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**Evaluation of fungicides for control of dollar spot and brown patch in creeping bentgrass, ISU Horticulture Farm 2008**

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**Introduction**

Fungicide evaluations for control of dollar spot and brown spot in greens height creeping bentgrass were conducted at the Iowa State University Horticulture Station in Gilbert, Iowa.

**Materials and Methods**

Plots of creeping bentgrass (cv. Penncross) were maintained at 0.16-inch cutting height. On 16 May, plots were inoculated with rye grain infested with *Sclerotinia homoeocarpa*. Fungicides were applied using a backpack sprayer at 30 psi and a dilution rate of 5 gal per 1000 sq

ft. The experimental design was a randomized complete block with four replications. All sub-plots measured 4 ft x 5 ft. Spray applications were initiated on 20 May followed by re-application at recommended intervals until 20 Aug. Percent disease severity of dollar spot was assessed approximately 14-day intervals starting on June 23. Brown spot symptoms were assessed using a qualitative scale of 0-5 for brown patch, where 0 = no disease; 1 = 1-5%; 2 = 6-10%; 3 = 11-25%; 4 = 26-50%; 5 = >50% plot symptomatic. A turf quality assessment of 1 to 10 (1=poorest, 10=best, 7=adequate) was also taken throughout the season. Data were analyzed using the GLM procedure in SAS and mean separations were determined using Fisher's protected LSD at P≤0.05.

**Table 1. Dollar spot on creeping bentgrass**

Products and rates per 1000 sq ft	Interval (days)	% plot with symptoms			
		23-Jun	7-Jul	7-Aug	14-Aug
Unsprayed check.....	---	0.8 a	1.5 a	8.0 a	9.0 a
BioSafe ZeroTol 1% first spray; 0.33% later sprays.....	7	0.0 b	0.0 c	3.5 b	3.0 b
BioSafe STBX-013 0.2% first spray; 0.07% later sprays.....	7	0.0 b	0.0 c	1.0 c	1.3 bc
Cleary 26/36 3 oz.....	14	0.0 b	0.8 b	0.3 c	0.0 c
Cleary Spectro 3.5 oz.....	14	0.0 b	0.0 c	0.3 c	0.3 c
Valent Tourney 50WD 0.18 oz.....	14	0.0 b	0.0 c	0.0 c	0.0 c
Valent Tourney 50WD 0.25 oz.....	14	0.0 b	0.0 c	0.0 c	0.0 c
Valent Tourney 50WD 0.37.....	14	0.0 b	0.0 c	0.0 c	0.0 c
BASF Insignia 0.5 oz.....	14	0.0 b	0.0 c	0.0 c	0.0 c
BASF Trinity 1.0 oz.....	14	0.0 b	0.0 c	0.0 c	0.0 c
