

Research You Can Use

Dew the Right Thing

Superintendents often remove dew from fairway turf during the early morning as a courtesy to golfers, but are there more benefits to this practice than golfer satisfaction?

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For years, superintendents have dragged ropes, hoses, chains, and nets across fairway turf to remove the heavy dew that annoys early morning golfers. Dragging is employed on mornings when fairways are not mowed, usually every other day. Experienced superintendents have noticed that the last fairways to be mowed or dragged are the fairways that tend to develop the most severe dollar spot problems. Is there an explanation for this relationship between dew removal and dollar spot?

Dollar spot, caused by the fungus *Sclerotinia homoeocarpa*, is the most common disease observed at golf courses that maintain cool-season turf species. The fungus infects turf at temperatures from 59°F to 86°F and is capable of causing damage throughout most of the golf season. As a result, multiple fungicide applications are needed to maintain an acceptable level of turf quality during periods of intense disease activity. An important cultural method of limiting dollar spot is to reduce the time that leaf tissue remains wet, often referred to as leaf wetness duration.^{1,2,3}

EXPERIMENTAL DESIGN

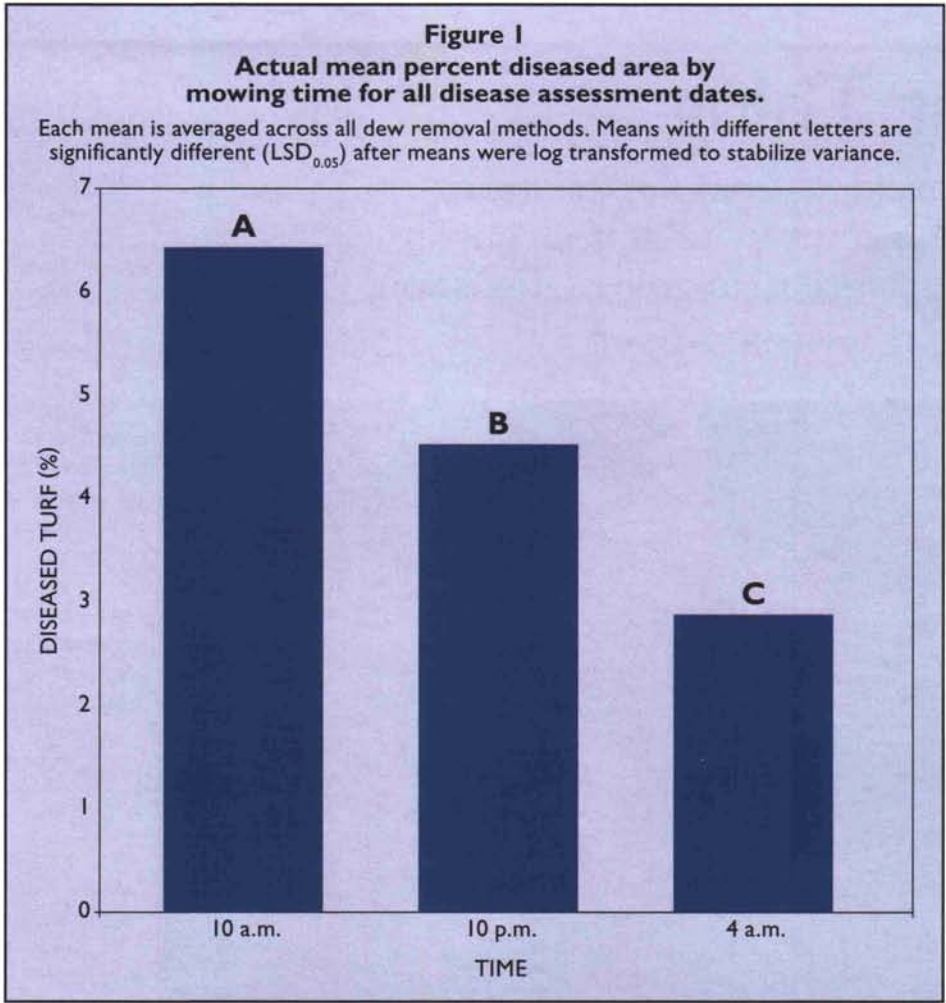
The objectives of the field study were to determine the effects of different mowing times (4 a.m., 10 a.m., or 10 p.m.) on leaf wetness duration (dollar spot incidence) of creeping bentgrass/annual bluegrass turf, determine the effect of daily mowing versus mowing every other day, the effects of dragging versus mowing, and the effects of using a sharp versus dull mower (Table 1).



Dollar spot is the most common disease seen on cool-season golf course turf. It requires long periods of leaf wetness to infect leaf tissue.

Table 1
Dollar spot mowing study treatment combinations.
Treatments 7-9 = mowing or squeegee on alternate days for daily dew removal.

