

## Turf M.D.

■ THE DOCTOR IS IN THE HOUSE

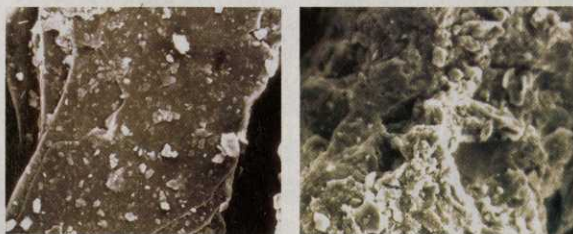
**I**n the midst of summer, a vast majority of golf course superintendents face a chronic problem of localized dry spots (LDS) on their courses' greens and fairways. LDS is caused by a hydrophobic (water repellent) soil condition. The result is a lack of uniform soil moisture across the turf, resulting in isolated dry patches. Although LDS is commonly associated with sandy soils or greens with high sand-content rootzones, it is found across a wide range of soil conditions in agricultural settings.

In the western United States, hydrophobic soil conditions can occur over a large area of a recently burned forest. Intense heat and burning of litter and organic matter results in a waxy substance being produced that can coat soil particles or form a layer at the soil surface. The waxy substance produces a hydrophobic condition. Additionally, some soil fungi can excrete organic substances that can render the surface soil hydrophobic. These waxy and organic substances often are associated with LDS on turf.

Within the turf profile, a hydrophobic area can develop in the thatch layer or in the top inch of the soil profile. Thatch hydrophobicity normally becomes more pronounced when soils reach low moisture levels. Although there appears to be a correlation between depth and the potential for LDS, there are exceptions. The hydrophobic zone is normally in the top 1-inch of soils, but can be as deep as 8 inches (Dekker, 2004).

**Left photograph: An electron micrograph of a wettable (hydrophilic) sand particle.**

**Right photograph: An electron micrograph picture of a non-wettable (hydrophobic) sand particle. Notice the organic coating compared to figure 1.**



# Summer Brings Fun, Sun and LDS

BY KARL DANNEBERGER



LDS IS FOUND  
ACROSS A WIDE  
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LDS turf symptoms are similar to wilt or drought symptoms. Diagnosing whether the cause of the drought symptoms is due to LDS or a lack of water is important in treating the cause. The water drop penetration test is one method for determining the presence and location of hydrophobicity in the rootzone.

By taking a rootzone core and placing water droplets along the profile from the thatch layer through the first few inches, the presence of the hydrophobic layer can be determined. If the water droplet penetrates the rootzone profile in less than five seconds, then the hydrophobic conditions are not present. However, if the water droplet does not penetrate (remains beaded), then a level of water repellency exists that can range from moderate to severe depending on the time needed for penetration.

Maintenance practices, some based on antidotal experience, range from modifying the rootzone to applying various products. Wetting agents are the most common and effective method for treating LDS. Wetting agents reduce the surface tension of water to allow for rootzone/soil penetration. There are several wetting agents/surfactants shown to reduce LDS.

In general, a combination of wetting agents along with good management practices, including coring and proper watering, provide the best results. Because of improvements in wetting agents, LDS is much less severe on turf than it once was. However, LDS is a chronic problem that needs to be managed annually.

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