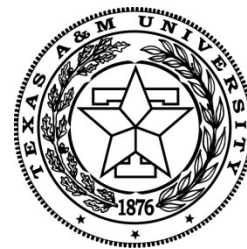


2010 Turfgrass Disease Field Day



October 20, 2010
Texas AgriLife Extension Service



Welcome to the 2010 Turfgrass Disease Field Day. At this event, Turfgrass Disease Specialists with Texas AgriLife Extension and Texas A&M University share the results of the fungicide evaluations and turfgrass disease research that has been performed in Texas over the past year. At this annual event we will share the results of our turfgrass disease management research program with the turfgrass and pest management professionals.

The field tests for 2009/2010 included six field plot sites established at one golf course and one sod farm in Texas, and at Texas A&M University research farms. More than 2,000 miles were driven during the past year to set up plots, apply treatments and evaluate diseases. Many County Extension Agents, Golf Course Superintendents, Landscape Mangers and Sod Farmers have been associated with our research efforts and provided invaluable supports to complete productive field study for the past year. I believe this event is a positive step toward building a successful Turfgrass Pathology Research and Extension Program in the state of Texas.

I am sincerely grateful for the tremendous industry support shown for the Texas A&M Turfgrass Pathology Program by BASF Corporation, Bayer Environmental Science, Cleary Chemical Corporation, Dow AgroSciences, Dupont Crop Protection, Quali-Pro, and Syngenta Professional Products. These field trials were partially sponsored by Turfgrass Producers of Texas (TPT).

I also would like to acknowledge and give special thanks to the golf course superintendents, golf club owners, and sod producers for participating in our research projects and providing us field research sites. Your volunteer effort made this research possible. Some of the great people that provided tremendous help include Eric Bauer and Billy Weeks of the Club at Carlton Woods, George Manuel of Royal Oaks Country Club, and Lindy Murff of Murff Turf Farms. Without the support of industry members like you, the Turfgrass Pathology Research and Extension Program would not be a success. I look forward to your continued support and collaborative relationship.

Sincerely,

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Disclaimer

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Fungicide evaluation for control of inky spot disease on zoysiagrass at the Club at Carlton Woods, Woodlands in 2010

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Objective

To evaluate fungicides for control of a foliar disease, tentatively named “inky spot,” caused by undocumented fungus on zoysiagrass.

Materials and Methods

The field trials were conducted at the Club of Carlton Woods, Tom Fazio Championship Course, Woodlands, TX. Field plots were established on zoysiagrass (cultivar Zeon) fairway #8 hole, maintained at 1/4-inch mowing height. Individual plots measured 3 by 4 feet. Both field plots were arranged in a randomized complete block design with four replicates.

A total of 24 different fungicide treatments along with a non-treated control were applied. Individual treatments were applied at a pressure of 40 p.s.i using a CO₂ pressurized boom sprayer equipped with two Teejet 8002 VS nozzles. All fungicides were agitated by hand and applied in the equivalent of 2 gallons of dilute fungicide spray per 1,000 ft². Fungicide applications were performed on June 1.

Percent diseased area and turfgrass quality of each plot were recorded weekly during the field evaluation. Data obtained were subjected to an analysis of variance to determine significant differences between treatments using the SAS software program. The mean percent disease for each treatment is presented in the tables below.

Results and Discussion

Symptoms of inky spot disease included distinctive black spots (~ 2 inches in diameter) on zoysiagrass fairways. As the disease progressed, individual spots were merged to bigger and irregular patches. We believe this disease may be caused by a previously-undocumented fungal pathogen on turfgrass.

Most fungicide treatments showed reduced disease severity and turfgrass quality improvement within 2 weeks after application. Particularly, fungicides containing propiconazole (Quali-Pro Propiconazole, Banner MAXX and Headway), myclobutanil (Eagle), iprodione (Interface, Iprodione Pro, Quali-Pro Ipro and 26GT), strobilurin (Tartan, Heritage and Insignia), flutolanil (ProStar) consistently showed best performance and suppress the disease for more than 2 months.

Table 1. Inky spot disease severity (number of infection centers, 2-inch diameter) on the zoysiagrass fairway plots established at Tom Fazio Championship Course.

