



# Dollar Spot Suppression on Golf Course Putting Greens

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## OBJECTIVE

To determine the efficacy of standard and experimental fungicides for suppressing dollar spot caused by the fungus *Sclerotinia homoeocarpa* on putting green-height creeping bentgrass.

## MATERIALS AND METHODS

The study was conducted at the O. J. Noer Turfgrass Research and Education Facility on a stand of creeping bentgrass (*Agrostis stolonifera* 'Penncross') maintained at 0.125 inches. The individual plots measured 3 feet by 5 feet and were arranged in a randomized complete block design with four replications. Treatments were applied at a nozzle pressure of 40 p.s.i. using a CO<sub>2</sub> pressurized boom sprayer equipped with two XR Teejet 8004 VS nozzles. All fungicides were agitated by hand and applied in the equivalent of 2 gallons of water per 1000 ft<sup>2</sup>. All treatments were initiated on May 30th and subsequent applications were made at either 14 or 21-day intervals. Number of dollar spot foci per plot, turfgrass quality (1-9, 9 being excellent, 6 acceptable, and 1 bare soil), and normalized difference vegetation index (NDVI) were assessed every 2 weeks. Turf quality and disease severity were subjected to an analysis of variance and means were separated using the Waller-Duncan test ( $P = 0.05$ ). Results of the disease intensity and turfgrass quality ratings can be found in table 1 and 2, respectively.

## RESULTS AND DISCUSSION

Dollar spot pressure was high throughout most of 2014, reaching extreme levels near the end of August as non-treated controls averaged nearly 600 foci per plot on the August 27<sup>th</sup> rating date. All treatments reduced dollar spot relative to the non-treated control on the August 27<sup>th</sup> rating date, though most failed to provide acceptable levels of suppression. Treatments that included Velista, Secure, A20866, or A20744 generally provided the greatest dollar spot suppression. Turfgrass quality mirrored disease severity, and only treatments 6 and 8-11 provided acceptable turf quality on the August 27<sup>th</sup> rating date. Phytotoxicity was not observed with any treatment.

**Table 1: Mean number of dollar spots per treatment at putting green height at the OJ Noer Turfgrass Research and Education Facility in Madison, WI during 2014.**

	Treatment	Rate	Application Interval	Dollar Spot Severity <sup>a</sup>		
				Jun 20	Jul 16	Aug 27
1	Non-treated control			16.8a	228.5a	598.5a
2	A20744	0.5 OZ/1000 FT2	14 Day	0.0b	12.8cde	41.3gh
3	A20744	0.5 OZ/1000 FT2	14 Day	0.0b	11.3de	66.3fgh
4	A20744	0.5 OZ/1000 FT2	14 Day	0.0b	20.0b-e	32.3gh
5	A15457	0.236 FL OZ/1000 FT2	14 Day	0.0b	40.3b-e	246.5b-f
6	A20866	0.21 FL OZ/1000 FT2	14 Day	0.0b	9.3e	9.3h
7	Secure	0.5 FL OZ/1000 FT2	14 Day	0.0b	17.5b-e	90.0e-h
8	A20744 Secure	0.5 OZ/1000 FT2 0.5 FL OZ/1000 FT2	14 Day	0.0b	20.0b-e	0.0h
9	A20744 Secure	0.5 OZ/1000 FT2 0.5 FL OZ/1000 FT2	14 Day	5.5b	11.3de	1.8h
10	A20744 Secure	0.5 OZ/1000 FT2 0.5 FL OZ/1000 FT2	14 Day	0.0b	12.5cde	2.3h
11	A15457 Secure	0.236 FL OZ/1000 FT2 0.5 FL OZ/1000 FT2	14 Day	0.0b	9.3e	2.5h
12	Isofetamid	0.5 FL OZ/1000 FT2	14 Day	4.5b	80.0b-e	253.0b-f
13	Isofetamid	0.6 FL OZ/1000 FT2	21 Day	0.0b	67.8b-e	150.3c-h
14	Isofetamid	0.7 FL OZ/1000 FT2	21 Day	0.0b	68.3b-e	142.5d-h
15	Isofetamid IB10354	0.2 FL OZ/1000 FT2 3.2 FL OZ/1000 FT2	14 Day	0.0b	35.0b-e	232.5b-g
16	Isofetamid IB10354	0.3 FL OZ/1000 FT2 3.2 FL OZ/1000 FT2	14 Day	0.0b	37.8b-e	176.5c-h
17	Isofetamid IB10354	0.4 FL OZ/1000 FT2 3.2 FL OZ/1000 FT2	14 Day	1.5b	36.5b-e	128.5d-h
18	Daconil Ultrex	3.2 OZ/1000 FT2	14 Day	0.0b	56.0b-e	325.5bcd
19	Daconil Ultrex Rhapsody	3.2 OZ/1000 FT2 3.0 FL OZ/1000 FT2	14 Day	0.0b	48.0b-e	260.3b-f
20	Daconil Ultrex Rhapsody	3.2 OZ/1000 FT2 6.0 FL OZ/1000 FT2	14 Day	0.0b	86.5bc	340.5bcd
21	Daconil Ultrex Serenade Optimum	3.2 OZ/1000 FT2 0.3202 OZ/1000 FT2	14 Day	1.0b	69.5b-e	263.3b-f
22	Daconil Ultrex Rhapsody Dynaflo 0-0-30	3.2 OZ/1000 FT2 3.0 FL OZ/1000 FT2 3.0 FL OZ/1000 FT2	14 Day	0.0b	84.5bcd	326.8bcd
23	Daconil Ultrex Rhapsody UW2014001	3.2 OZ/1000 FT2 3.0 FL OZ/1000 FT2 0.098% V/V	14 Day	1.5b	47.3b-e	191.0c-h
24	Daconil Ultrex Rhapsody Dynaflo 0-0-30 UW2014001	3.2 OZ/1000 FT2 3.0 FL OZ/1000 FT2 3.0 FL OZ/1000 FT2 0.098% V/V	14 Day	0.0b	89.3b	319.8bcd
25	Daconil Ultrex Rhapsody Chipco Signature	3.2 OZ/1000 FT2 3.0 FL OZ/1000 FT2 4.0 OZ/1000 FT2	14 Day	0.0b	25.5b-e	253.3b-f

