



Dollar Spot Suppression on Golf Course Fairways using Biological Fungicides

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Objective

To determine the efficacy of biological and alternative fungicides for controlling dollar spot caused by the fungus *Clarireedia jacksonii* on a creeping bentgrass fairway.

Materials and Methods

The study was conducted at the O. J. Noer Turfgrass Research and Education Facility on a mixed stand of 'Penncross' creeping bentgrass (*Agrostis stolonifera*) and annual bluegrass (*Poa annua*) 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 psi using a CO₂-pressurized sprayer equipped with one Teejet AI9508EVS nozzle. All fungicides were agitated by hand and applied in various water carrier volumes depending on the treatment. All treatments were initiated on June 2, 2026, and subsequent applications were made at 7-, 14-, or 28-day intervals. Number of dollar spot foci per plot, percent dollar spot infection, 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 (dollar spot counts and % infection) were subjected to an analysis of variance and means separated using Fisher's LSD ($P = 0.05$). Results of disease severity (dollar spot counts and % infection) and turfgrass quality ratings can be found in tables 1, 2, and 3, respectively. Area under the disease progress curve (AUDPC) and area under the turf quality curve (AUTQC) were calculated using the trapezoidal method and summarize the whole season disease severity and turf quality and are included in tables 1, 2, and 3, respectively.

Results and Discussion

Dollar spot pressure was very high starting in late July with nontreated controls averaging over 189 dollar spot infection centers per plot on the peak disease date of Aug 12. Most treatments did not reduce disease severity on any rating date. Treatments 3 and 7 were the only treatments to significantly reduce dollar spot severity, but neither provided acceptable levels of control during heavy periods of disease pressure. Turf quality mirrored disease severity and was generally unacceptable for most of the trial period. Mild phytotoxicity was observed with treatment 3 but no other treatments.

Table 1: Mean number of dollar spots per treatment at fairway height at the OJ Noer Turfgrass Research Facility in Madison, WI during 2026.

Ref #	Treatment	Rate	Water Carrier Volume	Application Interval	Application Code	Dollar Spot Severity Aug 12 th	Dollar Spot Severity Aug 26 th	Dollar Spot Severity AUDPC
1	Non-treated control	NA	NA	NA	NA	189.8ab	145.5a	4004.38ab
2	Sigma Bio Sigma Molasses Sigma Microalgae Sigma Biochar Sigma Seaweed	0.73 fl oz/1000 ft ² 0.73 fl oz/1000 ft ² 1.47 fl oz/1000 ft ² 1.47 fl oz/1000 ft ² 2.94 fl oz/1000 ft ²	65 gal/A	14d	DFHJLN	240.5a	133.3a	4882.88a
3	K bicarbonate Par	1.7 lb/1000 ft ² 0.37 fl oz/1000 ft ²	65 gal/A	14d	DFHJLN	49.0c	142.3a	1705.13c
4	Lalstop G46 Lalstop Osmo	0.131 oz/1000 ft ² 0.524 oz/1000 ft ²	86 gal/A	14d	DFHJLN	196.8a	162.8a	4361.50a
5	Lalstop K61	0.131 oz/1000 ft ²	53 gal/A	28d	DHL	245.3a	158.8a	5228.25a
6	Tmix Plus	0.98 oz/1000 ft ²	86 gal/A	14d	DFHJLN	206.5a	133.5a	4467.50a
7	Romeo Anti Dew Plus	0.246 oz/1000 ft ² 3.77 fl oz/1000 ft ²	86 gal/A 43 gal/A	14d	DFHJLN	108.8bc	120.0a	2500.13bc
8	Rigel G	0.314 fl oz/1000 ft ²	43 gal/A	14d	DFHJLN	185.0ab	186.8a	4176.88ab
9	Sirius	0.314 fl oz/1000 ft ²	43 gal/A	14d	DFHJLN	249.0a	203.3a	5246.13a
10	Oxyturf Champion Gladiator	6.3 fl oz/1000 ft ² 6.3 fl oz/1000 ft ² 0.314 fl oz/1000 ft ²	86 gal/A	7d	DEFGHIJKL MNO	229.8a	170.8a	5044.50a
11	Oxyturf Champion Gladiator	9.4 fl oz/1000 ft ² 6.3 fl oz/1000 ft ² 0.314 fl oz/1000 ft ²	86 gal/A	7d	DEFGHIJKL MNO	226.5a	127.5a	4653.00a
12	Oxyturf Champion Gladiator	12.6 fl oz/1000 ft ² 6.3 fl oz/1000 ft ² 0.314 fl oz/1000 ft ²	86 gal/A	7d	DEFGHIJKL MNO	208.5a	163.8a	4568.63a
13	Trident Tetra	0.63 fl oz/1000 ft ²	43 gal/A	14d	DFHJLN	240.0a	179.8a	5097.88a
NA	NA	NA	NA	NA	LSD P=.05	83.91	62.04	1692.91

