

WATER WISE [PART ONE]

SUPERINTENDENTS
REVEAL THAT THEY
FEEL UNDER MUCH
SCRUTINY FOR THEIR
WATER USE

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ABOUT THIS SERIES

Welcome to the third year of "Water Wise," our special series sponsored by Rain Bird and Aquatrols. As it was in the past two years, our goal in this three-part series, which runs through December, is to examine the fresh-water crisis while educating golf course superintendents and other industry personnel on several fronts of irrigation.

Part one, titled "Supers Under Scrutiny," examines what's behind the increased scrutiny of water use on golf courses and what golf course superintendents can do to quell the emotions of the scrutinizers.

Part two of the series will analyze how superintendents can be "green," as in environmental, and still provide golfers with green and healthy golf courses. Veteran superintendent Christopher S. Gray Sr. will offer superintendents tips on how to sustain healthy turfgrass without using too much water.

Part three looks at future government regulation of water use. What can superintendents expect in the next 10 years from lawmakers and regulators in regard to their use? California has already instituted a mandated 10-percent reduction of potable water use throughout the state by 2020. They say trends begin in California. Will that trend head east?

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A Call to Action

BY DEMIE MOORE

Let's face it, a lot of water is used on and around golf courses. So, in light of today's climate of concern over economic and environmental issues as well as growing concern about enough water for the future, it's not really surprising there's growing scrutiny of the water use on golf courses — by both supporters of the game and its detractors.

Regardless of whether the scrutinizers you face now or in the future have favorable or negative opinions toward golf's use of water, what's needed for productive discussion is accurate information and evidence of action. There's ample evidence that becoming defensive (about most anything) accomplishes little and can even make things worse. In contrast, defending one's position with objective information, solid evidence and consideration of the concern of the scrutinizers has the potential for further discussion and building new solutions.

As various groups become increasingly concerned and vocal about water use, superintendents must speak up by using information on the environmental and economic value of golf. They should also provide objective information about actual water-management practices in order to protect their courses' water rights and gain equal time and consideration from water regulators as water restrictions or conservation measures and mandates are being developed. The question is: How do you do this?

The first step is to make sure our own houses are in order, by showing a commitment to water and environmental stewardship through voluntarily implementing as many water conservation practices as possible — and integrating a focus on “as little as possible as efficiently as possible” into daily operations. With increased demands on water at many levels and no new readily available water sources, it just makes sense — practically and politically — to find ways to use less water. And it's good for not only your water image, but also for the agronomics of your course and your facility's budget.

Getting out the word about the commitment to



efficient water use at your facility is also important for showing that you share the concerns of state regulatory agencies and the general public — and are putting your concern into action. When you enhance your reputation as a conscious water-use expert and communicate that message internally and externally, you increase your chances of having an equal seat at the table when water policy discussions arise.

However, no matter how conscientious, proactive and objective you are about conserving water on your course and communicating that along with golf's positive impacts, golf courses are likely targets for criticism, particularly during periods of drought when neighbors are being cautioned or required to restrict water use, and they see (lots of) water continuing to be applied across your course. If enough complaints reach legislators, the legislators can't help but listen. And if the complainants' voices are louder and clearer than the golf industry's, chances of negotiating a fair deal on water regulations, or any other political mandates for that matter, are much lower. This is where working together is important and powerful.

Don't be afraid to ask for help. Solicit the involvement of your colleagues at your golf course and in the industry to develop a strategy for addressing negative perceptions. Again, objective information and evidence is vital, and good communication is the best tool you have for diffusing any problems that may arise with local governments or community members.

No one knows for sure what the future holds, but there's no time like the present to re-evaluate the water management and cultural practices on your golf course with the goal of being able to demonstrate responsible water use while providing quality playing conditions. ■

Moore is an Aquatrols' director, involved with corporate relations, education and training.



Viewing a Challenge as an Opportunity

BY MICHAEL ROBERTS

Today, there's no doubt that a greater emphasis is being placed on sustainable practices and water conservation. As a result, more people around the world are becoming aware of the need to use water wisely.

