a CO₂ backpack sprayer set at 38 psi with a single 8002E Tee Jet flat fan nozzle. Spray volume was 1 gallon/1000 sq ft. Plots were irrigated as needed and fertility was maintained at approximately 3/8 lb N/1000 sq ft/month with Country Club (18-3-12) fertilizer. Applications dates were: 7/12 (1/4 lb), 7/29 (1/4 lb), 8/13 (1/8 lb), 9/1 (1/8 lb), 9/10 (1/8 lb), and 9/21 (1/8 lb). Initial treatment applications for the program treatments were applied in mid June and re-applied on the dates indicated in Tables 16 and 17. The 14-day treatments were applied on 8/3, 8/18, 9/1, and 9/15. The 21-day treatments were applied on 8/3, 8/27, and 9/15. The 28-day treatments were applied on 8/3 and 9/1. Data represent mean percent plot area infected (Table 21). Quality ratings were also taken using a 0 (worst) to 10 (best) scale where 7 = acceptable turf quality (Table 22.)

As the data in Table 21 indicate, dollar spot pressure was modest on the bentgrass study this year. All treatments provided statistically significant control of dollar spot, with all the standard treatments (Rubigan, Echo, Banner Maxx, Daconil Ultrex, Emerald, Chipco 26GT) providing comparable disease control. The Velocity treatments were the poorest performers, possibly due to the moderate phytotoxicity observed in these treatments (Table 22.)

Table 21. Preventive Dollar Spot Study on Creeping Bentgrass, 2004.
Location: Hancock Turfgrass Research Center, E. Lansing, MI.
Rating Scale: Mean % plot area blighted by dollar spot.

		8-Sep	15-Sep	22-Sep	29-Sep
Treatment and Rate/1000 sq ft	Interval (Days)	Mean ^{a,b}	Mean ^{a,b}	Mean ^{a,b}	Mean ^{a,b}
Rubigan AS 1.5 oz	14	0.0 d	0.0 d	0.0 c	0.0 c
V-10116 SC 0.44 fl oz	14	0.0 d	0.0 d	0.0 c	0.0 c
V-10116 SC 0.66 fl oz	14	0.0 d	0.0 d	0.0 c	0.0 c
V-10116 WDG 0.275 oz	14	0.0 d	0.0 d	0.0 c	0.0 c
Banner Maxx 0.5 fl oz	14	0.0 d	0.0 d	0.0 c	0.0 c
Insignia 0.9 oz	14	0.0 d	0.0 d	0.0 c	0.0 c
Daconil Ultrex 3.2 oz	14	0.0 d	0.0 d	0.0 c	0.1 c
Emerald 0.18 oz	28	0.1 d	0.1 d	0.0 c	0.0 c
Chipco 26GT 4 fl oz	14	0.0 d	0.0 d	0.0 c	0.0 c
Emerald 0.18 oz ^c	na	0.1 d	0.1 d	0.0 c	0.2 c
Propiconazole Pro 1 oz	15-Jun				
Curalan 1oz	15-Jul				
Emerald 0.18 oz	15-Aug				
Propiconazole 1.3ME 2 fl oz	14	0.0 d	0.0 d	0.0 c	0.0 c
Banner Maxx 1 fl oz	24-Jun	0.1 d	0.1 d	0.1 c	0.3 c
Chipco 26GT 4 fl oz	15-Jul				
Daconil Ultrex 3.2 oz	29-Jul				
Daconil Ultrex 3.2 oz	12-Aug				
Spectro 4 oz	14	0.1 cd	0.2 cd	0.2 c	0.3 c
Velocity 30 g ai/A	14	0.5 cd	0.4 cd	0.4 c	0.5 c
RCS67 4 oz	14	0.4 cd	0.7 b-d	1.1 c	1.6 bc
Echo 720 3.6 fl oz	14	1.0 b-d	1.3 b-d	1.4 c	1.9 bc
Echo 825 3.25 oz	14	1.1 b-d	1.1 b-d	1.4 c	2.9 bc
Velocity 30 g ai/A	21	1.5 b-d	1.1 b-d	1.5 bc	1.3 bc
Velocity 45 g ai/A	28	3.3 b	1.9 b-d	1.8 bc	3.4 bc
Velocity 10 g ai/A	14	2.5 bc	2.4 bc	2.0 bc	3.5 bc
Velocity 60 g ai/A	8/3	2.0 b-d	2.8 b	3.5 b	4.3 b
Control	---	10.5 a	10.5 a	11.8 a	13.8 a

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

^b Mean of 4 replicate plots.

^c Treatment not applied.

Table 22. Preventive Dollar Spot Study on Creeping Bentgrass Quality Rating, 2004.

Location: Hancock Turfgrass Research Center, E. Lansing, MI

Rating Scale^a: Turfgrass Quality 0 – 10, where 10 = best, 0 = worst, and 7= acceptable.