26	Daconil Ultrex	3.2 OZ/1000 FT2	14 Day	0.0b	68.8b-e	362.5bc
	Rhapsody	3.0 FL OZ/1000 FT2				
	Chipco Signature	4.0 OZ/1000 FT2				
	Dynaflo 0-0-30	3.0 FL OZ/1000 FT2				
	UW2014001	0.25% V/V				
27	Velista	0.5 OZ/1000 FT2	14 Day	0.0b	10.0de	64.0fgh
28	Briskway	0.5 FL OZ/1000 FT2	14 Day	0.0b	75.3b-e	429.5b
29	Secure	0.5 FL OZ/1000 FT2	14 Day	0.0b	36.5b-e	91.5e-h
30	QP Fosetyl-Al	4.0 OZ/1000 FT2	14 Day	0.0b	65.0b-e	410.3b
	QP Chlorothalonil DF	3.23 OZ/1000 FT2				
	Foursome	0.4 FL OZ/1000 FT2				
31	Chipco Signature	4.0 OZ/1000 FT2	14 Day	0.0b	52.3b-e	289.5b-e
	Daconil Ultrex	3.23 OZ/1000 FT2				
32	QP Enclave	3.0 FL OZ/1000 FT2	14 Day	0.0b	33.8b-e	299.3b-e
	Foursome	0.4 FL OZ/1000 FT2				

<sup>a</sup>Dollar spot was visually assessed as number of dollar spot infection centers. Means followed by the same letter do not significantly differ (P=.05, Waller Duncan).

**Table 2. Mean turfgrass quality per treatment at putting green height at the O. J. Noer Turfgrass Research and Education Facility in Madison, WI during 2014.**