Our personal decisions have a tremendous impact on the amount of fresh water available for future use. Replacing a dripping faucet or turning off the water when we brush our teeth — these are choices that few others may know about or acknowledge. However, the choices that golf course superintendents make about irrigation can be highly visible to anyone who patronizes, visits or simply drives by a golf course.

Because water conservation awareness has improved, golf courses are now experiencing a higher level of scrutiny than ever before. As more people come to understand the severity of the world's water issues, immaculately kept golf courses with rotors swishing a steady stream of water back and forth have become somewhat of a target. While it's tempting to look on this intense scrutiny as both uncomfortable and unfair, those superintendents who choose to view this challenge as an opportunity to set their courses apart will thrive. This is the time for them to think outside the box and find new ways to lower the amount of water they use to irrigate their courses.

Technology has made it possible for superintendents to use less water while still providing an attractive, highly playable course. Sophisticated control systems and rotors with adjustable arcs now offer the



IT'S NO LONGER
JUST ABOUT
WALKING THE
WALK — IT'S
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THE TALK

type of water efficiency and precision irrigation that could only be imagined a few short years ago. A new appreciation for native plants and grasses has replaced much of the desire for thirstier, more exotic species. Elaborate systems for harvesting rainwater and cooling system condensate have opened the door to more sustainable irrigation practices at golf courses and commercial sites around the world.

However, the challenge faced by golf courses today doesn't end after irrigation systems have been upgraded, harvesting systems have been developed or more drought-tolerant turf and plants have been installed. Changing public perception of golf courses as indiscriminate users of fresh water will be the true test. Owners and managers accustomed to only touting their courses' rating and beauty should strongly consider mentioning their environmental efforts as well. It's no longer just about walking the walk—it's also about talking the talk.

Through motivation and willingness to adapt, golf courses can change their reputations as "water wasters," just as each of us can have a cumulative, positive impact on the amount of water we use every day. As a provider of irrigation systems around the world, Rain Bird has and will continue to support those superintendents who have taken on this challenge by continuing to develop products that encourage The Intelligent Use of Water™. ■

Roberts is director of Rain Bird's Golf Division.



Supers Under

SUPERINTENDENTS ARE CONCERNED THAT PEOPLE – OUTSIDE AND INSIDE THE GOLF INDUSTRY – THINK THEIR COURSES USE TOO MUCH WATER. WHAT TO DO?

BY LARRY AYLWARD, EDITOR IN CHIEF

IT'S A GIVEN THAT golf courses are often labeled as water wasters by the non-golfing public — you know, the people who are disgusted at seeing an emerald-green golf course at the height of a sizzling summer while their lawns burn out like fizzling firecrackers on the Fourth of July.

But it's somewhat surprising when a big-name golfer, who has made millions playing the game, calls out golf courses for being too verdant. South African golfer Gary Player says too many American golf courses overwater to maintain the lush look.

"If you take the average amount of water that's put on a golf course in the United States and compare it to Scotland or anywhere in Britain, it's three times the amount," Player contends.

It's also somewhat surprising when a big-name golf course architect says golf courses have a lot of room to improve



Scrutiny

when it comes to irrigation efficiency. But Mike Hurdzan, principal of Hurdzan-Fry Environmental Golf Design in Columbus, Ohio, also believes that golf courses use too much water.

"We're irrigating too much of the golf course," Hurdzan says. "We're irrigating bunkers on many golf courses so somebody can have a perfect sand shot every time. Where does this madness end?"

Even though golf courses comprise only 1.5 percent of the fresh water dedicated to overall irrigation and 0.5 percent of the nation's total fresh water, the question of whether golf courses use too much water isn't going away anytime soon. And stuck in the middle of the debate are golf course superintendents. They're the ones flipping the switches on their courses' irrigation systems.

Alas, it's no surprise that superintendents feel scrutinized about their water use. They're looking over their shoulders, indeed.

Golfdom recently surveyed about 500 superintendents and asked the question: What's your biggest concern regarding the water you use for golf course irrigation? Thirty-seven percent — the biggest group — said "increased scrutiny of its use."