Treatment and Rate/1000 sq ft	Interval (Days)	Mean^{b,c} 9/9	Mean^{b,c} 9/15	Mean^{b,c} 9/22
Rubigan AS 1.5 oz	14	7.8	7.5	7.3
V-10116 1.67SC 0.44 fl oz	14	7.8	7.8	8.0
V-10116 1.67SC 0.66 fl oz	14	7.3	7.5	7.5
V-10116 50WDG 0.275 oz	14	7.3	8.0	7.5
Velocity 10 g ai/A	14	6.5	6.5	6.5
Velocity 30 g ai/A	14	6.5	6.8	6.5
Velocity 30 g ai/A	21	6.8	7.0	6.5
Velocity 45 g ai/A	28	6.0	6.0	6.5
Velocity 60 g ai/A	1 app	7.0	7.0	7.0
Banner Maxx 0.5 fl oz	14	7.8	7.8	8.0
RCS67 4 oz	14	7.3	7.0	7.3
Spectro 4 oz	14	7.0	7.0	7.3
Insignia 0.9 oz	14	7.3	7.5	7.0
Daconil Ultrex 3.2 oz	14	7.0	7.0	8.0
Emerald 0.18 oz	28	7.3	7.0	7.3
Chipco 26GT 4 fl oz	14	7.3	7.3	7.3
Emerald 0.18 oz ^d	na	7.0	7.5	7.3
Propiconazole Pro 1 oz	15-Jun			
Curalan 1oz	15-Jul			
Emerald 0.18 oz	15-Aug			
Banner Maxx 1 fl oz	24-Jun	7.5	7.5	7.3
Chipco 26GT 4 fl oz	15-Jul			
Daconil Ultrex 3.2 oz	29-Jul			
Daconil Ultrex 3.2 oz	12-Aug			
Echo 720 3.6 fl oz	14	7.0	7.0	7.5
Echo 825 3.25 oz	14	7.3	7.3	7.3
Propiconazole 1.3ME 2 fl oz	14	7.3	7.8	8.0
Control	---	7.0	7.0	7.0

^a Ratings based on color, density, and uniformity.

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

^c Mean of 4 replicate plots.

^d Treatment not applied.

Curative Dollar Spot (*Rutstroemia floccosum*) on *Poa annua*

This study was set up on an annual bluegrass fairway at the Hancock Turfgrass Research Center on the MSU campus in E. Lansing, MI in four replications of a randomized block design. The plots measured 2' x 6' with 6" alleys. Spray treatments were applied using a CO₂ backpack sprayer set at 38 psi with a single 8002E Tee Jet flat fan nozzle. Spray volume was 1 gallon/1000 sq ft. Plots were irrigated as needed and Country Club 18-3-12 fertilizer was applied at 1/8# N/1000 sq ft on 8/27, 9/7, and 9/21. Treatments on a 14 day spray schedule were applied curatively on 8/26, 9/10 and 9/26 while the 28 day treatment was applied on 8/26 and 9/26 (except as noted in the data table). Disease ratings (as % recovery from initial disease levels) were taken on 9/10, 9/23, and 9/29.

As the turf recovery data (Table 23) indicate, on day 14 after the initial treatment application, treatments such as Emerald (0.18 oz), V-10116 SC, and Rubigan AS (1.5 fl oz) were already promoting significant turfgrass recovery, compared to the untreated control. By the 9/23 rating data, following 2 applications of most treatments, many of the treatments were promoting statistically significant turfgrass recovery compared to the untreated control, in which disease pressure continued to mount.

No quality ratings were taken because no non-disease quality differences were existent, with the exception of the Velocity (10 gm ai/A) treatment in which moderate phytotoxicity was noted within a few days after initial treatment application. The higher rate Velocity treatments were so severely damaged that no disease data was available, so these treatments were not included in Table 23.

Table 23. Curative Dollar Spot Study on *Poa annua*, 2004.
Location: Hancock Turfgrass Research Center, E. Lansing, MI.
Rating Scale: Percent recovery from initial dollar spot rating on August 26.

		10-Sep	23-Sep	29-Sep
Treatment and Rate/1000 sq ft	Interval (Days)	Mean^{a,b}	Mean^{a,b}	Mean^{a,b}
CI 0214 4 fl oz	8/26	-121.9 b-e	-101.8 cd	-184.6 e
Control	---	-102.2 a	-100.4 cd	-121.0 c-e
Spectro 4 oz	14	5.4 a-e	58.9 ab	-109.5 c-e
Echo 825 3.25 oz	14	-114.0 a-d	57.0 ab	-70.2 b-e
RCS67 4 oz	14	-31.3 b-e	-16.7 a-d	-60.4 b-d
Banner Maxx 1 fl oz	8/26	32.3 a	8.3 a-d	-45.8 b-d
Echo 720 3.6 fl oz	14	-17.3 a-d	-1.4 a-d	-35.6 b-d
Insignia 0.9 oz	14	-18.6 a-d	82.1 a	-5.2 a-c
V-10116 SC 0.44 fl oz	14	84.2 g	92.2 a	23.3 ab
Daconil Ultrex 3.2 oz	14	59.4 a-d	87.5 a	29.2 ab
Velocity 10 g ai/A	14	-0.8 e-g	58.3 ab	30.8 ab
V-10116 SC 0.66 fl oz	14	94.4 fg	98.6 a	88.9 a
Banner Maxx 0.5 fl oz	14	59.4 c-f	100.0 a	94.2 a
Propiconazole 1.3ME 2 fl oz	14	51.9 a-d	100.0 a	97.9 a
Rubigan AS 1.5 oz	14	34.1 g	93.8 a	98.9 a
Emerald 0.18 oz	28	97.5 a-d	100.0 a	99.4 a
V-10116 WDG 0.275 oz	14	63.9 fg	100.0 a	100.0 a
Chipco 26GT 4 fl oz	14	39.5 a-d	-50.0 b-d	100.0 a

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

^b Mean of 4 replicate plots.