

can pack together and be more stable than coarser sand."

Christian agrees, adding that instability has not been an issue with customers he has dealt with. "The finer sand usually doesn't have that problem of instability and shifting because they have a lot more tension with the water," he says. "Where I see that more is when you go to dried sand. If guys use that for a long time, they'll start to have instability problems."

Still, some superintendents are erring on the side of caution when it comes to stability problems by switching to a less uniformly graded sand. Dan Koops of Findlay Country Club in Findlay, Ohio, made the switch earlier this year.

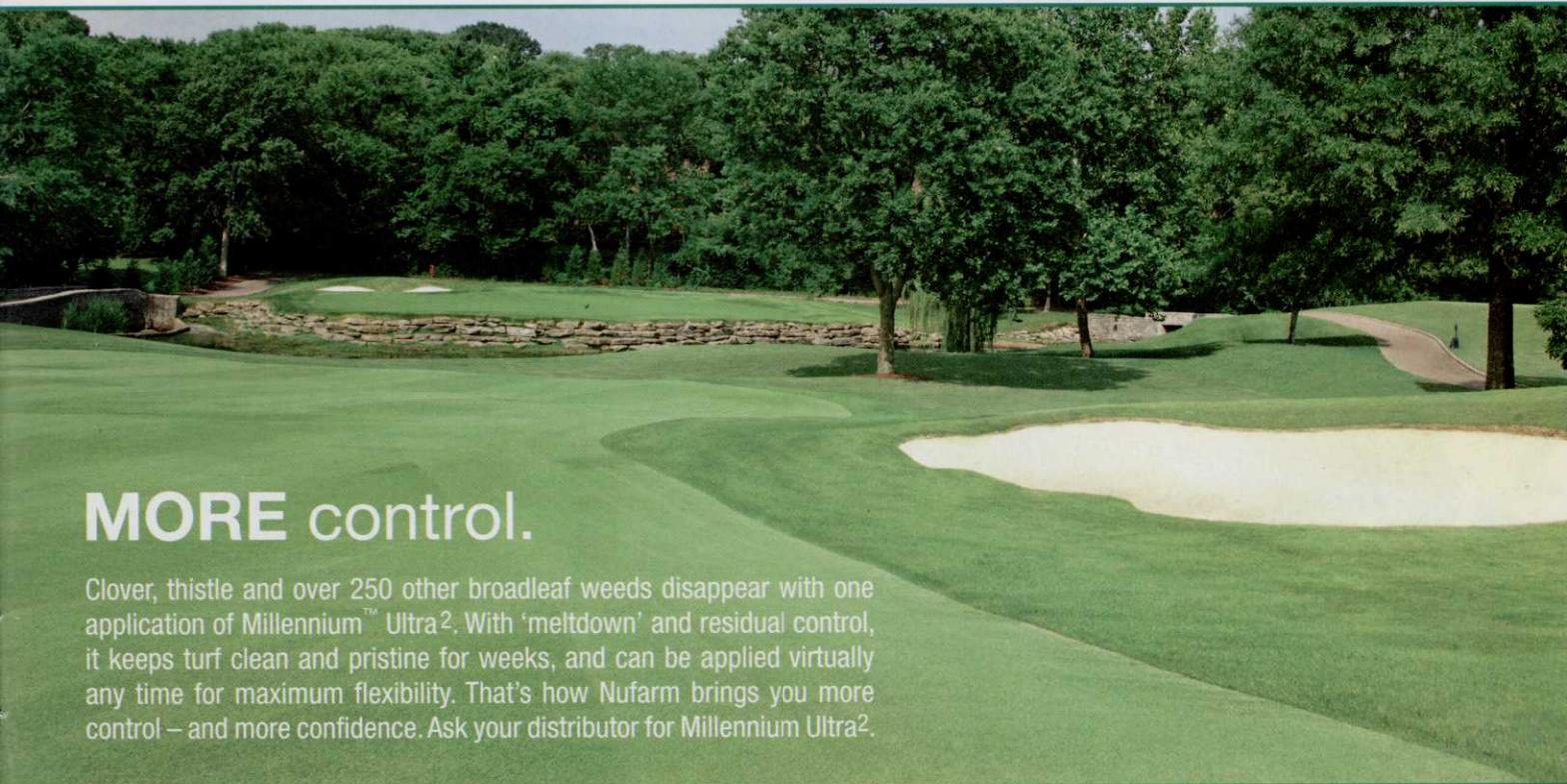
"When I came to Findlay Country Club, I changed sands immediately because, in my mind, the sand they were using was too fine and too uniform," says Koops. "I didn't want instability issues and the possibility of a wetter profile on top over time."