Table Notes by Column Name

- **Dollar Spot Severity** - was rated as number of dollar spot infection centers per plot. Means followed by the same letter do not significantly differ (P=.05, Fisher's LSD).
- **Application Code:** D = June 2nd, E = June 9th, F = June 16th, G = June 23rd, H = June 29th, I = July 7th, J = July 14th, K = July 22nd, L = July 29th, M = August 6th, N = August 10th, O = August 18th
- **AUDPC** - Area under the disease progress curve was calculated using the trapezoidal method.

Table 2: Mean dollar spot percentage per treatment at fairway height at the OJ Noer Turfgrass Research Facility in Madison, WI during 2026.

Ref #	Treatment	Rate	Water Carrier Volume	Application Interval	Application Code	Dollar Spot Percent Aug 12 th	Dollar Spot Percent Aug 26 th	Dollar Spot Percent AUDPC
1	Non-treated control	-	-	-	-	14.0ab	26.0a	403.38ab
2	Sigma Bio Sigma Molasses Sigma Microalgae Sigma Biochar Sigma Seaweed	0.73 fl oz/1000 ft ² 0.73 fl oz/1000 ft ² 1.47 fl oz/1000 ft ² 1.47 fl oz/1000 ft ² 2.94 fl oz/1000 ft ²	65 gal/A	14d	DFHJLN	16.0ab	28.0a	457.63ab
3	K bicarbonate Par	1.7 lb/1000 ft ² 0.37 fl oz/1000 ft ²	65 gal/A	14d	DFHJLN	1.5c	7.0b	72.63c
4	Lalstop G46 Lalstop Osmo	0.131 oz/1000 ft ² 0.524 oz/1000 ft ²	86 gal/A	14d	DFHJLN	16.0ab	23.0a	419.13ab
5	Lalstop K61	0.131 oz/1000 ft ²	53 gal/A	28d	DHL	18.0a	26.0a	478.63a
6	Tmix Plus	0.98 oz/1000 ft ²	86 gal/A	14d	DFHJLN	17.0a	28.0a	472.50a
7	Romeo Anti Dew Plus	0.246 oz/1000 ft ² 3.77 fl oz/1000 ft ²	86 gal/A 43 gal/A	14d	DFHJLN	8.8bc	23.0a	308.88b
8	Rigel G	0.314 fl oz/1000 ft ²	43 gal/A	14d	DFHJLN	17.0a	22.5a	426.13ab
9	Sirius	0.314 fl oz/1000 ft ²	43 gal/A	14d	DFHJLN	17.0a	27.0a	458.50ab
10	Oxyturf Champion Gladiator	6.3 fl oz/1000 ft ² 6.3 fl oz/1000 ft ² 0.314 fl oz/1000 ft ²	86 gal/A	7d	DEFGHIJKL MNO	19.0a	24.0a	469.88a
11	Oxyturf Champion Gladiator	9.4 fl oz/1000 ft ² 6.3 fl oz/1000 ft ² 0.314 fl oz/1000 ft ²	86 gal/A	7d	DEFGHIJKL MNO	15.5ab	23.0a	415.65ab
12	Oxyturf Champion Gladiator	12.6 fl oz/1000 ft ² 6.3 fl oz/1000 ft ² 0.314 fl oz/1000 ft ²	86 gal/A	7d	DEFGHIJKL MNO	14.5ab	22.5a	390.28ab
13	Trident Tetra	0.63 fl oz/1000 ft ²	43 gal/A	14d	DFHJLN	22.0a	28.0a	543.38a
NA	NA	NA	NA	NA	LSD P=.05	8.1	8.7	156.27