Treatment No.	Treatment	Appl. Rate (fl oz or oz/M)	Jun. 1 (Initial)	Jun.29	Jul. 15	Jul. 27	Aug. 4
1	NEW QP CHLOR DF	1.8	4.3	6.3	23.3	24.8	23.8
2	NEW QP CHLOR DF	3.2	0.3	1.3*	13.5	19.3	17.5
3	QP Chlorothalonil DF	1.8	0.5	2.3*	19.0	23.5	27.0
4	QP Chlorothalonil DF	3.2	0.3	4.5	13.5	20.3	24.8
5	Chlorothalonil 720 SFT	2.0	0.8	4.0*	13.8	12.8	13.5
6	Chlorothalonil 720 SFT	3.5	2.8	4.5	12.8	18.0	18.3
7	ECHO ULTIMATE	1.8	2.3	4.8	22.3	19.8	30.0
8	ECHO ULTIMATE	3.2	1.3	4.0*	16.0	27.5	26.3
9	DACONIL ULTREX	1.8	1.0	1.3*	3.8*	8.0	8.5
10	DACONIL ULTREX	3.2	0.0	0.0*	21.3	20.3	16.3
11	INTERFACE	3.0	1.0	2.0*	1.5*	4.3*	4.5*
12	INTERFACE	4.0	0.0	0.3*	0.0*	0.0*	3.8*
13	INTERFACE	5.0	0.0	0.0*	0.3*	0.8*	2.5*
14	INTERFACE	6.0	0.0	0.0*	0.0*	0.3*	0.8*
15	TARTAN	1.5	0.0	0.0*	0.5*	1.3*	1.5*
16	IPRODIONE PRO 2SE	4.0	0.0	0.0*	0.0*	0.0*	0.5*
17	Banner Maxx	2.0	0.5	0.0*	0.3*	2.0*	17.5
18	Eagle	1.2	0.0	0.0*	2.0*	2.0*	3.0*
19	Trinity	1.0	2.0	3.0*	9.3	9.0	23.3
20	3336 plus	5.0	4.0	4.8	6.0	6.3	5.3*
21	ProStar 70WP	3.0	0.3	1.3*	3.0*	2.5*	3.0*
22	Heritage WG	2.0	0.0	0.3*	0.0*	0.0*	0.0*
23	Insignia	0.9	0.0	0.3*	2.0*	6.3	7.8
24	LEM17	0.5	4.3	0.5*	1.0*	0.0*	1.0*
25	Non-treated control		6.3	7.0	10.0	13.5	25.0

*Significantly less disease than the non-treated control.

Evaluation of fall fungicide applications for control of large patch disease on zoysiagrass at the Club at Carlton Woods in 2009/2010

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Objective

To evaluate fungicides of protective effect for large patch disease caused by *Rhizoctonia solani* on zoysiagrass.

Materials and Methods

The field trial was conducted at the Club of Carlton Woods, Tom Fazio Championship Course, Woodlands, TX. Plots were established on zoysiagrass cultivar 'Zeon' driving range, maintained at 1/4-inch mowing height. Individual plots measured 3 by 4 feet, and were arranged in a randomized complete block design with four replicates.

A total of 26 different fungicide treatments along with a non-treated control were applied based at labeled or suggested rates. Individual treatments were applied at a pressure of 40 p.s.i using a CO₂ pressurized boom sprayer equipped with two Teejet 8002 VS nozzles. All fungicides were agitated by hand and applied in the equivalent of 2 gallons of dilute fungicide spray per 1,000 ft². The application was performed on 6 Oct, 2009. For certain fungicide treatments with Triton Flo, the second application with a 21-day interval was made on 27 Oct. Percent diseased area was measured in the following spring. Data obtained were subjected to analysis of variance and means comparisons were performed using Fisher's Protected LSD (alpha = 0.05).

Percent diseased area of each plot was recorded in the following spring. Data obtained was subjected to an analysis of variance to determine significant differences between treatments using the SAS software program. The mean disease severity and turf quality for each treatment are presented in the tables below.

Results and Discussion

Spring green-up began and disease symptoms appeared in March on most plots. Statistically, there was no significant improvement with fungicides compared with the non-treated control, while certain fungicides showed indication of disease reduction. Particularly, Tartan, Headway, Triton and Daconil Ultrax yielded best protection, showing less symptom than the non-treated control plot.

Table 1. Large patch disease severity (% infected area) on zoysiagrass plots established at Tom Fazio Championship Course, Woodlands.