At a previous course Koops worked at, the



Superintendents who can't keep their greens wet can change the sand size, but be aware that choosing too fine a sand can create a whole new set of problems.

DAKOTA PEAT & EQUIPMENT



MORE control.

Clover, thistle and over 250 other broadleaf weeds disappear with one application of Millennium™ Ultra². With 'meltdown' and residual control, it keeps turf clean and pristine for weeks, and can be applied virtually any time for maximum flexibility. That's how Nufarm brings you more control – and more confidence. Ask your distributor for Millennium Ultra².

Millennium[™] ULTRA²

More where it matters most.
www.nufarm.com/usto

©2013 Nufarm. Important: Always read and follow label instructions. Millennium™ is a trademark of Nufarm.



2013

CELEBRATE YOUR IND

Blooma Palooza

AUGUST 1-3, 2013
RAKER TRIAL GARDENS
LITCHFIELD, MICHIGAN

Held at one of the largest trial gardens in North America and in conjunction with the Michigan Garden Tour, **BloomaPalooza 2013** will celebrate the hard work, entrepreneurial spirit and unique style of the independent retailer, grower and supplier.

BROUGHT TO YOU EXCLUSIVELY BY



Hort Couture



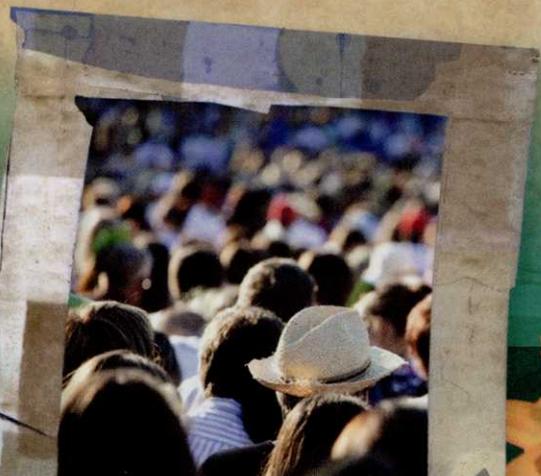
gie
media

GET BACK TO YOUR INDEPENDENT ROOTS AT BLOOMAPALOOZA 2013!
REGISTRATION IS NOW OPEN.

DEPENDENT SPIRIT



Visit www.BloomaPalooza.com
for more details and to take advantage of early bird pricing.



Retailers, growers, lawn care professionals, suppliers and passionate gardeners will find themselves immersed in this never-held-before event.

The BloomaPalooza 3-day experience includes:

- * Music festival format with live bands.
- * Presentations from the most talented minds in the industry intermingled with bands on the main stage.
- * Family oriented fun with special children-oriented activities throughout.
- * Exceptional value including free admission for those 17 and under accompanied by a paying adult.
- * Independent garden center centric trade fair with the top industry vendors arranged in an outdoor, flexible space.
- * Opportunity to view over 3,500 unique plant varieties in multiple forms and settings amidst the famed Raker Trial Gardens.



TURF MAINTENANCE



Some finer sand, despite being uniformly graded, can pack together and be more stable than coarser sand.

Come see us at
Booth #1938

OUR SEEDERS MAKE FOR SOME 'ANGRY BIRDS'



Overseeder 1575/2075



Verti-Seed



Speedseed 1600/2100/2400

Seeds need protection and soil contact to grow. Our 'V' shaped slit allows the seed to be firmly placed against the soil. Unlike other seeders, our finishing roller closes the slot protecting the seed from wind and hungry birds.



Speedseed Walk-Behind

Redexim
NORTH AMERICA, INC.

www.redexim.com ■ 636-326-1009

wrong kind of sand was being used and, as a result, they had a perched water table where the top two to three inches of the soil profile was staying way too wet.

"That can definitely be a problem when guys are using too fine a sand," he says. "It comes down to doing your due diligence and taking tests to see what kind of sand is beneath and making sure your topdressing sand matches it."