Twenty-nine percent said "decreasing availability" was their biggest concern. Eighteen percent said "increased cost" and 17 percent said "decreasing quality."

Think about it: More than twice the amount of superintendents are worried about being scrutinized for their water use than they are about its cost and quality.

"Unfortunately, superintendents are standing center stage with the white, hot

spotlight on them," Hurdzan says. "People drive by golf courses in their cars and see how green and lush the courses are. But those people don't presume the people managing those golf courses are better water managers than they are. They presume they're just using too much water."

So what does this say about golf course irrigation in 2010? For one, it has become a highly political issue in addition to an environmental and economic matter.

In a related survey, *Golfdom* asked nearly 600 superintendents: What is your biggest professional concern? Twenty-one percent (the No.2 answer out of seven choices) answered, "Unrealistic expectations from golfers." Translation: Superintendents are worried about losing their jobs if they don't meet golfers' demands for quality conditions, which often translate into wall-to-wall green and lush turfgrass. And water, of course, is the main force behind establishing such conditions.

While this isn't a new phenomenon to the golf course maintenance industry, it's intensifying for several reasons and causing superintendents to feel more scrutiny.

First, the media attention to the impending freshwater crisis has magnified the past several years, thanks in part to the Internet. More and more people are seeing reports about water shortages, like the one issued by the U.S. Government Accountability Office that says at least 36 states in America face serious

freshwater shortages within the next five years. Meanwhile, those same people see sprinklers swirling on golf courses and assume that water is being wasted.

Second, the impending freshwater crisis is real for many golf courses. For instance, the California legislature passed a bill last year to reduce water use statewide by 20 percent by 2020, including on golf courses.

Third, even though reports of the freshwater crisis have intensified, golfers' expectations for near-perfect conditions haven't. Consider the U.S. Open at Pebble Beach Golf Links in June. Most golfers' eyes nearly popped out when they saw Pebble Beach's brown and blotchy *Poa annua* greens on TV. They thought the greens looked terrible. Golfers want green greens, and many want the same for tees, fairways and roughs.

Do they or don't they?

If you took 10 superintendents and asked them whether the golf industry uses too much water, there's a good chance that five would answer "yes" and five would answer "no." Their perceptions are based on many variables, including tenure, location and even political affiliation.

Mark Clark, the certified superintendent of Troon Country Club in Scottsdale, Ariz., believes the industry uses too much water. "We overwater, but we do it because the consumer wants it," he adds.

But Mark Jarrell, the certified superintendent of the Palm Beach National Golf and Country Club in

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Architect Mike Hurdzan is shocked that some golf courses irrigate bunkers. "Where does this madness end?"



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Lake Worth, Fla., says most superintendents are responsible irrigators.

"I believe superintendents overall are diligent about being good stewards when it comes to water use," he says.

This is where the issue gets murky. What constitutes a good steward? Does a golf course have to be brown in order for it not to be labeled as a water waster?

Clark believes it's possible to have a green golf course that plays firm and fast without using too much water. In fact, that's what he strives to offer at Troon.

"You can come to my golf course tomorrow and you'll get firm, fast greens ... and it's green and looks great," Clark says. "We manage our water the absolute best we can."

Hurdzan also believes in the firm and fast philosophy. "We need to keep our tees and greens healthy with the right amount of water," Hurdzan says. "But why are we watering roughs?"

Incidentally, an estimated 31,877 acres of irrigated turfgrass were added to existing golf courses in the United States from 2001 to 2005, according to a study by the Golf Course Superintendents Association of America. The net gain in irrigated turfgrass is because of golf facilities converting non-irrigated rough to irrigated rough to meet golfers' demands.

Hurdzan says superintendents No. 1 priority with water should be to do more with less. And one of the keys to using less is to measure what you're using.

"There's an old saying, 'What gets measured, gets managed.' But if you can't measure it, then it's difficult to manage it," he adds.

Hurdzan says superintendents will always be scrutinized for their water use as long as their golf courses are green—and the people doing the scrutinizing live in houses with lesser-quality lawns.