Treatment No.	Treatment	Appl. Rate (fl oz or oz/M)	Mar.16	Mar.23	Mar.29	Apr.6
1	Quali-Pro Ipro 2SE	4.0	36.3	40.0	31.3	42.5
2	Quali-Pro TM 4.5F	2.0	33.8	38.8	25.0	41.3
3	Quali-Pro Chlorothalonil 720 SFT	3.5	22.5	26.3	18.8	30.0
4	Quali-Pro TM/C 66.7 WG	4.0	25.0	26.3	13.8	42.5
5	Quali-Pro Propiconazole 14.3	4.0	12.5	18.8	6.3*	27.5
6	Chipco 26 GT 2SC	4.0	27.5	33.8	17.5	45.0
7	Cleary 3336 Plus 19.4F	5.0	15.0	16.3	10.0	28.8
8	Cleary 3336 Plus 19.4F + Daconil Ultrex 82.5WDG	5 + 2.5	16.3	20.0	15.0	28.8
9	Banner Maxx 1.3ME	4.0	22.5	16.3	11.3	30.0
10	Prontech		20.0	25.0	15.0	23.8
11	Headway 1.39ME	3.0	16.3	10.0	8.8*	12.5
12	Headway 1.39ME	1.5	10.0	12.5	5.0*	13.8
13	Heritage TL 0.8ME	2.0	11.3	8.8*	5.0*	11.3*
14	Daconil Ultrex 82.5WDG	2.5	16.3	12.5	6.3*	10.0*
15	Eagle	2.0	21.3	21.3	13.8	17.5
16	Insignia 20WG	0.9	17.5	22.5	13.8	22.5
17	Trinity 16F	2.0	22.5	15.0	13.8	30.0
18	Tartan	2.0	17.5	7.5*	8.8*	25.0
19	Triton Flo	0.8	11.3	13.8	6.3*	16.3
20	Triton Flo, 2 applications	0.8	5.0*	5.0*	5.0*	8.3*
21	Triton Flo	1.1	7.5*	6.3*	5.0*	8.3*
22	Triton Flo, 2 applications	1.1	5.0*	5.0*	5.0*	10.0*
23	Chipco Triton 70WDG	0.3	20.0	17.5	12.5	20.0
24	Prostar 70WG	3.0	20.0	16.3	15.0	22.5
25	Disarm 480 SC	0.25	23.8	30.0	15.0	20.0
26	Disarm 480 SC	0.5	18.8	10.0*	8.8*	17.5
27	Non-treated control		16.3	26.3	15.0	22.5

* Significantly less disease than the non-treated control.

Evaluation of spring fungicide applications for control of large patch disease on zoysiagrass at the Club at Carlton Woods in 2010

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Objective

To evaluate fungicides of curative effect for large patch disease caused by *Rhizoctonia solani* on zoysiagrass.

Materials and Methods

The field trial was conducted at the Club of Carlton Woods, Tom Fazio Championship Course, Woodlands, TX. Plots were established on zoysiagrass cultivar 'Zeon' driving range, maintained at 1/4-inch mowing height. Individual plots measured 3 by 4 feet, and were arranged in a randomized complete block design with four replicates.

A total of 24 different fungicide treatments along with a non-treated control were applied based at labeled or suggested rates. Individual treatments were applied at a pressure of 40 p.s.i using a CO₂ pressurized boom sprayer equipped with two Teejet 8002 VS nozzles. All fungicides were agitated by hand and applied in the equivalent of 2 gallons of dilute fungicide spray per 1,000 ft². The application was performed once on 2 March, 2010. Percent diseased area and was measured. Data obtained were subjected to analysis of variance and means comparisons were performed using Fisher's Protected LSD (alpha = 0.05).

Percent diseased area and turfgrass quality of each plot were recorded weekly during this field trial. Data obtained was subjected to an analysis of variance to determine significant differences between treatments using the SAS software program. The mean disease severity and turf quality for each treatment are presented in the tables below.

Results and Discussion

Spring green-up began in March. Large patch symptoms appeared on most plots before fungicide treatment, and average 40% of the plot area was infected. Statistically, there was indication of suppression by fungicides for large patch including Daconil Ultrex and Triton. Turfgrass naturally recovered by May.

Table 1. Large patch disease severity (% infected area) on zoysiagrass plots established at Tom Fazio Championship Course, Woodlands.

