



Seasonal Programs on Putting Greens

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OBJECTIVE

To determine the efficacy of fungicides for the season-long control of turfgrass diseases and abiotic stresses on golf course putting greens.

MATERIALS AND METHODS

The study was conducted at the O.J. Noer Turfgrass Research and Education Facility in Madison, WI on a mixed stand of creeping bentgrass (*Agrostis stolonifera*) and annual bluegrass (*Poa annua*) maintained at a 0.110 inch cutting height. The individual plots measured 3 ft X 10 ft and were arranged in a randomized complete block design with four replications. Individual treatments were applied at a nozzle pressure of 40 p.s.i using a CO₂ pressurized boom sprayer equipped with two XR Teejet AI8004 VS nozzles. All fungicides were agitated by hand and applied in the equivalent of 1.5 gallons of water per 1000 ft². Disease severity (number of dollar spot infection centers per plot) and turfgrass quality (1-9, 9 being excellent, 6 acceptable, and 1 bare soil) were assessed every two weeks. Results 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

Dollar spot pressure was high throughout most of 2017, though few other diseases were noted in the experimental area. Non-treated controls averaged at least 120 dollar spot infection centers per plot throughout the season. Though all programs reduced dollar spot and increased turf quality compared to the non-treated control, there were only minor differences between programs in both disease control and quality. No phytotoxicity was observed with any treatment.

Table 1. Mean number of dollar spot infection centers per plot at the O. J. Noer Turfgrass Research and Education Facility in Madison, WI during 2017.

	Treatment	Rate	Application Code ^b	Dollar Spot Severity ^a		
				Jun 19	Jul 17	Aug 16
1	Non-treated control			123.6 a	169.3 a	163.3 a
2	Tartan	2 fl oz/1000 ft ²	D	0.0 b	61.0 b	21.8 b
	Signature Xtra	4 oz/1000 ft ²	F			
	Daconil Ultrex	3.2 oz/1000 ft ²	F			
	Signature Xtra	4 oz/1000 ft ²	H			
	Daconil Ultrex	3.2 oz/1000 ft ²	H			
	Signature Xtra	4 oz/1000 ft ²	J			
	Exteris	4 fl oz/1000 ft ²	J			
	Daconil Ultrex	3.2 oz/1000 ft ²	L			
	Mirage	1 fl oz/1000 ft ²	L			
	Signature Xtra	4 oz/1000 ft ²	N			
	Exteris	4 fl oz/1000 ft ²	N			
	Signature Xtra	4 oz/1000 ft ²	P			
	26 GT	4 fl oz/1000 ft ²	P			
	Signature Xtra	4 oz/1000 ft ²	R			
	Exteris	4 fl oz/1000 ft ²	R			
	Interface	4 fl oz/1000 ft ²	T			
	Tartan	2 fl oz/1000 ft ²	V			
	Tartan	2 fl oz/1000 ft ²	X			
3	Lexicon	0.47 fl oz/1000 ft ²	D	0.0 b	1.0 b	3.3 b
	Banner Maxx	2 fl oz/1000 ft ²	F			
	Daconil Ultrex	3.2 oz/1000 ft ²	F			
	Lexicon	0.47 fl oz/1000 ft ²	H			
	Banner Maxx	2 fl oz/1000 ft ²	J			
	Lexicon	0.47 fl oz/1000 ft ²	M			
	Banner Maxx	2 fl oz/1000 ft ²	O			
	Daconil Ultrex	3.2 oz/1000 ft ²	O			
	Trinity	1 fl oz/1000 ft ²	Q			
	3336F	3.5 fl oz/1000 ft ²	S			
	26 GT	3 fl oz/1000 ft ²	V			
	Daconil Weatherstik	3.6 fl oz/1000 ft ²	V			
4	Concert II	6 fl oz/1000 ft ²	X	3.3 b	14.0 b	35.5 b
	Emerald	0.18 oz/1000 ft ²	D			
	Torque	1.1 fl oz/1000 ft ²	H			
	Xzemplar	0.26 fl oz/1000 ft ²	K			
	Pinpoint	0.31 fl oz/1000 ft ²	O			
	26 GT	4 fl oz/1000 ft ²	R			
	Emerald	0.18 oz/1000 ft ²	T			
	Torque	1.1 fl oz/1000 ft ²	X			
LSD P=.05				56.31	68.93	61.79

^aDollar spot was visually assessed as number of dollar spot infection centers per plot. Means followed by the same letter do not significantly differ (P=.05, Fisher's LSD).