BASF Emerald 0.13 oz.....	14	0.0 b	0.0 c	0.0 c	0.0 c
Bayer Chipco Triton "Legacy B" 1.0 fl. oz + Signature Ultra 4.0 oz.....	14	0.0 b	0.0 c	0.0 c	0.0 c
Bayer Chipco Triton "Legacy B" 1.5 fl. oz.....	14	0.0 b	0.0 c	0.0 c	0.0 c
Bayer Chipco Triton "Legacy B" 2.0 fl. oz.....	14	0.0 b	0.0 c	0.0 c	0.0 c
1 <sup>st</sup> spray Signature Ultra 4.0 fl. oz + Tartan 1.5 oz.....	14	0.0 b	0.0 c	0.0 c	0.0 c
2 <sup>nd</sup> spray Signature Ultra 4.0 oz + Daconil Ultrex 3.2 oz.....					
3 <sup>rd</sup> spray Signature Ultra 4.0 oz + Chipco Triton "Legacy A" 0.225 oz.....					
4 <sup>th</sup> spray Signature Ultra 4.0 oz + Chipco26GT 4.0 oz.....					
5 <sup>th</sup> spray Signature Ultra 4.0 fl. oz + Tartan 1.5 oz.....					
6 <sup>th</sup> spray Signature Ultra 4.0 oz + Daconil Ultrex 3.2 oz.....					
7 <sup>th</sup> spray Signature Ultra 4.0 oz + Chipco Triton "Legacy A" 0.225 oz.....					
8 <sup>th</sup> spray Signature Ultra 4.0 oz + Chipco26GT 4.0 oz + Daconil Ultrex 3.2 oz.....					
1 <sup>st</sup> spray Signature Ultra 4.0 fl. oz + Tartan 1.5 oz.....	14	0.0 b	0.0 c	0.0 c	0.0 c
2 <sup>nd</sup> spray Signature Ultra 4.0 oz + Daconil Ultrex 3.2 oz.....					
3 <sup>rd</sup> spray Signature Ultra 4.0 oz + Chipco Triton "Legacy B" 0.225 oz.....					
4 <sup>th</sup> spray Signature Ultra 4.0 oz + Chipco26GT 4.0 oz.....					
5 <sup>th</sup> spray Signature Ultra 4.0 fl. oz + Tartan 1.5 oz.....					
6 <sup>th</sup> spray Signature Ultra 4.0 oz + Daconil Ultrex 3.2 oz.....					
7 <sup>th</sup> spray Signature Ultra 4.0 oz + Chipco Triton "Legacy B" 0.225 oz.....					
8 <sup>th</sup> spray Signature Ultra 4.0 oz + Chipco26GT 4.0 oz + Daconil Ultrex 3.2 oz.....					
1 <sup>st</sup> spray Chipco Triton "Legacy B" 4.0 fl. oz.....	14	0.0 b	0.0 c	0.0 c	0.3 c
2 <sup>nd</sup> spray Signature Ultra 4.0 oz.....					
3 <sup>rd</sup> spray Signature Ultra 4.0 oz.....					
4 <sup>th</sup> spray Daconil Ultrex 3.2 oz.....					
5 <sup>th</sup> spray Chipco Triton "Legacy B" 4.0 fl. oz.....					
6 <sup>th</sup> spray Signature Ultra 4.0 oz.....					
7 <sup>th</sup> spray Signature Ultra 4.0 oz.....					
8 <sup>th</sup> spray Daconil Ultrex 3.2 oz.....					
Syngenta Concert 4.0 oz.....		0.0 b	0.0 c	0.0 c	0.0 c
LSD (0.05) <sup>x</sup> .....	---	0.5	0.5	2.1	2.2

