



out in

FRONT

A proactive, multipractice approach to treating localized dry spots can make the battle easier

The fundamental problem with localized dry spot is an organic coating that forms from the natural breakdown of organic substances. The coating prevents soil particles from absorbing water. Photo: Aquatrols

BY T.R. MASSEY

Golf courses can be frustrating places to work. Just when one turfgrass problem is contained, another breaks out. And when the weather patterns are like the ones that occurred during the spring and summer of 2007, there can be more problems than normal.

Consider the problem of localized dry spots. It's a condition that appears as an irregular patch of grass that shows drought stress for seemingly no particular reason. Research shows one of the main factors contributing to localized dry spot is hydrophobic soil, or soil that rejects water.

Keith Karnok, a professor of turfgrass science at the University of Georgia, is one of the leading localized dry spot researchers who says the fundamental problem is a coating that forms from the natural breakdown of organic substances. When plant matter, such as roots, peat and other soil amendments, breaks down in normal microbiological processes, they form an organic compound that coats sandy soil particles and prevents them from absorbing water. Some believe the coating consists of fulvic acid.

Karnok's research shows that when decomposing plant matter is extremely dry, fulvic acid forms and coats individual sand grains, making it repel water. This hydrophobicity is more severe at shallower depths, so it occurs in the top 1 to 2 inches of the soil profile. Coarse soil textures and sandy soils are most likely to be water repellent, Karnok says.

"It's a natural phenomenon," he says. "You can't stop it, but you can treat it. In high-sand-content soil, it's common. Nine to 18 months after construction, dry spots begin to appear."

Once localized dry spots appear, superintendents should use a variety of approaches to treat them. Most people use wetting agents, Karnok says. Wetting agents are a chemical compound known as surfactants. The name is borrowed from three words – surface, active, agents – because it works to cause a physical change on the surface of liquids, Karnok says. A surfactant bonds with water and the organic coating on sand particles, allowing the soil to become wet.

MIX IT UP

Jason Regan, golf course superintendent at the Selma (Ala.) County Club, says he's had success battling localized dry spots because of the program he's developed.

"If I wasn't on this program I'd have a problem," Regan says. "I've built the program during my 10 years here. When I arrived here, I was treating it after it happened. Now I'm in front of

Localized dry spots are a constant battle for superintendents, who often use wetting agents to combat the problem.
Photo: Aquatrols



it. It just took a while to learn. I haven't had any problems this year in spite of a drought."

Regan's plan begins with spraying Revolution, a wetting agent, in mid- to late March each year, then applying it all summer long. He applies it on fairways and uses four ounces per 1,000 square feet on the greens once a month. He's also applies another wetting agent, Dispatch, which he injects into the irrigation system, using 48 ounces per acre in the fairways.

"It's been so dry this year, I've had some spots where the irrigation system doesn't cover," he says. "The wetting agent has done a tremendous job. We haven't had any rain at all – the driest year on record – and it's worked out great for me."

Regan also applies another surfactant, Aquaduct, at a high rate then drenches it in with water for 15 minutes.

"We're doing drench applications once a month on the greens," he says.

A CONSTANT PROBLEM

In Columbus, Ohio, Don Sutton, CGCS, at Kinsale Golf and Fitness Club, has more of a problem with localized dry spots on fairways than greens. Kinsale is a 4-year-old private facility designed

by Arthur Hills.

"I use wetting agents on my greens, and it takes care of the problem," he says.

Sutton treats entire greens, not just the areas affected by localized dry spots.

"I treat the fairways as needed and spot spray areas that have been a problem historically, such as some of the knobs on fairways," he says.

In June, when Ohio was in a drought, Sutton made spot treatments often and a complete course application in the third week of the month. Other practices are included, too.

"I do quite a bit of aerification on tees, greens, fairways and roughs," he says. "It's a cultural practice to help eliminate a lot of dry spots. Proper aerification will help it. I core aerify at least once a year, deep-tine greens at least once a year, and a use my AerWay with solid tines for fairways about three times a year. That allows water a channel to get down in the soil."

Though common sense would dictate hand-watering in the worst localized dry spot areas, Sutton says it doesn't work sometimes.

"The soil doesn't accept water," he says. "You have to use a wetting agent or surfactant to get it to accept water."

Localized dry spots are a constant problem in the summer months for Sutton.

"From my experience here, we haven't reduced them," he says. "It almost becomes a thing in which you're going to have a certain number of them, and you're dealing with the same spots every year."

While it takes a good bit of man-power to fight localized dry spots, Sutton says it's not one of his biggest problems.

"It's something you expect to happen, and you go out and deal with it," he says.

LABOR AND WATER

Like many other superintendents, Paul Cushing, director of golf construction and maintenance operations at Vellano Golf Club in Chino Hills, Calif., likes to get out in front of the localized dry spot problem instead of reacting to it.

"Instead of putting a Band-Aid on the problem, which is by hand-watering time and again, I find the source of the irrigation problem," Cushing says. "We just installed the new Toro 835 heads, which I can adjust to customize the spray to fix the dry spot in the area. That's made fighting dry spots a little bit easier."

Cushing prefers to aerify dry spots with three-fourths-inch solid tines, then topdress the area with compost.

"It gets organic matter in the holes, which allows you to hold a little more water," he says.

Once Cushing has aerified the spot, he sets up sprinklers on mounted skids that attach to quick couplers.

"Then I go for a slow, meticulous watering on a dry spot for seven or eight hours and get a lot of water on the ground with a low precipitation head," he says. "I put out about 15 to 20 heads on dry spots in the day. That's the last thing I do, once I have the holes open, after I've aerified. That breaks up the surface tension that's not allowing water into the soil. Once you've broken the surface tension, you can get water into the ground."

Cushing also applies surfactants, which are used regularly by 87 percent of superintendents in America, according to Karnok's research. Cushing sprays fertilizers every couple of weeks and mixes Surfside in with it.

"I use Surfside on the greens," he says. "Anytime I spray anything on the greens, tees and fairways, I have a little of it in the tank. It makes the water wetter. It makes it stick to the plant better and works in the soil better. It's a great wetting agent."

In a dry year like 2007, localized dry spots take more of Cushing's resources.

"It takes people away from their second job and puts them with a hose in their hands," he says. "It's all labor and water, but 10 to 15 percent of your budget goes to fight it."

"We're below normal precipitation – we've had three inches of rain so far, and we're used to 15 of 16, so localized dry spots have become more of an issue than in other years," he adds. "It's a top-five problem for me this year."

A HIGH PRIORITY

At the Denver Country Club, golf course superintendent Doug Brooks doesn't have a drought situation, but he says it doesn't matter when localized dry spots appears, it's a high priority. His program includes various practices, too, such as consistent aerification, the use of wetting agents, hand-watering and the use Surfside in drenches.

"I usually do three or four drenches a year, and every spraying I do, I put it in," he says. "There's some chemistry that I'm not qualified to discuss, but it makes everything a little more efficient."

Brooks uses a relatively small percentage of his overall budget to fight localized dry spots.

"It's all your practices you do regardless, so you have to do it anyway," he says. **GCI**

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Eighty-seven percent of superintendents in the U.S. use surfactants according to research by Keith Karnok, Ph.D.

Ten to 15 percent of superintendent Paul Cushing's budget goes to fight localized dry spots. That money is spent on water and labor.

To help treat localized dry spots, superintendent Jason Regan injects a wetting agent into his irrigation system, using 48 ounces per acre in the fairways.



Aerifying, topdressing and adjusting irrigation heads also can help in the fight against localized dry spots by breaking up surface tension. Photo: Aquatrols