"Those people will think superintendents have overwatered their courses," Hurdzan says. "But if superintendents have the numbers to prove they haven't used an excessive amount of water or

that the water they have used is within a reasonable amount, then scrutiny will be less of a factor."

Hurdzan is a major proponent of soil sensors, which measure soil moisture among other capabilities.

"There shouldn't be an irrigation system update that doesn't have soil sensors as part of the package," Hurdzan says, also noting that soil sensors can be simply installed even if a course isn't undergoing an irrigation renovation.

One bite at a time

Some things must change for superintendents to feel less scrutinized. While Clark doesn't expect the scrutiny to go away anytime soon, he stresses the golf industry needs to communicate to regulators and legislators that the water it uses goes in hand with the money it generates as a \$60 billion industry.

Clark also believes superintendents and the golf industry are succeeding in convincing environmental groups that healthy turfgrass is good for the environment. He credits the industry, specifically the GCSAA, for responding to reports that depict the entire golf industry in an unfair light regarding irrigation.

"It's a big elephant," Clark says. "You take one bite at a time. But eventually you're going to make some progress."

While Jarrell doesn't expect the scrutiny to go away, he believes it's directly related to superintendents' fears of decreased water availability, which could happen if regulators decide to impose restrictions on them.



tinny to go away, he believes it's directly related to superintendents' fears of decreased water availability, which could happen if regulators decide to impose restrictions on them.

"There may be decreased availability because people are scrutinizing and saying all those rich fat cats are just overwatering their golf courses," Jarrell says.

No doubt, there are similar relationships between golf courses and regulators in other regions throughout the country. Golf courses that say they use water efficiently must promote what they're doing. In South Florida, golf courses promote the fact they account for only 3 percent of the freshwater use in the region.

Jarrell believes We Are Golf, an initiative introduced early this year by the game's leading associations "to change the face of golf and to represent the economic, human and environmental benefits of the industry at federal, state and local levels of government," will help the industry's image regarding water use.

Founded by the GCSAA, Club Managers Association of America, National Golf Course Owners Association and The PGA of America, We Are Golf is a coalition to inform and educate the public on issues such as irrigation.

Jarrell aims to defend the industry

How Golf Courses are Saving Water

According to the GCSAA's "Golf Course Environmental Profile: Water Use and Conservation Practices on U.S. Golf Courses," many 18-hole golf facilities have incorporated several practices to conserve irrigation water. The top three practices are:

- Wetting agent use.
- Hand-watering.
- Keeping turfgrass drier.



An Environmentalist Who Understands a Superintendent's Dilemma

BY LARRY AYLWARD, EDITOR IN CHIEF

Brent Blackwelder is a hardcore environmental activist. The president emeritus for Friends of the Earth, a prolific Washington, D.C.-based environmental group, also happens to be an avid golfer who sports a single-digit handicap.

Many people in the golf course maintenance industry believe environmentalists like Blackwelder don't know a ball mark from a divot when it comes to what they do for a living. But Blackwelder, regarded as the most senior environmentalist in Washington, is an exception. He knows more about golf course maintenance and conditioning than most golfers. That said, Blackwelder believes golf courses use too much water.


But rather than just make such a sweeping statement and leave it at that, Blackwelder elaborates on the matter with a powerful anecdote.

He says he was playing golf recently with friends at a private club in Washington. One of the players launched a shot that landed five feet in front of the green and stopped cold – the ball buried in mud. By coincidence, the course's superintendent was driving by in his utility vehicle at the time, and the players called him over. After showing him the ball, they asked the superintendent if he thought there was too much water on the fringe of the green.

The superintendent replied, "If I don't irrigate enough around the green, the *Poa annua* will die from the heat. And the area will turn brown."

Blackwelder could see the superintendent was caught in a classic damned-if-you-do-and-damned-if-you-don't scenario. He understood his dilemma. Blackwelder understands that superintendents, especially those at private clubs, are under pressure from members and golfers to deliver excellent conditions daily. But he says it's time for golfers to stop pressuring superintendents for those conditions. Then, superintendents won't have to look over their shoulders if they reduce irrigation and let courses play harder and faster.