^bApplication Code D=June 1st, F=June 14th, H= June 29th, J=July 13th, K=July 18th, L=July 28th, M=Aug 2nd, N=Aug 9th, O=Aug 15th, P=Aug 23rd, Q=Aug 29th, R=Sep 7th, S=Sep 13th, T=Sep 19th, V=Oct 8th, X=Oct 19th.

Table 2. Mean turfgrass quality per plot at the O. J. Noer Turfgrass Research and Education Facility in Madison, WI during 2017.

Treatment	Rate	Application Code ^b	Turfgrass Quality ^a		
			Jun 19	Jul 17	Aug 16
1 Non-treated control			6.5 a	4.3 b	4.8 c
Tartan	2 fl oz/1000 ft ²	D			
Signature Xtra	4 oz/1000 ft ²	F			
Daconil Ultrex	3.2 oz/1000 ft ²	F			
Signature Xtra	4 oz/1000 ft ²	H			
Daconil Ultrex	3.2 oz/1000 ft ²	H			
Signature Xtra	4 oz/1000 ft ²	J			
Exteris	4 fl oz/1000 ft ²	J			
Daconil Ultrex	3.2 oz/1000 ft ²	L			
2 Mirage	1 fl oz/1000 ft ²	L	6.8 a	6.3 a	5.5 bc
Signature Xtra	4 oz/1000 ft ²	N			
Exteris	4 fl oz/1000 ft ²	N			
Signature Xtra	4 oz/1000 ft ²	P			
26 GT	4 fl oz/1000 ft ²	P			
Signature Xtra	4 oz/1000 ft ²	R			
Exteris	4 fl oz/1000 ft ²	R			
Interface	4 fl oz/1000 ft ²	T			
Tartan	2 fl oz/1000 ft ²	V			
Tartan	2 fl oz/1000 ft ²	X			
Lexicon	0.47 fl oz/1000 ft ²	D			
Banner Maxx	2 fl oz/1000 ft ²	F			
Daconil Ultrex	3.2 oz/1000 ft ²	F			
Lexicon	0.47 fl oz/1000 ft ²	H			
Banner Maxx	2 fl oz/1000 ft ²	J			
Lexicon	0.47 fl oz/1000 ft ²	M			
3 Banner Maxx	2 fl oz/1000 ft ²	O	7.0 a	7.0 a	6.5 a
Daconil Ultrex	3.2 oz/1000 ft ²	O			
Trinity	1 fl oz/1000 ft ²	Q			
3336F	3.5 fl oz/1000 ft ²	S			
26 GT	3 fl oz/1000 ft ²	V			
Daconil Weatherstik	3.6 fl oz/1000 ft ²	V			
Concert II	6 fl oz/1000 ft ²	X			
Emerald	0.18 oz/1000 ft ²	D			
Torque	1.1 fl oz/1000 ft ²	H			
Xzemplar	0.26 fl oz/1000 ft ²	K			
4 Pinpoint	0.31 fl oz/1000 ft ²	O	7.0 a	7.0 a	6.3 ab
26 GT	4 fl oz/1000 ft ²	R			
Emerald	0.18 oz/1000 ft ²	T			
Torque	1.1 fl oz/1000 ft ²	X			
LSD P=.05			0.67	1.16	0.92

^aTurfgrass quality was visually assessed on 1-9 scale, with 9 being excellent, 6 being acceptable, and 1 bare dirt. Means followed by the same letter do not significantly differ (P=.05, Fisher's LSD).

^bApplication Code D=June 1st, F=June 14th, H= June 29th, J=July 12th, K=July 18th.