Koops said he has never had a problem incorporating sand into the turf canopy. He is aware that superintendents use different sands for topdressing and aerating, but he uses the same sand all the time. His method is to apply the sand, let it dry, brush it in and then mow when it's dry.

Since Koops has switched to a less uniformly graded sand, he has noticed a little bit more staying on top of the greens. But it still hasn't proved to be an issue.

"There definitely are bigger particles that have to get worked in, but again, if you let the sand dry completely, then brush it in, it's not a problem," he says.

To put some science on whether topdressing with fine sand could ultimately be bad news for soil, two research trials were conducted at Rutgers to gauge the effect on turfgrass quality and surface firmness. According to Murphy, in the first trial, coarse-medium sand or medium-fine sand was applied on a Greenwich velvet bentgrass green every two weeks at 50 or 100 pounds per 1,000 square feet. Plots were mowed daily at 0.11 inch with a triplex mower, and irrigated only enough to relieve initial signs of stress. As expected, it took more time for the greens to become clear of sand after topdressing with medium-coarse sand.

"As the particle size of the sand was reduced, less sand was removed by mowing," said Murphy. "The critical issue that must be evaluated is, will the use of a finer topdressing sand applied over coarser-textured soils have any long-term ramifications? Will infiltration be affected negatively, and/or will free drainage within the profile be unaffected?"

A second trial using medium-coarse sand, medium sand and medium-fine sand was conducted on an annual bluegrass green. The plots that were topdressed had as good or better turfgrass quality than the non-topdressed plots. Also, more anthracnose disease was observed on the non-topdressed plots. **GCI**

Jason Stahl is a Cleveland-based freelance writer and frequent GCI contributor.



AN EQUIPMENT MANAGER'S VALUE

The golf course mechanic whom we all used to know and love is quietly fading away. The industry is replacing him with the modern-day equipment technician, or as I favor, the equipment manager. The role these individuals play within the golf course maintenance arena is often under appreciated, as they play an ever increasing role in the overall conditioning and management of the facility.

No single individual can take credit for the performance, presentation and conditioning of the golf course. It takes a team to make it happen. A successful team is made up of individuals who do their job, not because they have to, but because they want to. To say they take pride in their work is an understatement. They do whatever it takes to reach their goals and simply make it happen.

At the end of the day these individuals also recognize the importance of everyone's contributions, not only in their own success but to the overall success of the team and the facility.

The golf course superintendent plays a critical role developing the property into its full potential, but it's the equipment manager who leaves the team's signature on it when the day's work is done. This role factors into whether a member or customer returns to play again or makes it their last call.

Bearing the responsibility for more than \$1 million dollars in rolling stock is no small task. It takes every piece of that equipment that they are responsible for to fulfill the day's assignments. The various disciplines required to manage the modern golf course equipment fleet are quite varied and extremely technical in nature.

The equipment manager is the point man for everything from two-cycle, small engines, diesel, hydraulics, electrical, fuel systems, preventative maintenance schedules and most importantly, cutting units. And that's just the equipment.

Maintaining good preventative maintenance saves a golf course facility hundreds of thousands of dollars in purchases of new equipment, time lost to repairs, lost efficiencies from poor equipment performance and subpar conditioning and presentation on the course.

As the name implies, the equipment manager is much more than a skilled mechanic. They not only

maintain the fleet, but they play a critical role in the concept of Total Shop Management.