Treatment	Mowing Time	Blade Sharpness	Dew Removal Method	Mowing Frequency
1	4 a.m.	Sharp	Mower only	Daily
2	10 a.m.	Sharp	Mower only	Daily
3	10 p.m.	Sharp	Mower only	Daily
4	4 a.m.	Dull	Mower only	Daily
5	10 a.m.	Dull	Mower only	Daily
6	10 p.m.	Dull	Mower only	Daily
7	4 a.m.	Sharp	Mower 3X Dew squeegee 4X	Daily (alternate methods)
8	10 a.m.	Sharp	Mower 3X Dew squeegee 4X	Daily (alternate methods)
9	10 p.m.	Sharp	Mower 3X Dew squeegee 4X	Daily (alternate methods)
10	4 a.m.	Sharp	Mower only	3X/week
11	10 a.m.	Sharp	Mower only	3X/week
12	10 p.m.	Sharp	Mower only	3X/week
13	4 a.m.	Dull	Mower only	3X/week
14	10 a.m.	Dull	Mower only	3X/week
15	10 p.m.	Dull	Mower only	3X/week



RESULTS AND DISCUSSION

Mowing and squeegee treatments conducted at 4 a.m. significantly reduced dollar spot compared to treatments conducted at 10 a.m. and 10 p.m., and 10 p.m. treatments significantly reduced dollar spot compared to treatments at 10 a.m. (Figure 1).

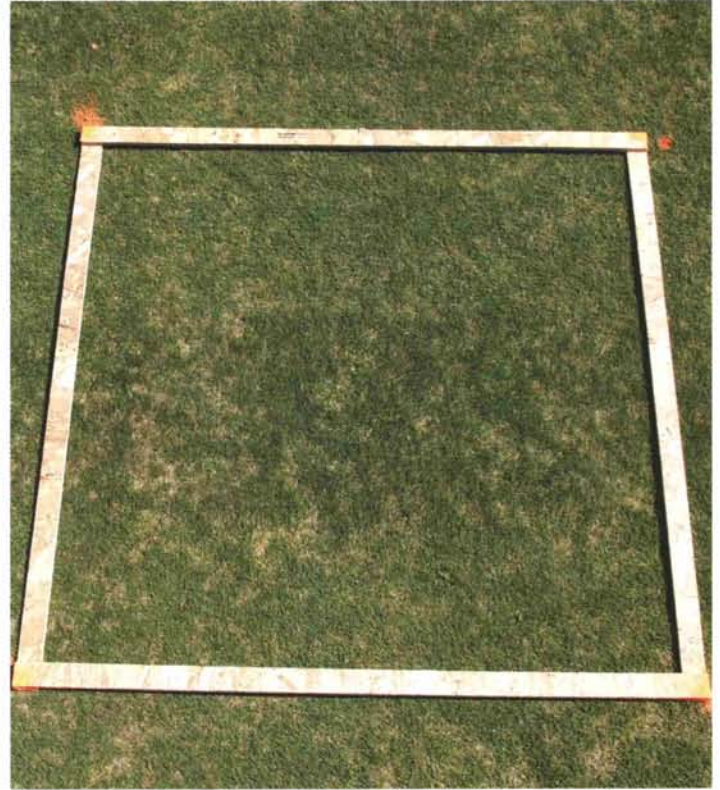
Plots treated at 4 a.m. or 10 p.m. had a shorter duration of continuous leaf wetness, which reduced dollar spot. During these studies, dew typically set around 9 p.m. and lifted at 10 a.m., so removing dew at 4 a.m. typically divided the period of continuous leaf wetness in half. The 10 p.m. treatments reduced the leaf wetness duration only slightly by directly removing early-setting dew on some evenings and delaying dew set on other evenings. The 10 a.m. treatments had little or no effect on leaf wetness duration because dew had already evaporated by the time plots were treated. Daily dew removal resulted in less dollar spot infected turf than when treatments were conducted on alternate days, regardless of dew removal method.



Dragging fairways with hoses, ropes, nets, and chains is an early morning maintenance operation employed to remove dew from fairways on days the turf will not be mowed. Can these cultural practices help reduce disease pressure from pathogens that require long periods of leaf wetness to infect the plants and, in turn, reduce pesticide use?



Turf inoculated with dollar spot fungi developed minimal disease activity when mowed every day at 4 a.m. with a sharp mower. The treatment removed dew before the pathogen had an opportunity to infect the turf.



Turf inoculated with dollar spot fungi developed significant injury despite being mowed every day at 10 a.m. with a sharp mower. Under this treatment the dew remained on the turf long enough to allow infection of leaf tissue.

There was no difference in dollar spot incidence among plots that were mowed with a sharp mower blade and those with a dull one. This result contradicts the popular belief that dull mowers increase dollar spot because a dull mower blade shreds leaf tissue, weakening the plant and leaving more wounded tissue for pathogen invasion. The data also indicate that using a squeegee on alternate days was not as effective as mowing in reducing dollar spot. However, removing dew with a squeegee on alternate days still reduced dollar spot compared to not removing dew on alternate days.

Timing dew removal so that it divides the length of continuous leaf wetness in half and minimizes leaf wetness duration was most effective in reducing dollar spot. For dew removal, mowing was more effective than dragging a squeegee. Daily dew removal substantially reduced dollar spot as compared to dew removal on alternate

days. Although mower blade sharpness impacted turf quality, dull mowers do not appear to increase dollar spot severity.

CONCLUSIONS

In practical terms, mowing and other dew removal methods should be done as early in the morning as possible. Dew should be removed daily by mowing or by other methods like dragging and rolling when mowing is impractical. Areas that are shaded and dry slowly in the morning should be given extra attention.

As environmental stewards, turfgrass managers should strive to reduce pesticide use in managing turfgrass diseases and other pests. Integrated approaches utilizing pesticides as a part of a management plan, supplemented by cultural and biological management methods, will help sustain healthy turfgrass and a healthy environment for future generations.

LITERATURE CITED

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