Dollar Spot Suppression on Golf Course Putting Greens

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OBJECTIVE

To determine the efficacy of standard and experimental fungicides for controlling dollar spot caused by the fungus *Clarireedia jacksonii* on a creeping bentgrass putting green.

MATERIALS AND METHODS

The study was conducted at the O. J. Noer Turfgrass Research and Education Facility on a stand of 'Penncross' creeping bentgrass (*Agrostis stolonifera*) maintained at 0.125 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 psi using a CO_2-pressurized boom sprayer equipped with two Teejet AI8004 VS nozzles. All fungicides were agitated by hand and applied in the equivalent of 1.5 gallons of water per 1000 ft^2. All treatments were initiated on May 29th, 2020 and subsequent applications were made at 7- or 14-day intervals. Number of dollar spot foci per plot 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 Fisher's LSD (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 moderate throughout the summer, and the highest pressure was recorded during the Aug 19 rating date with over 47 dollar spot foci per plot in the non-treated control. On Aug 19, 10 of the 24 fungicide treatments provided 100% disease control and an additional 13 treatments provided statistically similar control to the best performing treatments. This means that a full 23 of 24 fungicide treatments provided excellent dollar spot control under moderate disease pressure. Turf quality mostly mirrored disease severity and 17 of 24 fungicide treatments provided acceptable turf quality (>6) on the Aug 19 rating date. Phytotoxicity was observed with all four of the potassium hydroxide treatments, especially at higher rates, though this phytotoxicity typicaly recovered within 3 to 4 days of the application.

Table 1. Mean number of dollar spots per treatment at greens height at the OJ Noer Turfgrass Research Facility in Madison, WI during 2020.

	Treatment	Rate	Application Interval	Application Code[b]	Dollar Spot Severity[a]		
					Jul 8	Jul 22	Aug 19
1	Non-treated control				22.0 a	34.8 ab	47.5 a
2	Lexicon	0.47 FL OZ/1000 FT2	14 day	BDFHJLN	0.0 d	0.0 d	0.0 b
3	Ascernity	1.0 FL OZ/1000 FT2	14 day	BDFHJLN	2.5 bcd	0.3 d	0.0 b
4	Briskway	0.5 FL OZ/1000 FT2	14 day	BDFHJLN	5.8 bcd	9.3 cd	6.0 b
5	Posterity XT	2.25 FL OZ/1000 FT2	14 day	BDFHJLN	0.0 d	0.0 d	0.0 b
6	Secure Action Daconil Action	0.5 FL OZ/1000 FT2 3.5 FL OZ/1000 FT2	14 day	BDFHJLN BDFHJLN	0.5 cd	2.3 d	0.0 b
7	Posterity Forte	0.42 FL OZ/1000 FT2	14 day	BDFHJLN	0.0 d	0.0 d	0.3 b
8	Posterity XT	1.5 FL OZ/1000 FT2	14 day	BDFHJLN	0.0 d	0.0 d	0.5 b
9	Secure Action Daconil Action	0.5 FL OZ/1000 FT2 2.0 FL OZ/1000 FT2	14 day	BDFHJLN	2.5 bcd	3.8 d	0.0 b
10	A22835A	1.44 FL OZ/1000 FT2	14 day	BDFHJLN	3.5 bcd	15.3 cd	4.5 b
11	A22835A	2.87 FL OZ/1000 FT2	14 day	BDFHJLN	0.5 cd	0.3 d	0.0 b
12	Briskway	0.9 FL OZ/1000 FT2	14 day	BDFHJLN	0.5 cd	1.8 d	0.5 b
13	Briskway	1.2 FL OZ/1000 FT2	14 day	BDFHJLN	0.0 d	0.5 d	0.0 b
14	A20744D	0.5 OZ/1000 FT2	14 day	BDFHJLN	0.0 d	1.3 d	0.5 b
15	Traction	1.3 FL OZ/1000 FT2	14 day	BDFHJLN	0.0 d	0.0 d	0.0 b
16	Traction Ammonium Sulfate	1.3 FL OZ/1000 FT2 2 OZ/1000 FT2	14 day	BDFHJLN BDFHJLN	0.0 d	0.0 d	0.0 b
17	NUP-19022	0.159 FL OZ/1000 FT2	14 day	BDFHJLN	0.0 d	0.3 d	0.3 b
18	NUP-19022 Spectro 90	0.159 FL OZ/1000 FT2 3 OZ/1000 FT2	14 day	BDFHJLN BDFHJLN	0.0 d	1.0 d	0.0 b
22	Potassium Hydroxide	0.2 LB K2O/1000 FT2	7 day	BCDEFGHIJK LMN	20.8 a	37.5 a	43.0 a
23	Potassium Hydroxide	0.4 LB K2O/1000 FT2	7 day	BCDEFGHIJK LMN	5.8 bcd	12.3 cd	5.8 b
24	Potassium Hydroxide	0.6 LB K2O/1000 FT2	7 day	BCDEFGHIJK LMN	3.0 bcd	1.3 d	5.5 b
25	Potassium Hydroxide	0.8 LB K2O/1000 FT2	7 day	BCDEFGHIJK LMN	12.0 abc	11.0 cd	8.5 b
				LSD P=.05	11.56	18.55	20.13

[a]Dollar spot rated as number of dollar spot infection centers. Means followed by the same letter do not significantly differ (P=.05, Fisher's LSD).

