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Thanks to new tech, supers are getting a leg up on water management.

> BY BETH GERACI Senior Editor

CONTROL

A NEW AGE IS DAWNING in the world of golf course maintenance, and it's hardly a stretch to say so. Yes, the days of hand watering and gauging moisture manually with soil probes still are alive, but they're not looking so well.

Some turf professionals imagine it's just a matter of time before manual water management becomes a thing of the past. In its place will be the world that is emerging now — an automated wonderland where water is distributed by computers, cell phones and wireless technology.

It's something superintendents just 10 years ago never saw coming. Today, it's happening.

Number one

"Moisture meters are number one in terms of new technology," says Adam Moeller, agronomist with the USGA Green Section Northeast. "It seems that most folks visiting either have them or are going to try to get them soon." Moisture meters, also called moisture sensors, enable superintendents to accurately measure soil moisture anywhere on the course. They are game changers for superintendents, because they reduce the guesswork involved in irrigating.

"In the past, watering was much more subjective," Moeller says. "Moisture meters make it more of an objective process, because you can really quantify how much moisture is in the soil."

Scott McBane, superintendent at Galloway National Golf Club in Galloway, N.J., has used moisture meters on his course for four years. "We first started using them just to see what they were all about," he says. "Now we're using them on greens, tees, fairways, everything."

McBane, who uses the FieldScout TDR 300 meter from Spectrum Technologies, says moisture meters are valuable tools for superintendents because they produce hard data on what the moisture level in the soil actually is. "It has made a big difference," he says. "We can get in and monitor known areas that are dry and see the exact moisture in the soil. Rather than watching things wilt out and going to get it later, we can prevent it. It's really made what we do better."

Dan Hawkins, superintendent at The Club at Flying Horse in Colorado Springs, Colo., was sold on the TDR 300 at the 2012 GIS. "I highly recommend it," he says. "It gives us an idea of how long we can go before giving our greens a drink."

Superintendents still visually inspect the turf for wilt and use soil probes to see how moist the soil is, Moeller says, "but they're generally not pulling the core with a soil probe as often as they used to."

Moisture sensors aren't new. But within the past five years or so the cost of producing them has declined, so they're becoming more popular, Moeller says.

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Tech Immersion

At Merion Golf Club, Rain Bird's IC system and UgMo moisture sensors keep turf healthy and allow crews to focus on things other than water management.



Taking it underground

Unlike Spectrum Technologies' portable meters, wireless moisture sensors, such as UgMo's and Toro's Turf Guard, are installed underground.

Matt Shaffer, superintendent at Merion Golf Club, had 65 UgMo sensors on his course until recently, when he removed them for aerification. He says he'll reinstall them before the 2013 U.S. Open, which Merion is hosting.

Sensors are "playing a huge role" in the way superintendents irrigate today, he says. "We use them on greens, fairways, roughs, tees and bunker faces. It's crazy the difference we've seen on the course as a result.... It's just fantastic technology."

Shaffer began using moisture sensors in 2005, when they were just emerging in the golf world. As intuitive as meters are, though, Shaffer says they've been slow to catch on because superintendents are hesitant to experiment with expensive technology they've never used.

Mike Swing, CGCS at Visalia Country Club in Visalia, Calif., says that's unfortunate, because superintendents willing to try new technology reap the benefits and assist in product development.

"You've got to take a step," asserts Swing, who's worked as a superintendent for 40 years. "You have to be daring enough to try something. It may not work out, but how else are you going to get a product to the market if you don't try it out? (Manufacturers) might come back and develop a better product."

Swing has experimented with everything from seeders to algae control products and solved problems on his course as a result. And since California has mandated that by 2020 courses must reduce their water consumption by 20 percent, this spring Visalia will replace its 23-yearold sprinkler heads and install Toro Turf Guard moisture sensors. Doing so, Swing says, not only will save water, it will make him a better irrigator and give him more control over turf conditions.

"Moisture sensors take the pressure off," he says. "By managing water you have a better plant. Moisture sensors are just another tool in water management."

McBane saw the benefits of his moisture meters this summer during the heart *Continued on page 20*





 JOEL KACHMAREK, SUPERINTENDENT, TACOMA GOLF & COUNTRY CLUB

Tech Immersion

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of the drought. "We're towards the end of the summer right now and I would say we've had our best year ever, in a difficult, difficult July," he says.

"The turf just looks healthy," he continues, "and I think a lot of it is keeping up with things, and a lot of it is our use of the moisture meters. At Galloway, I do think these moisture meters are changing the way we take care of the place."

Pat Gross, Southwest Director of the USGA Green Section, says both portable and in-ground moisture meters are popular in his region, where water conservation is a way of life.

The USGA first began working with Spectrum Technologies' meters for the 2008 U.S. Open at Torrey Pines. "It went fantastic," Gross recalls, "and we learn more about it every year. The biggest impact is on greens for championhe opines about everything from fat flagsticks and healthy turf to bunker rake placement and equipment.

But today, he's sharing his excitement about something else — the Toro Lynx software on his central computer system. The Lynx control system adjusts water output to accommodate exactly how much water Kachmarek wants dispersed on a specific area of his course.

"You can give it a threshold and tell your Lynx, 'OK, when the moisture level hits 20 percent, I want the sprinkler to turn off. So it'll water (your turf) exactly the amount you want to give it. The control is so much better. It's just amazing."

