Effect of Rain and Mowing on Fungicide Performance for Dollar Spot Control in Fairway Bentgrass

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Objectives:

1. To assess the ability of fungicides to provide effective dollar control when subjected to a 0.25" simulated rainfall one hour following application.
2. To assess the effect of mowing and clipping removal on disease severity when performed within 24 hours of a fungicide application.

Start Date: 2006
Project Duration: one year
Total Funding: $3,000

The effect of untimely rainfall on fungicide performance is unknown. Furthermore, fairways are mowed several times weekly and clippings often are removed. The impact of mowing and clipping removal on fungicide performance within a day of application is unknown.

Chlorothalonil (Daconil Ultrex, contact); boscalid (Emerald, acropetal penetrant); iprodione (Chipco 26 GT, localized penetrant); propiconazole (Banner MAXX, acropetal penetrant) and thiophanate methyl (3336 Plus, acropetal penetrant) target dollar spot and are chemically unrelated to one another. Only clorothalonil is a contact fungicide and therefore would not be expected to provide effective control for as long a period as one of the aforementioned penetrants.

All fungicides were applied initially on June 1, 2006. Four blocks received the equivalent of 0.25" water within one hour of fungicide application. The other four were not irrigated for several days or until there were visual symptoms of wilt. Subplots (5 ft. x 10 ft.) consisted of the five fungicides and an untreated control. For sub-sub plots (5 ft x 5 ft), each block was split in half and one half was mowed and clipping were removed about 24 hours following fungicide applications on June 2 and 28, but not following the application of the penetrants on July 7, 2006. The other half of each plot was mowed 48 hours following the fungicide application and clipping were removed.

Dollar spot was assessed by counting the number of *S. homoeocarpa* infection centers per plot. When infection centers coalesced, plots were visually assessed for percent of plot area blighted using a linear 0 to 100% scale where 0 = no blighting and 100 = entire plot area blighted. A reapplication threshold was established at about 8 to 12 infection centers per plot or 0.5% plot area blighted in an attempt to ensure that none of the plots was severely blighted and unable to recover satisfactorily following retreatment. Brown patch (*Rhizoctonia solani*) was visually assessed on a few dates using a 0 to 100% linear scale where 0 = no blighting and 100 = entire plot area blighted.

The irrigation system was calibrated with cans to ensure that water was uniformly distributed across each 5 ft x 10 ft subplot.

While there was a trend for more dollar spot in plots subjected to rain at this time, the difference was not significant. Hence, these data indicated that both the rain and mowing parameters had no influence on the preventive performance of Daconil when targeting dollar spot. Like Daconil, the performance of the penetrants applied preventively were unaffected by rain or mowing treatments.

For the Daconil curative treatment (i.e., reapplied June 27), plots subjected to rain had more dollar spot versus no rain plots on July 5, but the difference was not significant.

Data collected in 2006 indicated that none of the fungicides evaluated was impacted by the rain or mowing parameters following the initial, preventive application. Daconil-treated plots were first to sustain dollar spot levels in excess of the threshold and were retreated curatively on June 27. Planned comparisons for Daconil data showed that dollar spot was more severe in plots subjected to rain on July 18 and 21 (i.e., 23 to 26 days following retreatment) versus no rain plots.

Although differences between Daconil with and without rain appeared small (0.8 to 1.6% with rain versus 0.1 to 0.2% rain-free), they were agronomically significant since the threshold was 0.5%. It should be noted that 0.5% of plot area affected with dollar spot would be equivalent to 8 or more infection centers per 25 ft^2. Most golf course superintendents would likely spray a fungicide if there were only 1 to 3 infection centers (i.e., 0.1% dollar spot) per 25 ft^2.

Summary Points

- While there was a trend for more dollar spot in plots subjected to rain at this time, the difference was not significant. Hence, these data indicated that both the rain and mowing parameters had no influence the preventive performance of Daconil when targeting dollar spot.
- Like Daconil, the performance of the penetrants applied preventively were unaffected by rain or mowing parameters for dollar spot control.
- The influence of rain on the curative application of the penetrants was inconclusive since dollar spot had subsided within two weeks of the application. Mowing and the removal of clippings had no apparent impact on fungicide performance.
- Brown patch data were inconclusive.