

Water Volume and Nozzle Impact on Dollar Spot Development



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OBJECTIVE

To determine the impact of water volume and nozzle type on dollar spot caused by the fungus *Sclerotinia homoeocarpa* on 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* 'Alpha') maintained at 0.5 inches. Individual plots measured 3 feet by 10 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 CO₂ pressurized boom sprayer equipped with either two XR Teejet 8004 VS nozzles or two Dual Flat Fan nozzles from Greenleaf Technologies. All fungicides were agitated by hand and applied in the equivalent of either 0.5, 1.0, or 1.5 gallons of water per 1000 ft². All treatments were initiated on June 16th and subsequent applications were made at 21-day intervals. Number of dollar spot foci and turfgrass quality (1-9, 9 being excellent, 6 acceptable, and 1 bare soil) were visually assessed every 2 weeks. Turf quality and disease severity were subjected to an analysis of variance and means separated using the Waller-Duncan test (P = 0.05). Results of 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 1200 foci per plot on the August 27th rating date. All treatments reduced dollar spot relative to the non-treated control on both the July 16th and August 27th rating date, though all failed to provide acceptable levels of dollar spot suppression. In addition, differences between water volumes and nozzle type were not observed, suggesting that both nozzle types provide as effective suppression of dollar spot at 0.5 gallons of water per 1000 ft² as they do at 2.0 gallons of water per 1000 ft² using Banner MAXX. Note that using different fungicides may lead to different results. Turfgrass quality mirrored disease severity, with no treatments providing acceptable turfgrass quality at either the July or August rating dates. Phytotoxicity was not observed with any treatment.

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

	Nozzle Type Application Volume	Fungicide Rate	Application Interval	Dollar Spot Severity ^a		
				Jun 20	Jul 16	Aug 27
1	Non-treated control			7.5a	677.3a	1174.8a
2	Dual Flat Fan 0.5 GAL/1000 FT2	Banner MAXX II 2.0 FL OZ/1000 FT2	21 Day	1.8ab	95.8b	330.0b
3	Dual Flat Fan 1.0 GAL/1000 FT2	Banner MAXX II 2.0 FL OZ/1000 FT2	21 Day	3.8ab	84.8b	314.8b
4	Dual Flat Fan 1.5 GAL/1000 FT2	Banner MAXX II 2.0 FL OZ/1000 FT2	21 Day	0.0b	90.3b	330.3b
5	Air Induction 0.5 GAL/1000 FT2	Banner MAXX II 2.0 FL OZ/1000 FT2	21 Day	2.0ab	92.5b	347.3b
6	Air Induction 1.0 GAL/1000 FT2	Banner MAXX II 2.0 FL OZ/1000 FT2	21 Day	3.3ab	72.8b	332.0b
7	Air Induction 1.5 GAL/1000 FT2	Banner MAXX II 2.0 FL OZ/1000 FT2	21 Day	0.8b	70.8b	311.8b

^aDollar spot severity 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. Turfgrass quality at green height at the OJ Noer Turfgrass Research and Education Facility in Madison, WI during 2014.

	Treatment Application Volume Nozzle Type	Rate	Application Interval	Turfgrass Quality ^a		
				Jun 20	Jul 16	Aug 27
1	Non-treated control			7.0a	3.0b	3.0b
2	Dual Flat Fan 0.5 GAL/1000 FT2	Banner MAXX II 2.0 FL OZ/1000 FT2	21 Day	7.0a	4.5a	5.0a
3	Dual Flat Fan 1.0 GAL/1000 FT2	Banner MAXX II 2.0 FL OZ/1000 FT2	21 Day	7.0a	5.0a	5.0a
4	Dual Flat Fan 1.5 GAL/1000 FT2	Banner MAXX II 2.0 FL OZ/1000 FT2	21 Day	7.0a	4.8a	5.0a
5	Air Induction 0.5 GAL/1000 FT2	Banner MAXX II 2.0 FL OZ/1000 FT2	21 Day	7.0a	4.8a	5.0a
6	Air Induction 1.0 GAL/1000 FT2	Banner MAXX II 2.0 FL OZ/1000 FT2	21 Day	7.0a	4.8a	5.0a
7	Air Induction 1.5 GAL/1000 FT2	Banner MAXX II 2.0 FL OZ/1000 FT2	21 Day	7.0a	5.0a	5.0a

^aTurfgrass 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).