Treatment No.	Treatment	Appl. Rate (fl oz or oz/M)	Mar. 2 (Initial)	Mar.16	Mar.23	Mar.29	Apr. 6
1	Quali-Pro Ipro 2SE	4.0	53.8	40.0	60.0	26.3	52.5
2	Quali-Pro TM 4.5F	2.0	61.3	45.0	68.8	46.3	62.5
3	Quali-Pro Chlorothalonil 720 SFT	3.5	36.3	45.0	48.8	37.5	40.0
4	Quali-Pro TM/C 66.7 WG	4.0	60.0	37.5	51.3	40.0	56.3
5	Quali-Pro Propiconazole 14.3	4.0	42.5	30.0	58.8	31.3	46.3
6	Chipco 26 GT 2SC	4.0	32.5	30.0	46.3	20.0	38.8*
7	Cleary 3336 Plus 19.4F	5.0	58.8	50.0	63.8	45.0	55.0
8	Cleary 3336 Plus 19.4F + Daconil Ultrex 82.5WDG	5 + 2.5	38.8	33.8	42.5	36.3	36.3*
9	Banner Maxx 1.3ME	4.0	30.0	41.3	60.0	51.3	57.5
10	Prontech		40.0	25.0*	46.3	23.8	57.5
11	Headway 1.39ME	3.0	36.3	30.0	46.3	35.0	47.5
12	Headway 1.39ME	1.5	40.0	35.0	46.3	25.0	45.0
13	Heritage TL 0.8ME	2.0	32.5	32.5	46.3	27.5	45.0
14	Daconil Ultrex 82.5WDG	2.5	37.5	26.3*	32.5*	18.8*	30.0*
15	Eagle		40.0	26.3*	41.3	23.8	42.5
16	Insignia 20WG	0.9	23.8	37.5	26.3*	17.5*	30.0*
17	Trinity 16F	2.0	46.3	42.5	55.0	40.0	50.0
18	Tartan	2.0	33.8	22.5*	31.3*	23.8	41.3
19	Triton Flo	0.8	51.3	32.5	48.8	30.0	50.0
21	Triton Flo	1.1	30.0	26.3*	23.3*	23.8	32.5*
23	Chipco Triton 70WDG	0.3	50.0	35.0	53.8	38.8	53.8
24	Prostar 70WG	3.0	27.5	37.5	46.3	27.5	57.5
25	Disarm 480 SC		13.8*	36.3	35.0*	31.3	35.0*
26	Disarm 480 SC		23.8	30.0	38.8*	18.8*	40.0
27	Non-treated control		35.0	45.0	53.8	32.5	52.5

* Significantly less disease than the non-treated control.

Efficacy of the fall application of fungicides for control of large patch on St. Augustinegrass at Dallas Urban Solution Center, Dallas in 2009/2010

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Objective

To evaluate fungicides for management of large patch disease caused by *Rhizoctonia solani* and spring green-up on St. Augustinegrass.

Materials and Methods

The field trial was conducted at the Texas AgriLife Urban Solution Center in Dallas. Plots were established on St. Augustinegrass cultivar 'Raleigh' maintained at 4-inch mowing height. Individual plots measured 3 by 6 feet, and were arranged in a randomized complete block design with four replicates.

A total of 24 different fungicide treatments along with water and fertilizer controls were applied based at labeled or suggested rates. Individual treatments were applied at a pressure of 40 p.s.i using a CO₂ pressurized boom sprayer equipped with two Teejet 8002 VS nozzles. All fungicides were agitated by hand and applied in the equivalent of 2 gallons of water per 1,000 ft². The application of the treatments was performed on November 5, 2009.

Percent diseased area of each plot was recorded in the following spring. Data obtained were subjected to an analysis of variance to determine significant differences between treatments using the SAS software program. The mean turfgrass quality for each treatment is presented in the table below.

Results and Discussion

Spring green-up began and disease symptoms appeared in early April. There was significant improvement on turfgrass with some fungicides (Triton, Tartan and Insignia) compared with the non-treated control or the turfgrass condition in the previous fall. Phytotoxicity including discoloration, and reduced turf quality was observed in plots treated with demethylase inhibitor fungicides.

Table 1. Disease severity and Turfgrass quality of St. Augustinegrass plots established at Dallas Urban Solution Center, Dallas. Quality scale on a 1 to 9, where 9 = highest quality, and 6 = acceptable.

Treatment No.	Treatment	Appl. Rate (fl oz or oz/M)	Nov. 5 (Initial)	Severity Apr.23	Quality Apr.23
1	Quali-Pro Ipro 2SE	4.0	53.8	33.8	5.0
2	Quali-Pro TM	2.0	65.0	47.5	4.8
3	Quali-Pro Chlorothalonil 720 SFT	3.5	50.0	36.3	5.5
4	Quali-Pro TM/C	4.0	52.5	46.3	4.5
5	Quali-Pro Propiconazole 14.3	4.0	42.5	36.3	5.3
6	Chipco 26 GT	4.0	23.8	28.8	5.8
7	Cleary 3336 Plus	5.0	50.0	28.8	5.5
8	Cleary 3336 Plus + Daconil Ultrex 82.5WDG	5.0 + 2.5	40.0	31.3	5.3
9	Banner Maxx	4.0	47.5	45.0	4.5
10	Prontech		61.3	61.3	4.3
11	Headway	3.0	25.5	25.0	5.5
12	Headway	1.5	77.5	51.3	4.5
13	Heritage TL	2.0	63.8	46.3	4.3
14	Daconil Ultrex 82.5WDG	2.5	56.3	35.0	5.0
15	Eagle	2.0	76.3	55.0	4.5
16	Insignia 20WG	0.9	40.0	25.0	5.3
17	Trinity	2.0	13.8*	15.0*	6.3
18	Tartan	2.0	57.5	27.5	5.5
19	Triton Flo	0.8	52.5	32.5	5.0
20	Triton Flo	1.1	36.3	15.0*	6.5
21	Chipco Triton 70WDG	0.3	70.0	52.5	4.3
22	Prostar 70WG	3.0	32.5	20.0	5.8
23	Disarm 480 SC	0.25	31.3	25.0	5.5
24	Disarm 480 SC	0.5	52.5	32.5	5.0
25	Non-treated control		53.8	41.3	5.0