[b]Application Code B = May 29, C = Jun 3, D = Jun 10, E = Jun 17, F = Jun 24, G = Jun 30, H = Jul 8, I = Jul 14 J=Jul 22, K = Jul 29, L = Jul 31, N = Aug 14.

Table 2. Mean turfgrass quality per treatment at greens height at the OJ Noer Turfgrass Research Facility in Madison, WI during 2020.

	Treatment	Rate	Application Interval	Application Code[b]	Turfgrass Quality[a]		
					Jul 8	Jul 22	Aug 19
1	Non-treated control				5.3 e	4.8 g	5.0 c
2	Lexicon	0.47 FL OZ/1000 FT2	14 day	BDFHJLN	7.0 a	7.0 a	7.0 a
3	Ascernity	0.5 FL OZ/1000 FT2	14 day	BDFHJLN	7.0 a	6.8 ab	6.8 a
4	Briskway	1.0 FL OZ/1000 FT2	14 day	BDFHJLN	6.5 abc	5.8 cde	5.8 b
5	Posterity XT	2.25 FL OZ/1000 FT2	14 day	BDFHJLN	7.0 a	7.0 a	7.0 a
6	Secure Action Daconil Action	0.5 FL OZ/1000 FT2 3.5 FL OZ/1000 FT2	14 day	BDFHJLN BDFHJLN	6.8 ab	6.3 bc	7.0 a
7	Posterity Forte	0.42 FL OZ/1000 FT2	14 day	BDFHJLN	7.0 a	7.0 a	7.0 a
8	Posterity XT	1.5 FL OZ/1000 FT2	14 day	BDFHJLN	7.0 a	7.0 a	7.0 a
9	Secure Action Daconil Action	0.5 FL OZ/1000 FT2 2.0 FL OZ/1000 FT2	14 day	BDFHJLN	6.3 a-d	6.0 cd	7.0 a
10	A22835A	1.44 FL OZ/1000 FT2	14 day	BDFHJLN	6.0 b-e	5.3 efg	6.0 b
11	A22835A	2.87 FL OZ/1000 FT2	14 day	BDFHJLN	6.8 ab	6.8 ab	7.0 a
12	Briskway	0.9 FL OZ/1000 FT2	14 day	BDFHJLN	7.0 a	6.0 cd	7.0 a
13	Briskway	1.2 FL OZ/1000 FT2	14 day	BDFHJLN	7.0 a	7.0 a	7.0 a
14	A20744D	0.5 OZ/1000 FT2	14 day	BDFHJLN	7.0 a	6.3 bc	7.0 a
15	Traction	1.3 FL OZ/1000 FT2	14 day	BDFHJLN	7.0 a	7.0 a	7.0 a
16	Traction Ammonium Sulfate	1.3 FL OZ/1000 FT2 2 OZ/1000 FT2	14 day	BDFHJLN BDFHJLN	7.0 a	7.0 a	7.0 a
17	NUP-19022	0.159 FL OZ/1000 FT2	14 day	BDFHJLN	7.0 a	7.0 a	7.0 a
18	NUP-19022 Spectro 90	0.159 FL OZ/1000 FT2 3 OZ/1000 FT2	14 day	BDFHJLN BDFHJLN	7.0 a	6.8 ab	7.0 a
22	Potassium Hydroxide	0.2 LB K2O/1000 FT2	7 day	BCDEFGHIJK LMN	5.3 e	5.0 fg	5.0 c
23	Potassium Hydroxide	0.4 LB K2O/1000 FT2	7 day	BCDEFGHIJK LMN	6.0 b-e	5.5 def	5.5 bc
24	Potassium Hydroxide	0.6 LB K2O/1000 FT2	7 day	BCDEFGHIJK LMN	6.0 b-e	6.0 cd	6.0 b
25	Potassium Hydroxide	0.8 LB K2O/1000 FT2	7 day	BCDEFGHIJK LMN	5.5 de	5.8 cde	5.8 b
				LSD P=.05	0.82	0.74	0.64

[a]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, Fisher's LSD).

[b]Application Code B = May 29, C = Jun 3, D = Jun 10, E = Jun 17, F = Jun 24, G = Jun 30, H = Jul 8, I = Jul 14 J=Jul 22, K = Jul 29, L = Jul 31, N = Aug 14.