Seasonal Programs for Disease Control on Putting Greens

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OBJECTIVE

To determine the efficacy of fungicide programs 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 on a mixed stand of creeping bentgrass (*Agrostis stolonifera*) and annual bluegrass (*Poa annua*) maintained at a 0.125 inch cutting height. The mowing height was gradually lowered to 0.100 inches by early July. 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 CO_2 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^2. Five different fungicide treatments and one fungicide program was initiated on May 21st and subsequent applications made every 14 days. Number of dollar spot infection centers per plot, turfgrass quality (1-9, 9 being excellent, 6 acceptable, and 1 bare soil), and normalized difference vegetation index (NDVI) were assessed every two weeks. Results were subjected to an analysis of variance and means were separated using the Waller-Duncan test (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 2014, reaching extreme levels near the end of August as non-treated controls averaged nearly 900 foci per plot on the August 28th rating date. All treatments except for Chipco Signature reduced dollar spot relative to the non-treated control on the August 27th rating date, though the most effective dollar spot suppression was provided by Lexicon and Headway. Chipco Signature is not labeled for dollar spot control, and would not be expected to provide dollar spot suppression without being tank-mixed with another fungicide. Turfgrass quality mirrored disease severity, and only Lexicon provided acceptable turf quality on the August 28th rating date. Despite providing acceptable dollar spot suppression, a minor to moderate degree of phytotoxicity was observed following repeated use of Headway on a 14-day interval, which slightly reduced its turf quality rating.

Table 1. Mean number of dollar spot infection centers per treatment at the O. J. Noer Turfgrass Research and Education Facility in Madison, WI during 2014.

	Treatment	Rate		Application Date/Interval	Dollar spot severity[a]		
					Jun 20	Jul 16	Aug 28
1	Non-treated control				33.8a	434.0a	889.8ab
2	Lexicon	0.34	FL OZ/M	14 Day	2.5a	15.3c	31.0d
3	Lexicon	0.47	FL OZ/M	14 Day	2.8a	4.3c	55.3d
4	Chipco Signature	4.0	OZ/M	14 Day	48.5a	351.5ab	1007.3a
5	Daconil Action	3.5	FL OZ/M	14 Day	60.5a	147.8bc	667.8bc
6	Headway	3.0	FL OZ/M	14 Day	23.5a	7.0c	77.5d
7	Chipco Signature (A) Daconil Ultrex (A) Chipco Signature (B) Interface (B) Chipco Signature (C) Daconil Ultrex (C) Chipco Signature (D) Insignia SC (D) Chipco Signature (E) Daconil Ultrex (E) Chipco Signature (F) Interface (F) Chipco Signature (G) Daconil Ultrex (G) Chipco Signature (H) Insignia SC (H)	4.0 3.2 4.0 4.0 4.0 3.2 4.0 0.7 4.0 3.2 4.0 4.0 4.0 3.2 4.0 0.7	OZ/M OZ/M OZ/M FL OZ/M OZ/M OZ/M OZ/M FL OZ/M OZ/M OZ/M OZ/M FL OZ/M OZ/M OZ/M OZ/M FL OZ/M	May 21 May 21 June 5 June 5 June 17 June 17 July 1 July 1 July 16 July 16 July 31 July 31 Aug 14 Aug 14 Aug 27 Aug 27	3.5a	142.8bc	439.5c

[a]Dollar 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, Waller-Duncan).

Table 2. Mean turfgrass quality ratings at the O. J. Noer Turfgrass Research and Education Facility in Madison, WI during 2014.

	Treatment	Rate		Application Date/Interval	Turfgrass Quality[a]		
					Jun 20	Jul 16	Aug 28
1	Non-treated control				6.3ab	3.8c	3.5d
2	Lexicon	0.34	FL OZ/M	14 Day	7.0a	6.5a	6.3a
3	Lexicon	0.47	FL OZ/M	14 Day	7.0a	7.0a	5.5ab
4	Chipco Signature	4.0	OZ/M	14 Day	5.5b	3.8c	3.3d
5	Daconil Action	3.5	FL OZ/M	14 Day	6.5ab	4.8bc	4.0cd
6	Headway	3.0	FL OZ/M	14 Day	6.5ab	5.0b	5.0bc
7	Chipco Signature (A) Daconil Ultrex (A) Chipco Signature (B) Interface (B) Chipco Signature (C) Daconil Ultrex (C) Chipco Signature (D) Insignia SC (D) Chipco Signature (E) Daconil Ultrex (E) Chipco Signature (F) Interface (F) Chipco Signature (G) Daconil Ultrex (G) Chipco Signature (H) Insignia SC (H)	4.0 3.2 4.0 4.0 4.0 3.2 4.0 0.7 4.0 3.2 4.0 4.0 4.0 3.2 4.0 0.7	OZ/M OZ/M OZ/M FL OZ/M OZ/M OZ/M OZ/M FL OZ/M OZ/M OZ/M OZ/M FL OZ/M OZ/M OZ/M OZ/M FL OZ/M	May 21 May 21 June 5 June 5 June 17 June 17 July 1 July 1 July 16 July 16 July 31 July 31 Aug 14 Aug 14 Aug 27 Aug 27	7.0a	4.8bc	4.3cd

[b]Turfgrass 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, Waller-Duncan).