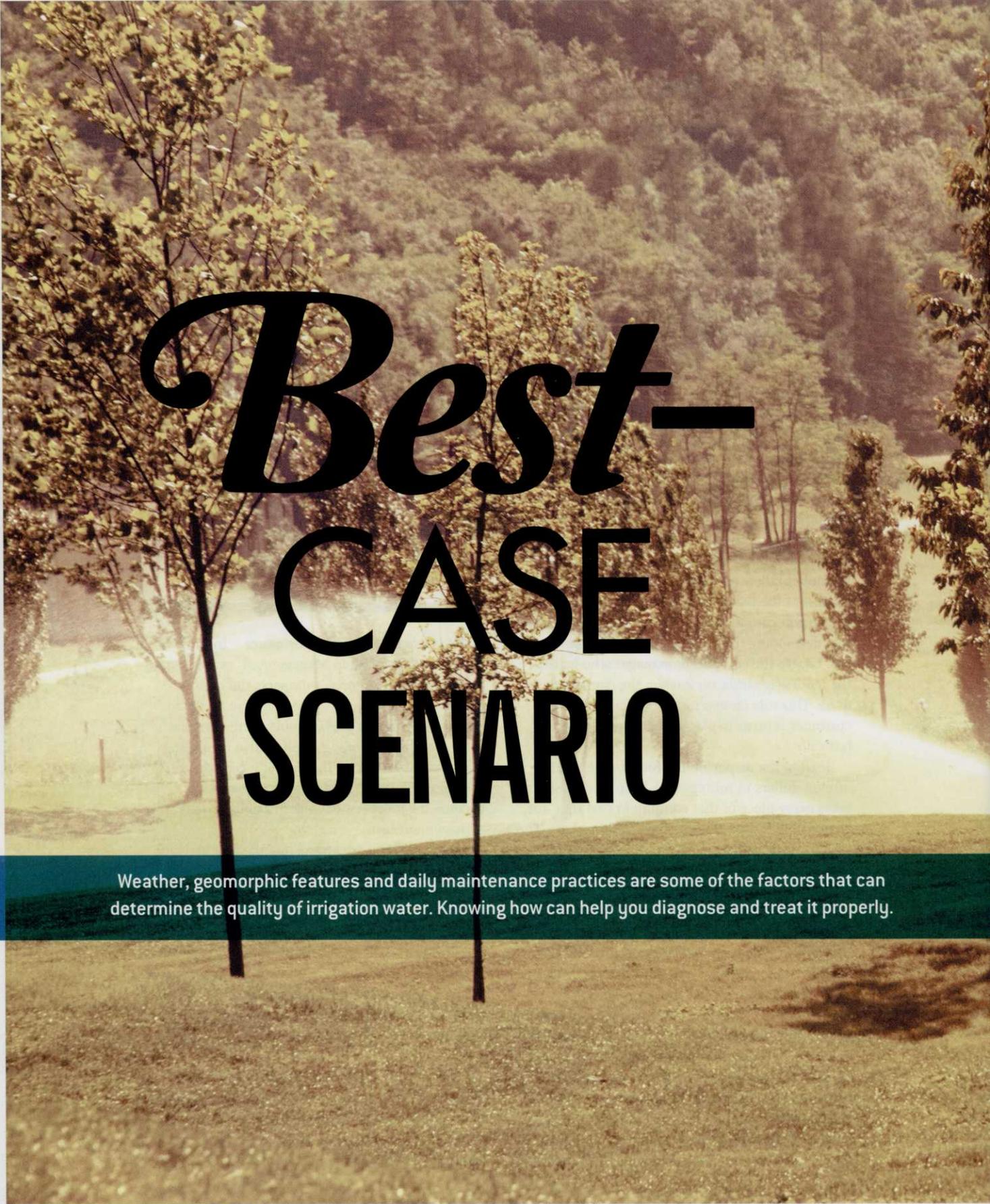
Total Shop Management encompasses everything from spatial development of the equipment warehouse, ordering and managing parts inventories, fuel reserves and managing staff within the shop proper. More times than not they will serve as the lead trainer for new equipment operators.

Maintaining good preventative maintenance can potentially save a facility hundreds of thousands of dollars in purchases of new equipment, time lost to repairs, lost efficiencies from poor equipment performance and subpar conditioning and presentation on the course.

Every aspect of their performance – from the equipment, Total Shop Management, training staff or managing inventories – impacts the bottom line. In the “new normal” that we have all found ourselves operating under, doing more with less is the standard. Running a golf course is running a business. More often than not it is big business. Without a doubt, the equipment manager has become the most critical link in a golf course's management team.

As many of you are aware, qualified technicians are in high demand within the industry. There are more jobs than there are qualified technicians to fill them. Many of the staff members on a golf course's maintenance team have alternates who can fulfill their duties in the event of an absence. This isn't always the case with equipment managers because they are the only individuals who have the full skillset to complete the tasks they are charge with. And with no equipment, no work will get done.