<sup>x</sup> Means followed by the same letter are not significantly different within column according to Fisher's protected LSD at P≤0.05.

## Results and Discussion

Although there was exceptionally wet weather throughout June and July, the location was a windy upland site, which may have reduced dollar spot disease severity to moderate levels. On the first rating, all of the tested products suppressed dollar spot significantly ( $P \leq 0.05$ ) in

comparison to the unsprayed check (Table 1). High severity rates of brown spot occurred in August as a result of natural inoculum. Effectiveness of treatments ranged from complete control to small differences from unsprayed control (Table 2). No phytotoxicity symptoms were observed during the trial.

**Table 2. Brown patch on creeping bentgrass**  
Products and rates per 1000 sq ft

Products and rates per 1000 sq ft	Interval (days)	Brown patch (0-5 rating) <sup>z</sup>			
		23-Jun	7-Jul	7-Aug	14-Aug
Unsprayed check.....	---	0.0 a	0.0 a	4.50 a	4.00 a
BioSafe ZeroTol 1% first spray; 0.33% later sprays.....	7	0.0 a	0.0 a	3.50 a	2.00 bc
BioSafe STBX-013 0.2% first spray; 0.07% later sprays.....	7	0.0 a	0.0 a	3.00 ab	2.25 ab
Cleary 26/36 3 oz.....	14	0.0 a	0.0 a	1.00 cd	1.25 b-d
Cleary Spectro 3.5 oz.....	14	0.0 a	0.0 a	0.00 d	0.00 d
Valent Tourney 50WD 0.18 oz.....	14	0.0 a	0.0 a	1.25 b-d	0.50 b-d
Valent Tourney 50WD 0.37.....	14	0.0 a	0.0 a	1.25 b-d	0.25 c-d
Valent Tourney 50WD 0.25 oz.....	14	0.0 a	0.0 a	1.00 cd	0.50 b-d
BASF Insignia 0.5 oz.....	14	0.0 a	0.0 a	0.75 d	0.50 b-d
BASF Trinity 1.0 oz.....	14	0.0 a	0.0 a	1.00 cd	0.50 b-d
BASF Emerald 0.13 oz.....	14	0.0 a	0.0 a	2.75 a-c	1.00 b-d
Bayer Chipco Triton "Legacy B" 1.0 fl. oz + Signature Ultra 4.0 oz .....	14	0.0 a	0.0 a	1.00 cd	0.50 b-d
Bayer Chipco Triton "Legacy B" 1.5 fl. oz.....	14	0.0 a	0.0 a	0.00 c	0.00 d
Bayer Chipco Triton "Legacy B" 2.0 fl. oz.....	14	0.0 a	0.0 a	0.50 d	0.00 d
1 <sup>st</sup> spray Signature Ultra 4.0 fl. oz + Tartan 1.5 oz .....	14	0.0 a	0.0 a	0.50 d	0.00 d
2 <sup>nd</sup> spray Signature Ultra 4.0 oz + Daconil Ultrex 3.2 oz					
3 <sup>rd</sup> spray Signature Ultra 4.0 oz + Chipco Triton "Legacy A" 0.225 oz					
4 <sup>th</sup> spray Signature Ultra 4.0 oz + Chipco26GT 4.0 oz					
5 <sup>th</sup> spray Signature Ultra 4.0 fl. oz + Tartan 1.5 oz					
6 <sup>th</sup> spray Signature Ultra 4.0 oz + Daconil Ultrex 3.2 oz					
7 <sup>th</sup> spray Signature Ultra 4.0 oz + Chipco Triton "Legacy A" 0.225 oz					
8 <sup>th</sup> spray Signature Ultra 4.0 oz + Chipco26GT 4.0 oz + Daconil Ultrex 3.2 oz					
1 <sup>st</sup> spray Signature Ultra 4.0 fl. oz + Tartan 1.5 oz .....	14	0.0 a	0.0 a	0.00 d	0.00 d
2 <sup>nd</sup> spray Signature Ultra 4.0 oz + Daconil Ultrex 3.2 oz					
3 <sup>rd</sup> spray Signature Ultra 4.0 oz + Chipco Triton "Legacy B" 0.225 oz					
4 <sup>th</sup> spray Signature Ultra 4.0 oz + Chipco26GT 4.0 oz.					
5 <sup>th</sup> spray Signature Ultra 4.0 fl. oz + Tartan 1.5 oz					
6 <sup>th</sup> spray Signature Ultra 4.0 oz + Daconil Ultrex 3.2 oz					
7 <sup>th</sup> spray Signature Ultra 4.0 oz + Chipco Triton "Legacy B" 0.225 oz					
8 <sup>th</sup> spray Signature Ultra 4.0 oz + Chipco26GT 4.0 oz + Daconil Ultrex 3.2 oz					
1 <sup>st</sup> spray Chipco Triton "Legacy B" 4.0 fl. oz .....	14	0.0 a	0.0 a	0.00 d	0.00 d
2 <sup>nd</sup> spray Signature Ultra 4.0 oz					
3 <sup>rd</sup> spray Signature Ultra 4.0 oz					
4 <sup>th</sup> spray Daconil Ultrex 3.2 oz					
5 <sup>th</sup> spray Chipco Triton "Legacy B" 4.0 fl. oz					
6 <sup>th</sup> spray Signature Ultra 4.0 oz					
7 <sup>th</sup> spray Signature Ultra 4.0 oz					
8 <sup>th</sup> spray Daconil Ultrex 3.2 oz					
Syngenta Concert 4.0 oz.....	14	0.0 a	0.0 a	1.00 cd	2.25 ab
LSD (0.05) <sup>x</sup> .....	---	0	0	1.96	1.76

<sup>z</sup>Disease rating scale 0 = no disease; 1 = 1-5%; 2 = 6-10%; 3 = 11-25%; 4 = 26-50%; 5 = >50% plot symptomatic.

<sup>x</sup> Means followed by the same letter are not significantly different within column according to Fisher's protected LSD at  $P \leq 0.05$ .

All fungicides significantly improved turf quality to an acceptable rating in mid-August (Table 3). However, quality was lower in earlier August, near the end of the wet weather period. There was a close relationship

between turf quality assessments taken during mid-August indicated a close relationship and control of dollar spot and brown spot.

