

Soak it UP

Effectively moving water through your soil profile means not only healthier turf, but potentially lower irrigation costs.

By Katie Tuttle

As superintendents find ways to use money more efficiently, and at a time when water conservation is becoming an increasingly important topic, wetting agents have become a much larger part of the discussion.

This interest stems primarily from the 2008 drought, says Dr. Keith Karnok, University of Georgia professor of agronomy.

"[It] really woke people up," Karnok says. "Water restrictions essentially affected everyone, especially golf courses and the rest of the green industry. Water scarcity and conservation is something that has become a concern for all regions of the country. The fact is, short of desalination, we aren't making anymore water, yet population and use continue to grow."

Karnok has spent the last 25 years focusing on using wetting agents on water repellent soils and/or water repellent sand rootzones. This research, Karnok says, has found that wetting agents, when used on water repellent roots zones, reduces the amount water used on sand-based putting greens by 30 to 50 percent.

It's a statistic superintendents dealing with reduced water availability issues may find interesting.

"We have shown conclusively that when rootzones are water repellent, wetting agents can save significant amounts of water," says Karnok. "Therefore, we feel confident that if a golf course is dealing with soil water repellency in greens, tees or fairways, the use of a wetting agent will be beneficial."

Over the past few seasons, superintendent Erin McManus has witnessed warmer temperature and heavy rains at Medina Golf and Country Club in Medina, Minn. The course was built on farmland in 1922 and, although it is relatively flat, several holes have peat bog soil, as well as heavy clay soil.

McManus employs various types of wetting agents depending on whether they want to move water into the profile, hold moisture into the profile, or a combination of both. "By using the wetting agent we are able to hold moisture on the high spots and let the water infiltrate in the lower areas," he says. "[However] what works for my course will not work for all golf courses and that is where we, as superintendents, can experiment with different wetting agents to get the desired result."



A water-repellent core. Inset, the absorption of water in treated (left) versus untreated (right) soil.



Left, localized dry spots (LDS) caused by water repellent soil. Above, an instant visual of what happens to drops of water on treated and untreated soil.

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Because quality water has become such a premium, Mica McMillan, senior research agronomist for Aquatrols, says more pressure is placed on superintendents to conserve this resource – from both an environmental and financial/budgetary standpoint.

“It’s more bang for your buck,” McMillan says. “You not only save water, you save water costs and you also saves costs of anything you apply with your water.”



Left, Superintendent Erin McManus. Right, Dr. Keith Karnok.

Not only do wetting agents save superintendents money by using less water, they also save money by using less fertilizer. Many superintendents inject fertilizers with their wetting agents and it is important to make sure that the fertilizers are absorbed into the soil and do not run off.

Wetting agent use on water-repellent soils helps move inputs such as fertilizers and pesticides more uniformly into the soils, Karnok says. “More effective chemical use results in a healthier turfgrass plant,” he adds.

Research data supports improved efficacy of fungicides or herbicides with wetting agent use, McMillan says. “It helps maximize not only your water but your fertilizer applications as well,” he adds

In the end, it all boils down to money savings. On top of the money saved from less water and more efficient fungicide or herbicide application, there is also the energy saving side of things to consider.


If you’re running your pumps all the time to continuously wet up your soil, your pumps continue to use energy. If you use a wetting agent to keep wetting and rewetting the soil, the pumps do not use as much energy, creating less of a negative environmental impact.

Not 100 percent sold? Consider what’s best for the golfers. “Playability is one of the leading factors in what we as superintendents look for in projects,” McManus says. “A wetting agent can help keep the putting surfaces more firm and fast. This increases playability during rain events and other factors that we cannot control.”

However, not every golf course necessarily needs to use a wetting agent, McMillan says. If you have recently built a new golf course or a new hole, and you have made sure the construction was perfect, there will not be any hydrophobic coatings and therefore it is a good idea to save your money by waiting. It typically takes six months to develop a hydrophobic layer.

McManus also does not believe every course needs a wetting agent. Superintendents should ask themselves what goal they want to reach from using the agent, he says.

“Make sure you use a wetting agent that



How they WORK

Wetting agents work in two ways – they break surface tension and they improve water use efficiency, says Mica McMillan, senior research agronomist for Aquatrols. Wetting agents do this by coating the hydrophobic coatings on the soil particle. This moves the water in and around the soil particle and down into the soil profile. If your soil is having a problem taking in water, a wetting agent may help.

For more information, check out the online presentation by Aquatrols Territory Manager Ken Mauser, who explains the behind water repellency in soils Enter [bit.ly/WzAmRR](#) into your browser, or check out the presentation in the iPad/iPhone edition of this issue.

WATER MANAGEMENT

suits your needs and don't be afraid to run some small trials on your course to find out what works for your individual case," he says.

McManus worked with Winfield to run a wetting agent trial on their greens over a couple seasons. He says the results from those trials will dictate the types of products he uses on the course.

Another situation where no wetting agent is required would be if your course gets a lot of rain or has very wet conditions.

"Look at your soils and ask if you really need a wetting agent," McMillan says. Of course, once the soil does dry down, the hydrophobic coatings will start to reorient themselves and you will have trouble rewetting your soils. Then you will need to use a wetting agent, or a lot of water, to rewet it.

"I don't always recommend that you go out and mindlessly spray a wetting agent," McMillan says. "Look at your conditions. What's the age? What are the environmental conditions? Are your soils water repellent?"

However, Karnok offers a different view-

point. "Some research, including our own, suggests that under certain circumstances the application of a wetting agent to non-water repellent soil could be beneficial in terms of water savings and improved turfgrass health and quality," he says. "We have found this to be the case in some situations, but not all. Therefore, I cannot say with complete certainty that all golf courses should be using a wetting agent."

Despite this, Karnok says a lot of superin-

tendents use wetting agents.

"It should be pointed out that our surveys of golf course superintendents have shown that 94 to 98 percent of all golf courses in the U.S. use wetting agents either regularly or occasionally," he says. "They are without a doubt an important tool for almost all golf course superintendents." **GCI**

Katie Tuttle is an assistant editor at GCI.

Test for water repellent soil

As you know, water repellency ruins distribution uniformity (DU) and therefore reduces irrigation efficiency (IE). However, many turfgrass managers don't know how to test for it.

- After a few dry days, pull a soil core and place small drops of water from the thatch/mat layer downward. Soil must be completely dry to determine water repellency.
- Note time for complete penetration of drop
- Five seconds or more – definite presence of water repellency. Greater than 60 seconds – severe water repellency.
- Any delay in penetration – water resistant.
- Solution: Apply soil surfactants to reduce surface tension and hydrate water-repellent soil particles.

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Bird Phazer Laser for Canada geese



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During a recent USGA Turf Advisory Service visit, a laser was used to show how Canada geese can be removed from the course.

The pocket-sized Bird Phazer Laser emits a powerful bright green light. When the beam hits the feathers of geese, it makes a bright splash of light. Their eyes are very sensitive to uv light, and the bright green laser light is very traumatic for them. A flock of more than 50 Canada geese immediately took flight from more than 200 yards away.

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