Equipment managers are critical to the operation of any modern golf course. No longer are they “just the mechanic.” Instead, they are the valuable, key members of the team. Equipment managers – we need you and we thank you for all you do. **GCI**



Best- CASE SCENARIO

Weather, geomorphic features and daily maintenance practices are some of the factors that can determine the quality of irrigation water. Knowing how can help you diagnose and treat it properly.

BY JASON STAHL

Whenever the topic of water quality comes up, Dr. Dara Park, a soil and water specialist with the Clemson University School of Agricultural, Forest and Environmental Sciences, likes to relate the story of a superintendent in Boston she worked with. He has tertiary-treated wastewater, which is one step better than secondary-treated wastewater, which can be applied to landscapes. Besides that, he has two wells. But the irony is that his treated wastewater is of better quality than his well water, which has salt and high bicarbonates.

“So he asked me what he should use, and I told him to definitely use his tertiary-treated wastewater over the well water,” says Park.

The moral of this story? It all depends on what you have to work with.

The most common issue with irrigation water that Park sees is salinity. A close second she says is bicarbonates and carbonates, which come from groundwater as the result of the dissolution of rocks and minerals. She sees that problem frequently in South Carolina where she is located, but says it also occurs across the country.

“It’s one of the things you always want to look at,” says Park.

As far as salinity goes, Park says it isn’t an issue that only coastal golf courses have to deal with.

“You can run into [salinity] issues inland, too, especially out west in the arid region,” she says. “The reason is because you have all this evaporation and minerals, and they just end up accumulating in the soil because you don’t have the rainfall to leach them out.”

Demand for potable water is increasing, and thus pressure is being placed on superintendents to look at using non-potable alternatives, such as recycled water. This water presents its own challenges.

“Salts, chloride and particulate matter or organic material can be found in reclaimed water because it only has to meet certain standards,” Park says. “It comes from bleach or sodium hypochlorite or chlorine

KEY POINTS

- ▶ Superintendents can no longer rely on potable water sources for irrigation.
- ▶ There is no single, magic solution to correct poor water quality.
- ▶ Pure water – sans minerals or positively charged ions – can compact soil and prohibit water from reaching roots.
- ▶ Hydrologically connected surface water can transport soil contaminants from areas far outside of your facility.
- ▶ When a drought conditions persists, salt buildings up in the soil and causes problems.



TESTING 1-2-3

As far as testing irrigation water quality, superintendents can initially do it themselves and then, depending on the results, they may want to turn to a land grant university or extension.

"Land grant universities tend to be cheaper in the cost of analysis, but a lot of private labs give discounts if you're going to use them over a certain number of years," says Park.

The most important thing is to take the sample correctly and get it to the lab on time.

The lab will offer detailed instructions on how to take the sample correctly. "Once [the superintendent] takes the initial sample and sees what they have to work with, it may be that they monitor the water themselves or need to keep taking samples and sending them in," Park says.

There are some components of water, such as pH, salinity and electrical conductivity, that can be monitored via a pocket meter. If superintendents suspect there is an issue with

any of these three things, they can monitor it easily themselves.

"What I always tell my superintendents is to monitor for more than a year because weather changes, water quality changes, etc.," Park says. "If you see you're going into a drought or you have a lot of rainfall, monitor right then just to see where you're at. Then once you have at least one year of data, you can determine what you need to do."

gas that most of our wastewater treatment plants use as a disinfectant, so those end up being found in high quantities in the final product. If that isn't managed over time, you can have a lot of organic buildup in soils and have 'black layer' occur."

Geomorphic or land features can have an impact on water quality, too. In South Carolina, as you move closer to the coast, the aquifers are closer to the surface. Between those aquifers are confining units or layers, which are also thinner near the coast. Those thinner layers can cause problems, as Park explains.

"You can have water being transferred from an underlying aquifer to an above aquifer if you draw too much water from the overlying one," she says. "If the below aquifer is saltier and the above aquifer is freshwater, obviously the above aquifer is going to all of a sudden have salts in it. That's not so much the case as you go further inland because usually those confining units are thicker."

Plant materials and soil type also influence water quality. For example, Piedmont, South Carolina has a lot of clay, which is high in iron. Thus, superintendents in that area can potentially have

a lot of iron in their water. Park is quick to point out, however, that iron can be found all over the country. The rocks that groundwater moves through can affect water quality, too.

