Control of Anthracnose on Golf Course Turf

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OBJECTIVES

To determine the efficacy of standard and experimental fungicides for control of foliar anthracnose caused by the fungus *Colletotrichum cereale.*

MATERIALS AND METHODS

This study was conducted simultaneously at the O.J. Noer Turfgrass Research and Education Facility in Madison, WI and Pleasant View Golf Course in Middleton, WI. The OJ Noer site is a mixed annual bluegrass (*Poa annua*) and creeping bentgrass (*Agrostis stolonifera*) putting green and is maintained at a height of 0.125 inches. The Pleasant View site is a mixed annual bluegrass (*Poa annua*) and creeping bentgrass (*Agrostis stolonifera*) fairway and is maintained at a height of 0.5 inches. The individual plots measure 3 ft by 10 ft organized in a randomized complete block design with four replicates. These treatments are applied using a CO_2 pressurized boom sprayer with two Teejet AI 8004 VS nozzles at a pressure of 40 psi. All pesticides were agitated by hand and applied at 1.5 gallons of water per 1000 ft^2. The initial treatment application was done on June 7, 2018 and all following applications were made at 14-day intervals. Disease severity (percent plot area affected) and turfgrass quality (1-9, 9 being excellent, 6 acceptable, and 1 bare soil) were assessed immediately prior to each application. Turf quality and disease severity were subjected to an analysis of variance and means were separated using Fisher's LSD (P = 0.05). Results of the disease severity and turfgrass quality ratings can be found in table 1 and 2, respectively.

RESULTS AND DISCUSSION

Very little foliar anthracnose developed on the putting green trial at the OJ Noer. On July 3rd, there was a small anthracnose infection, and treatments 3, 4, and 5 resulted in good control. Turf quality ratings reflected how much dollar spot was present in each of the plots. All fungicide treatments were of acceptable turf quality on all rating dates. Disease development at Pleasant View was slightly higher during July. Treatments 3, 4, and 5 resulted in good control. Turf quality ratings reflected how much disease was in each plot and treatments 3, 4, and 5 resulted in the highest turf quality ratings. No phytotoxicity was observed with any treatment.

Table 1. Mean anthracnose disease percentage per treatment on creeping bentgrass/annual bluegrass maintained at putting green height at the OJ Noer Turf Research Facility in Madison, WI during 2018.

	Treatment	Application Rate	App Interval	App Dates[b]	Anthracnose Disease Percentage[a]		
					July 3	July 17	July 31
1	Non-treated control	N/A	N/A		7.3 -	0.0 -	0.0 -
2	Premion	6 fl oz/1000 ft^2	14 Day	FHJLNP	2.3 -	0.0 -	0.0 -
	Par	0.37 fl oz/1000 ft^2		FHJLNP			
3	Premion	8 fl oz/1000 ft^2	14 Day	F	0.5 -	0.0 -	0.0 -
	Par	0.37 fl oz/1000 ft^2		F			
	Signature Xtra	4 oz/1000 ft^2		H			
	Daconil Ultrex	3.25 oz/1000 ft^2		H			
	Velista	0.3 oz/1000 ft^2		J			
	Affirm	4 oz/1000 ft^2		J			
	Premion	4 fl oz/1000 ft^2		L			
	Medallion	1.5 fl oz/1000 ft^2		L			
	Par	0.37 fl oz/1000 ft^2		L			
	Signature Xtra	4 oz/1000 ft^2		N			
	Daconil Ultrex	3.25 oz/1000 ft^2		N			
	Velista	0.3 oz/1000 ft^2		P			
	Affirm	4 oz/1000 ft^2		P			
4	Navicon	0.85 fl oz/1000 ft^2	14 Day	FHJL	0.0 -	0.0 -	0.0 -
5	Maxtima	0.8 fl oz/1000 ft^2	14 Day	FHJL	0.0 -	0.0 -	0.0 -
				LSD P=.05	5.6	NA [c]	NA

[a] Means followed by the same letter do not significantly differ (P=.05, Fisher's LSD).
[b] Application dates: F=6/7, H=6/20, J=7/3, L=7/17, N=7/31, P=8/14
[c] Not Applicable

Table 2. Mean turf quality per treatment on creeping bentgrass/annual bluegrass maintained at putting green height at the OJ Noer Turfgrass Research Facility in Madison, WI during 2018.