* Significantly less disease than the non-treated control.

Efficacy of the spring application of fungicides for control of large patch disease on St. Augustinegrass sod at Murff Turf Farm, Crosby in 2009/2010

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Objective

To evaluate fungicides for management of large patch disease caused by *Rhizoctonia solani* and spring green-up on St. Augustinegrass.

Materials and Methods

The field trial was conducted at Murff Turf Farm in Crosby, TX. Plots were established on St. Augustinegrass cultivar 'Palmetto' maintained at 3-inch mowing height. Individual plots measured 3 by 6 feet, and were arranged in a randomized complete block design with four replicates.

A total of 26 different treatments along with water controls were applied based at labeled or suggested rates. Individual treatments were applied at a pressure of 40 p.s.i using a CO₂ pressurized boom sprayer equipped with two Teejet 8002 VS nozzles. All fungicides were agitated by hand and applied in the equivalent of 2 gallons of dilute fungicide spray per 1,000 ft². The application of the treatments was performed on February 26, 2010.

Disease severity of each plot started recording in March. Data obtained were subjected to an analysis of variance to determine significant differences between treatments using the SAS software program. The mean turf quality for each treatment is presented in the table below.

Results and Discussion

St. Augustinegrass area used in this field study was highly infested by large patch in the fall, 2009, and went to complete winter dormancy between December and February. Spring green-up began and disease symptoms appeared in March. There was no statistically significant improvement with any fungicides compared with the non-treated control. Slight phytotoxicity and slow spring green-up were observed on the plots treated with demethylation inhibitor fungicides.

Table 1. Disease severity of the St. Augustinegrass plots established at Murff turf Farms, Crosby.

Treatment No.	Treatment	Appl. Rate (fl oz or oz/M)	Feb.26 (Initial)	Mar.16	Mar.29	Apr.15
1	Quali-Pro Ipro	4.0	17.5	51.3	50.0	35.0
2	Quali-Pro TM	2.0	23.8	85.0	75.0	50.0
3	Quali-Pro Chlorothalonil 720 SFT	3.5	12.5*	73.8	70.0	52.5
4	Quali-Pro TM/C	4.0	38.8	72.5	72.5	52.5
5	Quali-Pro Propiconazole 14.3	4.0	10.0*	85.0	75.0	52.5
6	Chipco 26 GT 2SC	4.0	13.8*	72.5	65.0	35.0
7	Cleary 3336 Plus	5.0	5.0*	91.3	80.0	55.0
8	Cleary 3336 Plus + Daconil Ultrex 82.5WDG	5.0 + 2.5	10.0*	77.5	72.5	45.0
9	Banner Maxx	4.0	6.3*	68.8	65.0	47.5
10	Prontech		13.8*	58.8	55.0	30.0
11	Ammonium sulfate	30.0	15.0	91.3	75.0	50.0
12	Headway	3.0	5.0*	88.8	77.5	55.0
13	Headway	1.5	12.5*	72.5	67.5	45.0
14	Heritage TL	2.0	37.5	80.0	65.0	47.5
15	Daconil Ultrex 82.5WDG	2.5	23.8	81.3	72.5	52.5
16	Eagle	2.0	30.0	55.0	45.0	42.5
17	Insignia 20WG	0.9	42.5	93.8	87.5	70.0
18	Trinity	2.0	17.5	93.8	82.5	55.0
19	Tartan	2.0	18.8	98.8	85.0	57.5
20	Triton Flo	0.8	10.0*	85.0	72.5	55.0
21	Triton Flo	1.1	25.0	85.0	75.0	55.0
22	Core aeration		12.5*	81.3	77.5	55.0
23	Chipco Triton 70WDG	0.3	12.5*	93.8	85.0	52.5
24	Prostar 70WG	3.0	26.3	80.0	70.0	35.0*
25	Disarm 480 SC	0.25	16.3	95.0	90.0	57.5
26	Disarm 480 SC	0.5	5.0*	93.8	87.5	50.0
27	Non-treated control		27.5	71.3	65.0	57.5

* Significantly less disease than the non-treated control.