Surface water in flat areas like South Florida is hydrologically connected. As a result, if someone puts too much fertilizer out upstream or somewhere in the landscape and it runs off into the surface water body or percolates through but then moves horizontally through the soil (because everything is hydrologically connected), you can have nitrogen or that fertilizer show up a mile or two down from the original source.

"So if you have very flat land and all your water sheds are hydrologically connected, you may be taking good care of your water and practicing good management but someone else not too far away may pollute it," says Park.

In areas like Aiken, South Carolina and Augusta, Georgia, and even Clemson, South Carolina, there is "pure" water that has nothing at all in it. This can also be a problem, says Park.

"Because there's nothing in the water, you could have soil structure issues in that your soil falls apart because there is nothing

to hold it together," she says.

Without any minerals such as calcium or magnesium, or positively charged ions, to hold the soil together, it can become compact and make it difficult for water to penetrate and get to turfgrass roots. Plus, air movement gets limited. That's why pursuing reverse osmosis isn't always the answer, says Park. A lot of courses on the coast that have really bad water can afford to put in a reverse osmosis system

in, but Park tells them, "You know, you're taking everything out of the water, which isn't necessarily a good thing. As you can see, there's no perfect water source out there."

Turf care practices come into play, too. Park advises the spoon-feeding technique when it comes to fertilizers – less but more frequently. That goes for amendments, too. When it comes to pesticides, Park says superintendents need to know what they're applying and how to calibrate their spreader/sprayer.

"I'm always shocked by the number of turf managers who still can't do that properly," says Park. "That's not just big for the environment but their pocket-book as well. If they're putting out too much, that costs more. And if they don't put out enough, they'll have to go out again and reapply, which costs more."

There's usually not one magic thing to manage water quality when you have poor water, no matter what the problem is, Park concludes. **GCI**

Jason Stahl is a Cleveland-based freelance writer and frequent GCI contributor.

Treatment Options: CHEMICAL VS. BIOLOGICAL

There are many different ways to chemically treat irrigation water before it's applied. Which one you should use depends on the problem. And cost ranges widely, too.

"It could be just using a UV light, or as expensive as the reverse osmosis system or as cheap as sand filtration," says Park.

But there are ecological treatments, too. For those superintendents who are concerned about the water leaving the course and polluting another area, like a pond, floating wetlands, or floating mats, can be used. According to Park, they consist of plants that are known to be better at accumulating or cycling out nutrients or even certain metals.

"[The floating mats] are really catching on," Park says. "They can be decorative, changed out seasonally, harvested and sold for decorative plants or food such as different kinds of lettuces, etc."

However, what is still the most common method, says Park, is planting these wetland plants around the edges of a pond.



2013 IRRIGATION OUTLOOK

As we start the new year it's time to look at what the potential for golf course irrigation systems will be in 2013. Will the market be flat, grow or contract? Will there be new products? As an owner, superintendent or manager is there anything happening that may alter your 2013 plans?

Water will continue to be a hot topic in 2013 as it will be till we all turn to dust. Various state and local regulations, new standards and codes and costs will affect how a golf course uses, manages and pays for water. Alternative water sources for irrigation will continue to be explored, mandated and used. Golf courses will need to continue to efficiently manage their water sources and budgets. Investing in new irrigation technology when budgets allow will reap benefits.

The golf irrigation market in 2013 will contract a bit when, but 2014 is already looking to be a good year. In the U.S. almost all of the new irrigation systems in 2013 will be on existing courses as new construction is still basically non-existent. Overseas new construction will provide some relief to manufacturers. As the golf economy continues to sputter many courses that need new irrigation systems but can't afford one will be doing improvements to their system piecemeal as budgets allow. As was the case in 2012, there will be considerable irrigation control and pump system upgrades.

Control system upgrades can consist of a number of alternatives. You'll want to upgrade the control system software to a newer version or one that provides you with more control. As part of the central upgrade you may or may not upgrade the field controllers depending on the requirements of the central control upgrade you are



Given the anticipated 2013 economy, planning for **new irrigation systems** and upgrades takes more time, more documentation and more planning.

purchasing or the desire to achieve independent sprinkler control. Along with the control upgrade, you may have to upgrade your grounding system to protect your investment. Power supplies and communication wiring will need to be checked, as well.

