# Dollar spot suppression on golf course fairways using aerial application methods

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## OBJECTIVE

To determine the efficacy of aerial application methods for controlling dollar spot caused by the fungus *Clarireedia jacksonii* on a golf course 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 5 feet and were arranged in a randomized complete block design with three replications. Ground-based treatments were applied at a nozzle pressure of 40 psi using a $CO_2$-pressurized sprayer equipped with one Teejet AI9508EVS nozzle and in a water volume of 1.5 gal per M (66 gal per A). Aerial treatments were applied using a drone sprayer at water volumes of either 0.115 or 0.34 gal per M (5 or 15 gal per A, respectively). All treatments were initiated on May 29, 2025, and subsequent applications were made at 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. 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 and 2, respectively.

## RESULTS AND DISCUSSION

Dollar spot pressure was very high throughout the study with nontreated controls averaging over 223 infection centers per plot on July 23. All treatments significantly reduced dollar spot in comparison to the non-treated control and there was no different in dollar spot severity between the ground-based and aerial application treatments. All of the treatments were of acceptable turf quality. No phytotoxicity was observed with any treatment.

**Table 1. Mean number of dollar spots per treatment at fairway height at the OJ Noer Turfgrass Research Facility in Madison, WI during 2025.**

| | Treatment | Rate | Spray Volume | Application Code[b] | Dollar Spot Severity[a] Jul 9th | Dollar Spot Severity Jul 23rd | Dollar Spot Severity Aug 6th | Dollar Spot Severity AUDPC[c] |
|---|---|---|---|---|---|---|---|---|
| 1 | Non-treated control | | | | 80.0a | 223.3a | 97.0a | 5383.0a |
| 2 | Daconil Weatherstik | 5.5 fl oz/1000 $ft^2$ | 5 gal/A | DFHJL | 0.0b | 0.3b | 0.0b | 4.7b |
| 3 | Daconil Weatherstik | 5.5 fl oz/1000 $ft^2$ | 15 gal/A | DFHJL | 10.0b | 0.7b | 1.0b | 156.3b |
| 4 | Banner Maxx | 2.0 fl oz/1000 $ft^2$ | 5 gal/A | DFHJL | 0.0b | 0.0b | 0.3b | 2.3b |
| 5 | Banner Maxx | 2.0 fl oz/1000 $ft^2$ | 15 gal/A | DFHJL | 0.0b | 1.0b | 0.7b | 18.7b |
| 6 | Daconil Weatherstik | 5.5 fl oz/1000 $ft^2$ | 66 gal/A | DFHJL | 7.3b | 12.7b | 12.3b | 375.7b |
| 7 | Banner Maxx | 2.0 fl oz/1000 $ft^2$ | 66 gal/A | DFHJL | 0.3b | 0.7b | 1.7b | 128.3b |
| | | | | LSD P=.05 | 25.7 | 20.2 | 12.6 | 985.0 |

[a]Dollar spot 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).
[b]Application Code: D = May 29th, F = Jun 11th, H = Jun 25th, J = July 10th, L = July 24th
[c]Area under the disease progress curve (AUDPC) was calculated using the trapezoidal method.

**Table 2. Mean turfgrass quality per treatment at fairway height at the OJ Noer Turfgrass Research Facility in Madison, WI during 2025.**

| | Treatment | Rate | Spray Volume | Application Code[b] | Turfgrass Quality[a] Jul 9th | Turfgrass Quality Jul 23rd | Turfgrass Quality Aug 6th | Turfgrass Quality AUTQC[c] |
|---|---|---|---|---|---|---|---|---|
| 1 | Non-treated control | | | | 4.7c | 4.3b | 5.0a | 289.3c |
| 2 | Daconil Weatherstik | 5.5 fl oz/1000 $ft^2$ | 5 gal/A | DFHJL | 7.0a | 7.0a | 7.0a | 391.0a |
| 3 | Daconil Weatherstik | 5.5 fl oz/1000 $ft^2$ | 15 gal/A | DFHJL | 6.0b | 7.0a | 7.0a | 378.0ab |
| 4 | Banner Maxx | 2.0 fl oz/1000 $ft^2$ | 5 gal/A | DFHJL | 7.0a | 7.0a | 7.0a | 392.0a |
| 5 | Banner Maxx | 2.0 fl oz/1000 $ft^2$ | 15 gal/A | DFHJL | 7.0a | 7.0a | 7.0a | 392.0a |
| 6 | Daconil Weatherstik | 5.5 fl oz/1000 $ft^2$ | 66 gal/A | DFHJL | 6.3b | 6.7a | 6.0a | 371.0b |
| 7 | Banner Maxx | 2.0 fl oz/1000 $ft^2$ | 66 gal/A | DFHJL | 7.0a | 7.0a | 7.0a | 392.0a |
| | | | | LSD P=.05 | 0.59 | 0.53 | NA | 18.0 |

[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: D = May 29th, F = Jun 11th, H = Jun 25th, J = July 10th, L = July 24th
[c]Area under the turf quality curve (AUTQC) was calculated using the trapezoidal method.