Table Notes by Column Name

- **Dollar Spot Percent** - was rated as percentage of plot area affected. Means followed by the same letter do not significantly differ (P=.05, Fisher's LSD).
- **Application Code:** D = June 2nd, E = June 9th, F = June 16th, G = June 23rd, H = June 29th, I = July 7th, J = July 14th, K = July 22nd, L = July 29th, M = August 6th, N = August 10th, O = August 18th
- **AUDPC** - Area under the disease progress curve was calculated using the trapezoidal method.

Table 3: Mean turfgrass quality per treatment at fairway height at the OJ Noer Turfgrass Research Facility in Madison, WI during 2026.

Ref #	Treatment	Rate	Water Carrier Volume	Application Interval	Application Code	Turfgrass Quality Aug 12 th	Turfgrass Quality Aug 26 th	Turfgrass Quality AUTQC
1	Non-treated control	-	-	-	-	3.5c	3.3b	453.3bc
2	Sigma Bio Sigma Molasses Sigma Microalgae Sigma Biochar Sigma Seaweed	0.73 fl oz/1000 ft ² 0.73 fl oz/1000 ft ² 1.47 fl oz/1000 ft ² 1.47 fl oz/1000 ft ² 2.94 fl oz/1000 ft ²	65 gal/A	14d	DFHJLN	3.5c	3.0b	430.5c
3	K bicarbonate Par	1.7 lb/1000 ft ² 0.37 fl oz/1000 ft ²	65 gal/A	14d	DFHJLN	5.8a	5.0a	542.5a
4	Lalstop G46 Lalstop Osmo	0.131 oz/1000 ft ² 0.524 oz/1000 ft ²	86 gal/A	14d	DFHJLN	3.5c	3.3b	442.8bc
5	Lalstop K61	0.131 oz/1000 ft ²	53 gal/A	28d	DHL	3.5c	3.0b	441.0bc
6	Tmix Plus	0.98 oz/1000 ft ²	86 gal/A	14d	DFHJLN	3.5c	3.0b	448.0bc
7	Romeo Anti Dew Plus	0.246 oz/1000 ft ² 3.77 fl oz/1000 ft ²	86 gal/A 43 gal/A	14d	DFHJLN	4.5b	3.5b	465.5b
8	Rigel G	0.314 fl oz/1000 ft ²	43 gal/A	14d	DFHJLN	3.8bc	3.5b	441.0bc
9	Sirius	0.314 fl oz/1000 ft ²	43 gal/A	14d	DFHJLN	3.5c	3.5b	444.5bc
10	Oxyturf Champion Gladiator	6.3 fl oz/1000 ft ² 6.3 fl oz/1000 ft ² 0.314 fl oz/1000 ft ²	86 gal/A	7d	DEFGHIJKL MNO	3.3c	3.0b	430.5c
11	Oxyturf Champion Gladiator	9.4 fl oz/1000 ft ² 6.3 fl oz/1000 ft ² 0.314 fl oz/1000 ft ²	86 gal/A	7d	DEFGHIJKL MNO	3.5c	3.3b	439.3bc
12	Oxyturf Champion Gladiator	12.6 fl oz/1000 ft ² 6.3 fl oz/1000 ft ² 0.314 fl oz/1000 ft ²	86 gal/A	7d	DEFGHIJKL MNO	3.5c	3.3b	453.3bc
13	Trident Tetra	0.63 fl oz/1000 ft ²	43 gal/A	14d	DFHJLN	3.0c	3.0b	430.5c
NA	NA	NA	NA	NA	LSD P=.05	0.9	0.7	34.16

Table Notes by Column Name

- **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).
- **Application Code:** D = June 2nd, E = June 9th, F = June 16th, G = June 23rd, H = June 29th, I = July 7th, J = July 14th, K = July 22nd, L = July 29th, M = August 6th, N = August 10th, O = August 18th
- **AUTQC** - Area under the turf quality curve was calculated using the trapezoidal method.