You can just simply upgrade your remote system. Radios are becoming outdated, being replaced with tablets and smart phones to precisely operate your system even when your out on the course or out of the country. These smart devices do more and provide more feedback than the conventional radio remotes and with a lot less key strokes. These smart devices allow you to perform almost all of the functions you can perform at the central. As such, many superintendents hardly use the central anymore for routine tasks and instead use the smart device.

Pump system upgrades can consist of new pump and motors, control

panel upgrades or just preventive maintenance. Control panel upgrades, while expensive, can give new life to an aging pump station. Adding variable frequency drive and better switching from pump to pump will extend the life of the existing pumps and motors as well as your pipe and fittings. Without a properly operating pump system the rest of the irrigation system is difficult to operate. So if you're light on funds the pump station should be the priority.

If it's been more than 10 years, the pumps should be broken down and parts checked for wear and the motors rewound. This is especially important with turbine pumps.

In 2013, Hunter Industries is going to reenter the U.S. golf irrigation market with a number of new products and revamped distribution. Hunter has been strong in overseas golf markets but weak in the U.S.

Rain Bird and Toro will have upgrades and updates to their existing products line, mostly along the lines of software.

You will continue to see all three companies provide increased sensor capabilities and integration. Likewise, expect to see more sophisticated communication protocols to interact with smart devices and other systems on the golf course, such as pump stations.

This year is not expected to be a great irrigation year. However, it will still be full of limited upgrades for those golf course facilities that have been saving and planning to take advantage of lower pricing.

As fewer systems are being bid in the market, both material pricing and labor pricing have a tendency to be driven lower by the amount of competition. So if you are in a position to make substantial improvements to your irrigation, make sure you shop around and get the best deal. **GC**



By Mike Harrington

SPIN CITY

Disc golf doesn't have to be the nightmare most turf managers suspect. In fact, it could be a valuable revenue stream.

I have had

conversations with no less than a dozen people in the golf industry and every single one of them started with a response similar to "You want to do what on our golf course!?"

Having been in the golf course maintenance industry for nearly a decade I can appreciate why that is the initial reaction. However, I am here to tell you that adding disc golf onto an existing golf course does not have the negative impact everyone might initially think.

In fact, I am willing to say it has the potential to be another significant revenue stream for golf courses suffering from decreasing rounds played. It will only require a small investment in the disc golf equipment and even smaller investment in additional labor to maintain the course.

Consider the fact that you

already mow the grass, trim the trees, aerate your fairways, rake your bunkers, and keep the property very well groomed. Disc golfers are accustomed to a much lower maintenance regime and the high maintenance conditions on a golf course would be a welcome sight for many disc golfers. These are the conditions that would actually entice many disc golfers to spend money for the beautiful surroundings and the unique experience.

With proper design of the disc golf course and installation of the baskets and tees, the turf on the golf course will not suffer anymore from the traffic of the disc golfers than it does from the wear and tear a few thousand golf cart rentals do in a season. Proper design also includes ensuring that errant discs do not end up landing on fine turf areas. Putting the basket areas in the rough and along the edges of the golf holes will be necessary. Locating the tees away from fine turf areas will also ensure that the disc golfers do not put extra traffic on the highest maintenance turf on the golf course. Taking the time to design the disc golf course properly is an integral step in this process and the location of the tees and baskets is the first step.

Tees can be as simple as markers placed in the ground to indicate that day's location. Disc golfers do not need fine turf (golf tees). In fact, most disc golf courses receive even less maintenance than you would perform on your typical golf course rough. All we need is a level area in the rough. We could even use existing cart paths for tees if those made sense for the layout. The best solution for consistency and for the turf would be to use rubber mats and they are also easily movable. These are typically 8 feet long and 4 feet wide allowing people to gain momentum and throw from the rubber mat. That will prevent potential turf damage from spinning feet. The mats could be moved a few feet in any direction to keep from damaging the turf due to overheating or compaction.

Baskets could be setup as portable targets requiring no additional hardware as a bare minimum. Metal sleeves can also be mounted into the ground with concrete to keep them level and secure. Place a valve box in the concrete so that when the baskets are not in use, the valve box cover can go on just like any another irrigation valve box or drainage box.

Ideally, setting up a disc golf course on a completely temporary basis with portable bas-

