
CHALKBOARD

TIPS FROM THE PROS

Wetting Agents: First Aid For Localized Dry Spots

Summer has arrived. You are beginning to increase irrigation run times to compensate for the dry heat of the season, ever mindful of your water budget. You have instructed the crew to be on the alert for symptoms of wilt. Overall, the turf looks terrific.

One day the golf professional or coach enters your office and asks, "What are those small patches of off-color turf?" A number of small, irregular patches of limp, dark blue-green turf have begun to die.

Because you've kept a tight rein on water, thatch, diseases, and insects, you are fairly certain you have things under control. You send soil and tissue samples to a lab for a second opinion. The results indicate no problems with fertility, pests, or diseases. Through a process of elimination, you reach the conclusion that the problem is localized dry spots (LDS).

Does this sound familiar? Extension turf specialists from across the country are reporting widespread incidence of LDS, especially on greens and fields constructed of sand. Bentgrass seems to be more prone to the problem than other grasses. However, as the specialists have revealed, the problem is not the turf, it is the soil in which the turf is growing.

Research at the University of Georgia in Athens, Michigan State University in East Lansing, and Ohio State University in Columbus has narrowed the problem in sand rootzones down to organic material that repels water when it becomes dry. This material coats sand particles in localized spots and deprives the turf of soil moisture. To date, they have not identified the source of the material, but they have discovered that repeated applications of wetting agents will correct the situation.

Wetting agents are a type of surface active agent (surfactant) that decreases the surface tension of water. By reducing the forces that hold water molecules together or make them cling to soil particles, more moisture is available for uptake by plant roots.

Dr. Keith Karnock at the University of Georgia has performed the most recent

research on wetting agents. All 15 products he tested improved the water-holding capacity of LDS soils. The main differences he discovered between them were their recommended rates of application and the number of treatments necessary to achieve equal results.

Karnock reports that the soil in all treated plots returned to its previous dry state once applications of wetting agent were discontinued. This indicates that use of the products for less than one year did not provide a permanent cure for LDS.

The standard treatment program for golf greens is to make the first two applications two weeks apart in the spring, once irrigation has begun. Some manufacturers recommend higher rates for initial treatments than for subsequent ones. From that point on, the wetting agent is reapplied once a month. Programs for athletic fields may require lower rates and longer retreatment intervals.

As a general rule, wetting agents need to be watered in immediately after application. Turf managers have found it helpful to apply the products during rainfall or by injecting them into the irrigation system.

Most manufacturers offer both liquid and granular formulations. Granular products are convenient for spot treatment or application by spreaders. Liquid versions can be applied with sprayers or injected into irrigation water. Recently, hose-end adaptors that use dissolving pellets or liquid proportioners have gained popularity, especially for follow-up treatments.

Rates vary considerably between products. In Karnock's study they ranged from two to 64 ounces per 1,000 square feet per application. During the three-month project, the total amount applied ranged from eight to 128 ounces, depending upon the product. These rates provided a statistically equal amount of improvement in the water-holding capacity of the soil. Rates and price per weight or volume need to be determined when figuring the overall cost of a wetting agent program.

Karnock did find a difference in the

speed of water penetration between products. This might be important when using wetting agents on slopes or undulating greens. All products in the trials reduced water penetration time by 50 percent or more.

Danneberger points out that certain management practices can reduce the incidence of LDS. Because soil becomes more water repellent as it gets drier, don't allow problem areas to dry out during irrigation intervals. A method known as "double bumping" can help. This involves moistening the soil first with a short cycle, waiting a few hours, and then applying the bulk of the irrigation.

Mechanical aeration prior to hot, dry weather can improve water infiltration. Heavy thatch layers can also prevent water from reaching the soil. Thatch is found in close association with localized dry spots, but it is not always needed for them to occur, says Danneberger.

He reminds turf managers that wetting agents must be watered into the rootzone to be effective. Do not allow wetting agents to remain on the foliage of turf, especially if applied at high rates. Rinse the material off the plant and into the soil immediately after it is applied.

Once in the soil, wetting agents assist the movement of water into the rootzone for a period of weeks. The uniformity of the turf area is restored and water is utilized with greater efficiency. The temptation to overapply water to an entire area to correct dry spots is gone.

Localized dry spots are a tradeoff. If we want turf to withstand intense use, we need sand rootzones. If we want to discourage annual bluegrass from greens, tees, fairways, and athletic fields, tight control over water is necessary. If we are to satisfy golfers who prefer bentgrass to other turfgrasses, we must accept higher maintenance levels. And if we are to provide the highest-quality turf with the least amount of water, we must explore every possible way to conserve. Wetting agents allow us to do all these things while meeting professional standards of turf care.