Demethylation inhibitor fungicide evaluation for spring green-up and adverse effect on ultra-dwarf bermudagrass

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Objective

To evaluate demethylation inhibitor fungicides for spring green-up and adverse effect on the ultra-dwarf bermudagrass putting green.

Materials and Methods

The field trial was conducted at Turf Research Farm at Texas A&M University in College Station. Plots were established on ultra-dwarf bermudagrass putting green, maintained at 1/8-inch mowing height. Individual plots measured 3 by 4 feet, and were arranged in a randomized complete block design with four replicates.

A total of 8 different demethylation inhibitor fungicide treatments along with a non-treated control were applied based at labeled or suggested rates. Individual treatments were applied at a pressure of 40 p.s.i using a CO₂ pressurized boom sprayer equipped with two Teejet 8002 VS nozzles. All fungicides were agitated by hand and applied in the equivalent of 2 gallons of dilute fungicide spray per 1,000 ft². The applications of the treatments were performed on April 20.

Turfgrass quality of each plot was recorded biweekly throughout experiment. Data obtained was subjected to an analysis of variance to determine significant differences between treatments using the SAS software program. The mean turfgrass quality for each treatment is presented in the table below.

Results and Discussion

Statistically, there was not a significant improvement of turfgrass quality with demethylation inhibitor fungicides compared with the non-treated control. In contrast, the quality was significantly reduced by one application of these demethylase inhibitor fungicides. The reduced turfgrass quality was caused by phytotoxicity from application of these chemicals and took more than a month to recover the normal color.

Table 1. Turfgrass quality of the bermudagrass plots established on the putting green at the College Station. Quality scale on a 1 to 9, where 9 = highest quality, and 6 = acceptable.

Treatment No.	Treatment	Appl. Rate (fl oz or oz/M)	Apr.20 (Initial)	May. 4	May.12	Jun. 2
1	Banner MAXX	2.0	6.3	4.3*	3.8*	6.3
2	Banner MAXX	4.0	6.0	3.8*	3.5*	4.5*
3	Bayleton flo	1.0	6.5	4.8	4.3	6.5
4	Bayleton flo	2.0	6.3	4.0*	4.3	5.5
5	Eagle	1.2	5.8	4.3*	3.5*	5.5
6	Eagle	2.4	6.3	4.5	4.0	5.3
7	Trinity	1.0	6.5	4.8	4.0	5.5
8	Trinity	2.0	6.0	4.5	3.8*	4.8
9	Non-treated control		6.5	5.8	5.0	5.8

*Significantly lower turfgrass quality than the non-treated control.

Evaluation for fungicide programs on ultra-dwarf bermudagrass during a growing season

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Objective

To evaluate fungicides for spring green-up and control of potential diseases on the ultra-dwarf bermudagrass putting green.

Materials and Methods

The field trial was conducted at Turf Research Farm at Texas A&M University in College Station. Plots were established on ultra-dwarf bermudagrass putting green, maintained at 1/8-inch mowing height. Individual plots measured 3 by 4 feet, and were arranged in a randomized complete block design with four replicates.

Three different fungicide programs along with a non-treated control were performed. Individual treatments were applied at a pressure of 40 p.s.i using a CO₂ pressurized boom sprayer equipped with two Teejet 8002 VS nozzles. All fungicides were agitated by hand and applied in the equivalent of 2 gallons of dilute fungicide spray per 1,000 ft². The first applications of the treatments were begun on April 20 and continued until the end of October.

Turfgrass quality of each plot was recorded biweekly throughout experiment. Data obtained was subjected to an analysis of variance to determine significant differences between treatments using the SAS software program. The mean turfgrass quality for each treatment is presented in the table below.

Results and Discussion

No particular diseases broke out in the plots. The programs #2 and #3 provided good turfgrass quality throughout the growing season. Particularly, there was a significant improvement of turfgrass quality with the programs #2 and #3 in early spring (May and June) and fall (October), compared with the non-treated control.