**Table 3. Turf quality of creeping bentgrass**

Products and rates per 1000 sq ft	Interval (days)	Turf quality assessment of 1 to 10 <sup>z</sup>			
		23-Jun	7-Jul	7-Aug	14-Aug
Unsprayed check.....	---	7 a	6.5 a	3.25 a	4.25 a
BioSafe ZeroTol 1% first spray; 0.33% later sprays.....	7	7 a	7.00 a-c	4.75 ab	6.25 bc
BioSafe STBX-013 0.2% first spray; 0.07% later sprays.....	7	7 a	6.75 ab	5.00 bc	6.00 b
Cleary 26/36 3 oz.....	14	7 a	6.75 ab	6.25 b-d	6.75 b-e
Cleary Spectro 3.5 oz.....	14	7 a	6.75 ab	6.75 d-f	8.00 f-i
BASF Insignia 0.5 oz.....	14	7 a	6.75 ab	6.50 c-e	7.75 f-i
BASF Trinity 1.0 oz.....	14	7 a	6.75 ab	5.75 b-d	7.25 c-g
BASF Emerald 0.13 oz.....	14	7 a	7.00 a-c	5.00 bc	6.50 b-d
Valent Tourney 50WD 0.18 oz.....	14	7 a	6.50 a	6.00 b-d	6.75 b-e
Valent Tourney 50WD 0.25 oz.....	14	7 a	6.50 a	5.50 b-d	7.00 b-e
Valent Tourney 50WD 0.37.....	14	7 a	7.00 a-c	5.50 b-d	7.25 c-g
Bayer Chipco Triton "Legacy B" 1.0 fl. oz + Signature Ultra 4.0 oz .....	14	7 a	7.50 bc	8.25 fg	8.25 g-i
Bayer Chipco Triton "Legacy B" 1.5 fl. oz.....	14	7 a	7.5 bc	8.75 g	8.50 hi
Bayer Chipco Triton "Legacy B" 2.0 fl. oz.....	14	7 a	7.75 c	8.25 fg	8.75 i
1 <sup>st</sup> spray Signature Ultra 4.0 fl. oz + Tartan 1.5 oz .....	14	7 a	7.75 c	8.25 fg	8.25 g-i
2 <sup>nd</sup> spray Signature Ultra 4.0 oz + Daconil Ultrex 3.2 oz					
3 <sup>rd</sup> spray Signature Ultra 4.0 oz + Chipco Triton "Legacy A" 0.225 oz					
4 <sup>th</sup> spray Signature Ultra 4.0 oz + Chipco26GT 4.0 oz					
5 <sup>th</sup> spray Signature Ultra 4.0 fl. oz + Tartan 1.5 oz					
6 <sup>th</sup> spray Signature Ultra 4.0 oz + Daconil Ultrex 3.2 oz					
7 <sup>th</sup> spray Signature Ultra 4.0 oz + Chipco Triton "Legacy A" 0.225 oz					
8 <sup>th</sup> spray Signature Ultra 4.0 oz + Chipco26GT 4.0 oz + Daconil Ultrex 3.2 oz					
1 <sup>st</sup> spray Signature Ultra 4.0 fl. oz + Tartan 1.5 oz .....	14	7 a	7.75 c	8.00 e-g	8.50 hi
2 <sup>nd</sup> spray Signature Ultra 4.0 oz + Daconil Ultrex 3.2 oz					
3 <sup>rd</sup> spray Signature Ultra 4.0 oz + Chipco Triton "Legacy B" 0.225 oz					
4 <sup>th</sup> spray Signature Ultra 4.0 oz + Chipco26GT 4.0 oz					
5 <sup>th</sup> spray Signature Ultra 4.0 fl. oz + Tartan 1.5 oz					
6 <sup>th</sup> spray Signature Ultra 4.0 oz + Daconil Ultrex 3.2 oz					
7 <sup>th</sup> spray Signature Ultra 4.0 oz + Chipco Triton "Legacy B" 0.225 oz					
8 <sup>th</sup> spray Signature Ultra 4.0 oz + Chipco26GT 4.0 oz + Daconil Ultrex 3.2 oz...					
1 <sup>st</sup> spray Chipco Triton "Legacy B" 4.0 fl. oz .....	14	7 a	7.50 bc	8.75 g	8.25 g-i
2 <sup>nd</sup> spray Signature Ultra 4.0 oz					
3 <sup>rd</sup> spray Signature Ultra 4.0 oz					
4 <sup>th</sup> spray Daconil Ultrex 3.2 oz					
5 <sup>th</sup> spray Chipco Triton "Legacy B" 4.0 fl. oz					
6 <sup>th</sup> spray Signature Ultra 4.0 oz					
7 <sup>th</sup> spray Signature Ultra 4.0 oz					
8 <sup>th</sup> spray Daconil Ultrex 3.2 oz					
Syngenta Concert 4.0 oz.....	14	7 a	6.75 ab	6.75 d-f	7.50 e-i
LSD (0.05) <sup>x</sup> .....	---	0	0.93	1.6	1.19

<sup>z</sup> A turf quality assessment of 1 to 10 (1=poorest, 10=best, 6=acceptable)