Smart irrigation is critical in his region and to his job, says Kachmarek, whose course has 1,200 sprinkler heads. Kachmarek acquired the Lynx software in February and spent three months inputting all of his course-related informa-



YOU'VE GOT TO TAKE ΥΛΗ ΗΑΛΕ ΤΟ RING ENOUG **TO TRY SOMETHING.** IT MAY NOT WORK OUT, **BUT HOW ELSE ARE** YOU GOING TO GET A **PRODUCT TO THE** MARKET IF YOU DON'T TRY IT OUT?"

- MIKE SWING, CGCS AT VISALIA COUNTRY CLUB, VISALIA, CALIF.

ships, but I've seen more courses use them for daily operations. And I believe it's the best training tool out there, because you get direct feedback — you get a number."

The whole package

Joel Kachmarek, superintendent at Tacoma Country & Golf Club in Lakewood, Wash., is, in his own words, "big into blogging." On his blog, Tacoma Turf,

tion. Although that was laborious, the more data about your course you input into the system, the better Lynx works, Kachmarek says.

"You can say, 'Shady sprinklers, I want you to turn off for two days then come back on, because Joel wants to dry out all the shady areas,'" Kachmarek says. "Or you can say, 'I want the sprinkler to run three minutes when it's on

a slope.' You can attach terms to each sprinkler, such as sunny, sloped, sandy — so the sprinkler is being adjusted by seven or eight variables you're giving it. And you can add a different parameter to the program every day."

Because setting Lynx up takes time and patience, many superintendents will resist it, Kachmarek asserts. "But it's worth it," he emphasizes. "It's the most intuitive software I've ever seen."

In tandem with it, Kachmarek also uses Toro's new Web-based Lynx Mobile, which enables him to manage his irrigation system from anywhere on the course through his iPhone and iPad.

As sophisticated as controlling irrigation systems from smartphones is, Moeller says simply being able to communicate on smartphones at all has changed the way superintendents work.

"Use of smartphones and being able to communicate very quickly with the membership through email and Facebook has been a big benefit to superintendents, because communication is everything," he says. "Things like, 'Hey, we just got a lot of rain and the greens are wet today.' That's benefitted the golf course maintenance industry."

Shaffer and his counterpart up the road at The Philadelphia Cricket Club, Dan Meersman, turn to Rain Bird's integrated control (IC) system for their irrigation needs. It connects central control directly to each sprinkler rotor or valve on the course, enabling superintendents to control each of their sprinkler heads remotely.

Shaffer installed the subterranean IC system in 2009 and estimates it's reduced his water output by 25 percent. Meanwhile, The Philadelphia Cricket Club, a 45-hole, two-campus facility, is in the midst of synchronizing all three of its courses with Rain Bird's IC system.

"There's memory at each sprinkler head," Meersman says, adding that's partly why he chose it. "It's built toward the future. Basically, you're communicating from the computer to the

Washout Weapon

Superintendents nationwide increasingly are beginning to run their irrigation systems remotely through new technologies available on the market. But Dan Meersman, Director of Grounds at The Philadelphia Cricket Club, isn't stopping there.

Four years ago, Meersman developed and patented the Matrix Bunker System. The method of con-

structing and lining golf course bunkers uses a two-and-a-half-inch layer of porous asphalt between the bunker sand and the drainage stone, allowing unlimited drainage while preventing washouts.

"I was at an arboretum and I was looking at their parking lot, talking to their director on how it functioned," Meersman says of how he got the idea. "And I started to work on the material and change the spec until it worked out perfectly for a golf course."

Meersman sought a permanent solution to problems he was having with his bunker liners. "I was tired of bunkers in general," he says. "I wanted to be able to fix it one time and be done with it. I knew this would be a great fix. I can't foresee a time when I will have to change up my liner ever again."

At The Philadelphia Cricket Club, a 45-hole facility, both 18-hole courses have the Matrix Bunker System, while the nine-hole course will have it in place by October 2013. The system's selling well in Australia, and Meersman says he's getting positive feedback from the few U.S. courses using it.

"It's fun to get the comments," he says. "Guys shoot me an email after a two-inch rain and say, 'I can't believe it didn't wash out." -BG

Dan Meersman patented a system he says prevents bunker washouts and flooding.

irrigation head. It eliminates the satellite box as an intermediary communication."

Shaffer, too, says he is impressed by that aspect of it. "And the ease of adding additional sprinklers is just crazy good," he says. "It'll take an adjustment for some people to get used to, but it'll be worthwhile in the long run."

Meersman marvels that he'll be able to operate irrigation on two separate campuses through one central computer and mobile apps.

"We're looking at products as far as what's going to set us up for the next 50 years," Meersman explains. "The club's been around since 1854, and doing this significant amount of work, you're going to be using that technology for the next 15 to 20 years."

Ultimately, say superintendents who use the newest irrigation technology, the investment is worth the risk and worth the money.

"I'm no longer worried," Kachmarek says. "It used to be I knew the property well enough that I could drive around every morning and say, 'OK, something's not working over here.' And the reason I knew that was the turf was dead. And then people were like, 'Why is Joel letting turf die?' And the reason was there was only so much I could do every day."

But with the new technology of today, Kachmarek says, "the end result is just good quality, uniform golf conditions."■



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