Table 1. Fungicides programs tested in the study

Program #1	App date	Spray #	Treatment Name	Rate Unit (fl oz or oz/M)
	4/20/2010	Spray #1	Tartan	1
	5/11/2010	Spray #2	Tartan	1
			Fore	8
	6/2/2010	Spray #3	chipco 26GT	4
	6/22/2010	Spray #4	Insignia	0.9
	7/13/2010	Spray #5	chipco Signature	4
			Fore	8
	8/3/2010	Spray #6	chipco Signature	4
			Fore	8
	8/24/2010	Spray #7	Fore	8
	9/14/2010	Spray #8	Tartan	1

Program #2	4/20/2010	Spray #1	Interface	4
	5/11/2010	Spray #2	chipco Signature	4
			Cleary 3336	4
	6/2/2010	Spray #3	chipco Signature	4
			Prostar 70 wg	2.2
	6/22/2010	Spray #4	chipco Signature	4
			Compass	0.25
	7/13/2010	Spray #5	Interface	4
	8/3/2010	Spray #6	chipco Signature	4
			Prostar 70 wg	2.2
	8/24/2010	Spray #7	Interface	4
	9/14/2010	Spray #8	chipco Signature	4
			Daconil ultrex	3.2
	10/5/2010	Spray #9	Interface	4
	10/26/2010	Spray #10	chipco Signature	4
			Triton flo	0.5

Program #3	4/20/2010	Spray #1	chipco Signature	4
			Interface	4
	5/11/2010	Spray #2	chipco Signature	4
			Interface	4
	6/2/2010	Spray #3	chipco Signature	4
			Interface	4
	9/14/2010	Spray #8	chipco Signature	4
			Interface	4
	10/5/2010	Spray #9	chipco Signature	4
			Interface	4
	10/26/2010	Spray #10	chipco Signature	4
			Interface	4

Efficacy of Bayer fungicides program 2010

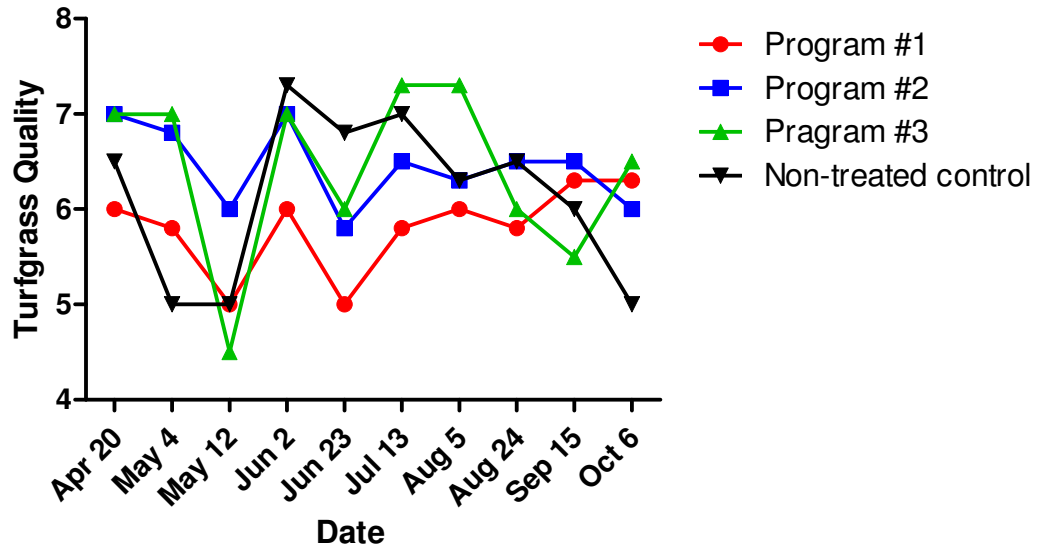


Figure 1. Seasonal turfgrass quality of the bermudagrass plots established on the putting green at College Station. Quality scale on a 1 to 9, where 9 = highest quality, and 6 = acceptable.