	Treatment	Rate	Application Interval	Turfgrass Quality <sup>a</sup>		
				Jun 20	Jul 16	Aug 27
1	Non-treated control			6.5b	4.0d	3.0g
2	A20744	0.5 OZ/1000 FT2	14 Day	7.0a	6.0ab	5.5bcd
3	A20744	0.5 OZ/1000 FT2	14 Day	7.0a	6.0ab	5.5bcd
4	A20744	0.5 OZ/1000 FT2	14 Day	7.0a	5.5abc	5.8abc
5	A15457	0.236 FL OZ/1000 FT2	14 Day	7.0a	5.0bcd	4.0d-g
6	A20866	0.21 FL OZ/1000 FT2	14 Day	7.0a	6.3a	6.5ab
7	Secure	0.5 FL OZ/1000 FT2	14 Day	7.0a	5.8abc	5.0cde
8	A20744 Secure	0.5 OZ/1000 FT2 0.5 FL OZ/1000 FT2	14 Day	7.0a	5.8abc	7.0a
9	A20744 Secure	0.5 OZ/1000 FT2 0.5 FL OZ/1000 FT2	14 Day	6.8ab	6.0ab	7.0a
10	A20744 Secure	0.5 OZ/1000 FT2 0.5 FL OZ/1000 FT2	14 Day	7.0a	6.3a	6.8ab
11	A15457 Secure	0.236 FL OZ/1000 FT2 0.5 FL OZ/1000 FT2	14 Day	7.0a	6.0ab	6.8ab
12	Isofetamid	0.5 FL OZ/1000 FT2	14 Day	6.8ab	5.0bcd	4.3d-g
13	Isofetamid	0.6 FL OZ/1000 FT2	21 Day	7.0a	5.0bcd	4.8c-f
14	Isofetamid	0.7 FL OZ/1000 FT2	21 Day	7.0a	5.0bcd	4.8c-f
15	Isofetamid IB10354	0.2 FL OZ/1000 FT2 3.2 FL OZ/1000 FT2	14 Day	7.0a	5.0bcd	4.0d-g
16	Isofetamid IB10354	0.3 FL OZ/1000 FT2 3.2 FL OZ/1000 FT2	14 Day	7.0a	5.0bcd	4.5c-g
17	Isofetamid IB10354	0.4 FL OZ/1000 FT2 3.2 FL OZ/1000 FT2	14 Day	7.0a	5.0bcd	5.0cde
18	Daconil Ultrex	3.2 OZ/1000 FT2	14 Day	7.0a	5.0bcd	3.3fg
19	Daconil Ultrex Rhapsody	3.2 OZ/1000 FT2 3.0 FL OZ/1000 FT2	14 Day	7.0a	5.0bcd	4.0d-g
20	Daconil Ultrex Rhapsody	3.2 OZ/1000 FT2 6.0 FL OZ/1000 FT2	14 Day	7.0a	5.0bcd	3.5efg
21	Daconil Ultrex Serenade Optimum	3.2 OZ/1000 FT2 0.3202 OZ/1000 FT2	14 Day	7.0a	5.0bcd	3.8efg
22	Daconil Ultrex Rhapsody Dynaflo 0-0-30	3.2 OZ/1000 FT2 3.0 FL OZ/1000 FT2 3.0 FL OZ/1000 FT2	14 Day	7.0a	5.0bcd	3.5efg
23	Daconil Ultrex Rhapsody UW2014001	3.2 OZ/1000 FT2 3.0 FL OZ/1000 FT2 0.098% V/V	14 Day	7.0a	5.0bcd	4.3d-g
24	Daconil Ultrex Rhapsody Dynaflo 0-0-30 UW2014001	3.2 OZ/1000 FT2 3.0 FL OZ/1000 FT2 3.0 FL OZ/1000 FT2 0.098% V/V	14 Day	7.0a	5.3bc	3.5efg
25	Daconil Ultrex Rhapsody Chipco Signature	3.2 OZ/1000 FT2 3.0 FL OZ/1000 FT2 4.0 OZ/1000 FT2	14 Day	7.0a	5.3bc	3.8efg

26	Daconil Ultrex	3.2 OZ/1000 FT2	14 Day	7.0a	4.8cd	3.5efg
	Rhapsody	3.0 FL OZ/1000 FT2				
	Chipco Signature	4.0 OZ/1000 FT2				
	Dynaflo 0-0-30	3.0 FL OZ/1000 FT2				
	UW2014001	0.25% V/V				
27	Velista	0.5 OZ/1000 FT2	14 Day	7.0a	6.0ab	5.0cde
28	Briskway	0.5 FL OZ/1000 FT2	14 Day	7.0a	5.0bcd	3.0g
29	Secure	0.5 FL OZ/1000 FT2	14 Day	7.0a	5.5abc	5.0cde
30	QP Fosetyl-Al	4.0 OZ/1000 FT2	14 Day	7.0a	5.0bcd	3.5efg
	QP Chlorothalonil DF	3.23 OZ/1000 FT2				
	Foursome	0.4 FL OZ/1000 FT2				
31	Chipco Signature	4.0 OZ/1000 FT2	14 Day	7.0a	5.0bcd	4.0d-g
	Daconil Ultrex	3.23 OZ/1000 FT2				
32	QP Enclave	3.0 FL OZ/1000 FT2	14 Day	7.0a	5.3bc	3.8efg
	Foursome	0.4 FL OZ/1000 FT2				

<sup>a</sup>Turfgrass quality was rated visually on a 1 – 9 scale with 6 being acceptable. Means followed by the same letter do not significantly differ (P=.05, Waller Duncan).