

Dollar Spot Severity as Influenced by Nozzle Type and Fungicide Mode of Activity

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Objectives:

1. The primary objective of this study is to determine the influence of various nozzle types on dollar spot control when applied in lower water volumes.

Start Date: 2005

Project Duration: two years

Total Funding: \$6,000

Dollar spot (*Sclerotinia homoeocarpa*) is perhaps the most chronic and problematic disease of golf course turf throughout the United States. In recent years, anecdotal observations have indicated a reduction in efficacy and length of control with regards to fungicides commonly used to manage the disease. Possible reasons for this reduction in control include variation in application volumes and timings, differences in application techniques, and potential resistance resulting from continued use of individual fungicides. The purpose of this study was to assess the influence of various nozzle types and fungicide mode of activity on the severity of dollar spot when applied at low water volumes.

Field studies were established on golf course fairways in Connecticut and on research plots at the Plant Science Research and Education Facility in Storrs. Trials were conducted on monostands of creeping bentgrass (*Agrostis stolonifera*) or mixed stands of creeping bentgrass and annual bluegrass (*Poa annua*). All sites were subjected to cultural management practices typical of golf course fairways in southern New England.

Fungicides were applied using one of five nozzle types designed to dis-



Fungicides were applied using one of five nozzle types designed to distribute varying droplet sizes.

tribute varying droplet sizes. Nozzles were selected to produce droplet sizes ranging from extremely coarse to fine. All nozzles were used to apply an acropetal penetrant (propiconazole), a contact (chlorothalonil), and a tank mix of the two fungicides. In 2006, a localized penetrant (iprodione) also was included in the evaluations. All fungicides were applied on a 14-day interval at the low recommended use rate for preventive control of dollar spot. Treatments were applied with a CO₂ pressurized (40 psi) sprayer equipped with a three-nozzle boom and calibrated to deliver 44 gallons of water per acre.

The numbers of dollar spot infection centers and/or percent disease were assessed throughout the study. Data were subjected to analysis of variance and means were separated using the Fisher's protected least significant difference test. In addition to treatment effects, the main effect of each fungicide or nozzle type as well as any interactions among variables were assessed using pre-planned orthogonal contrasts.

Regardless of nozzle type, all fungicides reduced dollar spot, when compared to the untreated control. Nozzle type and droplet size appear to heavily influ-

ence the level and length of fungicidal control. In general, fungicides used to control dollar spot were more efficacious when applied using a nozzle that produced a medium to fine droplet size or those that induce air into the droplet. Nozzles that produce an extremely coarse droplet, which are commonly supplied with new sprayer units, provided highly variable and often times poor control of dollar spot.

While additional research must be conducted to corroborate the results of this study, it is likely that nozzle selection will become an important component of any fungicide spray program for managing dollar spot and potentially many other turf-grass diseases.

Summary Points

- Fungicides used to control dollar spot on golf course fairways commonly are applied in water volumes as low as 1 gallon per 1000 ft².
- Nozzle types were evaluated for their fungicide efficacy when applied at lower water volumes.
- Increased suppression of dollar spot and reductions in spray drift can be achieved through the proper selection of nozzles.



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