Fungicides registered for use on golf course and sod production

Common Name	Trade Name	Mode of Action
Aromatic Hydrocarbon Chloroneb Etridiazol (ethazole) PCNB*	FRAC = 14 Terraneb SP, Teremec SP Terrazole, Koban Turficide 400, Turficide 10G, PCNB 12.5G, Revere 10G Revere 4000, FF II, Terrachlor 400, Terrachlor 75WP	Contact Contact Contact
Benzimidazole Thiophanate-methyl	FRAC = 1 Fungo 50, Fungo Flo, 3336 WP, 3336 Flo, Caviler 2G Caviler 4.5F, Caviler 50WSB, 3336 Plus	Acropetal Penetrant
Dithiocarbamate Maneb Thiram Mancozeb	FRAC = M3 Maneb Plus Zinc F4, Maneb 75DF, Pentathlon 4F, Pentathlon 75DG Spotrete, Thiram Fore, Fore Flo, Dithane T/O, Dithane WF, Pentathalon	Contact Contact Contact
Carbamate Propamocarb- HCl	FRAC = 28 Banol	Contact
Carboximide Flutolanil Boscalid	FRAC = 7 ProStar 70WP Emerald 70EG (WDG)	Acropetal Penetrant Acropetal Penetrant
Demethylation Inhibitor Fenarimol Myclobutanil Propiconazole Triadimefon* Triticonazole	FRAC = 3 Rubigan A.S. Eagle, Golden Eagle Banner, Banner MAXX, Spectator, Propiconazole Pro Bayleton 25, Bayleton 50, Accost 1G Trinity, Triton 70 WDG, Triton Flo	Acropetal Penetrant Acropetal Penetrant Acropetal Penetrant Acropetal Penetrant Acropetal Penetrant
Dicarboximide Iprodione* Vinclozolin*	FRAC = 2 Chipco 26GT, Chipco 26019, Iprodione Pro, ProTurf Fungicide X Curalan, Curalan DF, Touché, Touché Flowable, Vorlan	Local Penetrant Local Penetrant
Nitrile Chlorothalonil*	FRAC = M5 Daconil WeatherStik, Daconil Ultrex, Daconil 2787 Daconil Zn, Manicure 6 Flowable, Manicure Ultrex, Concorde, Thalonil 4L, Thalonil 90DF, Echo 720, Echo 75	Contact
Phenylamide Mefenoxam	FRAC = 4 Subdue, Subdue MAXX, Ridomil	Acropetal Penetrant
Phenylpyrrole Fludioxonil	FRAC = 12 Medallion	Contact
Phosphonate Fosetyl-aluminum Phosphite (salts)	FRAC = 33 Aliette, Aliette T&O, Chipco Signature, Prodigy, Autograph Magellan, Fosphite, Resyst, Alude, Reliant	Systemic Systemic
Polyoxin Polyoxin D Zinc	FRAC = 19 Endorse	Local Penetrant
Strobilurin (=QoI) Azoxystrobin Fluoxastrobin Pyraclostrobin Trifloxystrobin	FRAC = 11 Heritage Disarm Insignia Compass	Acropetal Penetrant Localized Penetrant Localized Penetrant Localized Penetrant
This list is not all-inclusive		*The use for residential turf is prohibited

Pre-mix products with more than one fungicide
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Active ingredients	Product name
azoxystrobin + propiconazole	Headway
chlorothalonil + propiconazole	Echo Propiconazole Turf Fungicide
chlorothalonil + thiophanate-methyl	ConSyst, Spectro, Broadside, Peregrine
chlorothalonil + fludioxonil + propiconazole	Instrata
mancozeb + copper hydroxide	Junction
mancozeb + myclobutanil	MANhandle
thiophanate-methyl + chloroneb	Proturf Fungicide IX
thiophanate-methyl + flutalonil	Systar
thiophanate-methyl + iprodione	26/36 Fungicide, Proturf Fluid Fungicide, Dovetail, Lesco Twosome
thiophanate-methyl + mancozeb	Duosan
thiophanate-methyl + thiram	Bromosan
triadimefon + flutolanil	ProStar Plus
triadimefon + metalaxyl	Proturf Fluid Fungicide II
triadimefon + thiram	Proturf Fluid Fungicide III
triadimefon + trifloxystrobin	Armada
triadimefon + trifloxystrobin	Tartan
trifloxystrobin + iprodione	Interface

Plot map for the fungicide evaluation for control of large patch

16	28	30	4	18	11	19	13	24	7	3	8	25	2	20
9	22	26	23	27	15	12	17	10	1	5	14	21	6	29
5	14	27	18	7	12	28	6	19	16	24	9	25	15	21
26	17	22	13	20	4	8	23	10	2	1	29	3	11	30
3	19	18	1	9	8	23	15	7	30	11	21	17	22	25
4	14	6	28	26	10	24	2	16	13	20	5	29	12	27
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Treatment

- 1.QP Ipro 4
- 2.QP TM 2
- 3.QP Chloro 3.2
- 4.QP New Chlr 3.2
5. 26 GT 4
6. 3336 5
7. Daconil 3.2
8. Triton flo 0.75
- 9.ProStar 2.2
10. Triton flo 0.5
11. Triton flo 0.75
12. ProStar 2.2
13. ProStar 2.2
14. Disarm 0.18
15. Disarm 0.36
16. Tartan 2
17. Headway G 4#
18. Renown 4.5
19. Heritage 2
20. Banner 4
21. Eagle 2
22. Insignia 0.9
23. Trinity 2
24. Fore 8
25. PCNB 7.5#
26. NH4SO4 16
27. NH4SO4 32
28. Maxide 4#