	Treatment	Application Rate	App Interval	App Dates[b]	Turf Quality[a]		
					July 3	July 17	July 31
1	Non-treated control	N/A	N/A		5.8 b	5.5 b	5.0 c
2	Premion	6 fl oz/1000 ft^2	14 Day	FHJL	6.5 a	7.0 a	6.5 ab
	Par	0.37 fl oz/1000 ft^2		FHJL			
3	Premion	8 fl oz/1000 ft^2	14 Day	F	6.8 a	6.8 a	6.0 b
	Par	0.37 fl oz/1000 ft^2		F			
	Signature Xtra	4 oz/1000 ft^2		H			
	Daconil Ultrex	3.25 oz/1000 ft^2		H			
	Velista	0.3 oz/1000 ft^2		J			
	Affirm	4 oz/1000 ft^2		J			
	Premion	4 fl oz/1000 ft^2		L			
	Medallion	1.5 fl oz/1000 ft^2		L			
	Par	0.37 fl oz/1000 ft^2		L			
	Signature Xtra	4 oz/1000 ft^2		N			
	Daconil Ultrex	3.25 oz/1000 ft^2		N			
	Velista	0.3 oz/1000 ft^2		P			
	Affirm	4 oz/1000 ft^2		P			
4	Navicon	0.85 fl oz/1000 ft^2	14 Day	FHJL	7.0 a	7.0 a	6.8 a
5	Maxtima	0.8 fl oz/1000 ft^2	14 Day	FHJL	7.0 a	7.3 a	6.8 a
				LSD P=.05	0.5	0.9	0.5

[a]Means followed by the same letter do not significantly differ (P=.05, Fisher's LSD).
[b]Application dates: F=6/7, H=6/20, J=7/3, L=7/17, N=7/31, P=8/14

Table 3. Mean anthracnose disease percentage per treatment on creeping bentgrass/annual bluegrass maintained at fairway height at Pleasant View Golf Course in Middleton, WI during 2018.

	Treatment	Application Rate	App Interval	App Dates[b]	Anthracnose Disease Percentage[a]		
					July 3	July 17	July 31
1	Non-treated control	N/A	N/A		4.3 a	4.3 -	7.5 -
2	Premion	6 fl oz/1000 ft^2	14 Day	FHJL	1.0 b	5.5 -	6.3 -
	Par	0.37 fl oz/1000 ft^2		FHJL			
3	Premion	8 fl oz/1000 ft^2	14 Day	F	0.0 b	0.0 -	0.0 -
	Par	0.37 fl oz/1000 ft^2		F			
	Signature Xtra	4 oz/1000 ft^2		H			
	Daconil Ultrex	3.25 oz/1000 ft^2		H			
	Velista	0.3 oz/1000 ft^2		J			
	Affirm	4 oz/1000 ft^2		J			
	Premion	4 fl oz/1000 ft^2		L			
	Medallion	1.5 fl oz/1000 ft^2		L			
	Par	0.37 fl oz/1000 ft^2		L			
	Signature Xtra	4 oz/1000 ft^2		N			
	Daconil Ultrex	3.25 oz/1000 ft^2		N			
	Velista	0.3 oz/1000 ft^2		P			
	Affirm	4 oz/1000 ft^2		P			
4	Navicon	0.85 fl oz/1000 ft^2	14 Day	FHJL	0.0 b	0.5 -	0.5 -
5	Maxtima	0.8 fl oz/1000 ft^2	14 Day	FHJL	0.0 b	0.5 -	0.0 -
				LSD P=.05	1.2	5.6	9.3

[a]Means followed by the same letter do not significantly differ (P=.05, Fisher's LSD).
[b]Application dates: F=6/7, H=6/20, J=7/3, L=7/17, N=7/31, P=8/14

Table 4. Mean turf quality per treatment on creeping bentgrass/annual bluegrass maintained at fairway height at Pleasant View Golf Course in Middleton, WI during 2018.

	Treatment	Application Rate	App Interval	App Dates[b]	Turf Quality[a]		
					July 3	July 17	July 31
1	Non-treated control	N/A	N/A		6.0 b	6.8 -	6.0 -
2	Premion	6 fl oz/1000 ft^2	14 Day	FHJL	6.8 a	6.5 -	6.0 -
	Par	0.37 fl oz/1000 ft^2		FHJL			
3	Premion	8 fl oz/1000 ft^2	14 Day	F	7.0 a	7.8 -	7.0 -
	Par	0.37 fl oz/1000 ft^2		F			
	Signature Xtra	4 oz/1000 ft^2		H			
	Daconil Ultrex	3.25 oz/1000 ft^2		H			
	Velista	0.3 oz/1000 ft^2		J			
	Affirm	4 oz/1000 ft^2		J			
	Premion	4 fl oz/1000 ft^2		L			
	Medallion	1.5 fl oz/1000 ft^2		L			
	Par	0.37 fl oz/1000 ft^2		L			
	Signature Xtra	4 oz/1000 ft^2		N			
	Daconil Ultrex	3.25 oz/1000 ft^2		N			
	Velista	0.3 oz/1000 ft^2		P			
	Affirm	4 oz/1000 ft^2		P			
4	Navicon	0.85 fl oz/1000 ft^2	14 Day	FHJL	7.0 a	7.8 -	7.0 -
5	Maxtima	0.8 fl oz/1000 ft^2	14 Day	FHJL	7.0 a	7.8 -	7.0 -
				LSD P=.05	0.3	1.5	1.2

[a]Means followed by the same letter do not significantly differ (P=.05, Fisher's LSD).
[b]Application dates: F=6/7, H=6/20, J=7/3, L=7/17, N=7/31, P=8/14