"Who needs balls getting covered in mud?" Blackwelder asks. ■



If superintendent Mark Jarrell was ever scrutinized on the spot for using too much water, he wouldn't hesitate to educate the scrutinizer on his irrigation program's efficiency.

in response to any water-wasting allegations. If he were ever scrutinized on the spot for using too much water on his course, Jarrell wouldn't hesitate to educate the scrutinizer.

"I would say, 'The bottom line is I collect, clean and recharge more water than I use,' he says. 'A golf course is doing a public service.'"

Hurdzan has also taken the matter into his own hands, literally. For instance, when he designed Erin Hills Golf Course in Wisconsin, site of the 2011 U.S. Open, he called for a double-row irrigation system on most holes. A lot of people complained, calling a double-row system "ancient," but Hurdzan stuck to his point.

"The only reason we went to a two-row system is so you can't possibly apply any more water than that," he says.

Of course, what also must change is golfers' expectations for the greenest of green turf. That in turn will take pressure off some superintendents who may be overwatering for job security.

"Superintendents make a conservative effort to use the minimum amount of water necessary to meet what's expected of them," Hurdzan says. "But if they err, they're going to do so on the high side, not the low side. Their jobs

are on the line."

That said, superintendents must get out in front of the issue to help themselves, Hurdzan says. They should find and take the time to schedule meetings to teach golfers and other members in their communities about golf and the environment, including water use.

"How many superintendents have outreach programs?" Hurdzan asks. "There are some, God bless them, but I think they all should."

Player advocates more government regulations on golf courses to save fresh water. He says more golf courses should be required to irrigate with recycled water. (Currently, only 12 percent of

18-hole golf courses irrigate with effluent, according to the GCSAA.)

By 2025, the world will be 20 percent short of fresh water, Player claims, adding that no golf course in a populated area then should be allowed to operate unless it uses recycled water.

"Once a week those courses would be allowed to flush greens with fresh water — but just the greens," Player says.

Sooner or later, Player says American golfers may be forced to change their minds about accepting less green on golf courses because they just won't be able to water as much as they do now.

"Because the world is running out of water," Player adds. ■

Silence the Scr

AS GOLF COURSE superintendents, we've come under increased scrutiny from people, groups and organizations regarding the large amount of water we use on our golf courses. And with the government starting to take a more active role with protecting the Earth's most precious resource, this scrutiny will only continue to grow.

Luckily for us, we have a number of simple yet effective solutions to help us combat this unrelenting examination of our irrigation practices. By employing these straightforward and practically sound strategies, we can see both a significant savings in the amount of water used and an increase in the efficiency of our irrigation techniques.

Replacing your stock irrigation nozzles

It's astounding to me how many golf facilities have never replaced the standard nozzles that were installed at the factory in the irrigation rotor. Unless the heads were specially ordered, the typical irrigation head from the manufacturer comes with a plastic nozzle that's calibrated to throw the same distance at the same gallons-per-minute flow rate. If used only as a starting point after installation, this setup works fine. But when left unchecked and unanalyzed, the performance of these standard, plastic nozzles may be costing you in more ways than one.

This one-size-fits-all irrigation head performs pretty well for the majority of your golf course, but we all have certain

areas that require fine-tuning when it comes to irrigation coverage. These areas are where utilizing the correct nozzle makes all the difference.

For the majority of your golf course, namely the fairways and roughs where the spacing of the heads has been triangulated for maximum throwing distance, stock nozzles work just fine. But when it comes to these special areas where a shorter throwing distance is much more optimal, changing the nozzle to accommodate that distance only makes sense. In short, you should select the correct nozzle for the appropriate area being irrigated.

There are a few things to keep in mind when replacing nozzles to solve coverage issues. Be sure to use matched precipitation rate (MPR) nozzles that are designed for your specific brand

Check plastic nozzles to make sure they're performing efficiently.



SUPERINTENDENTS HAVE A NUMBER OF SIMPLE YET EFFECTIVE SOLUTIONS TO HELP THEM COMBAT THE UNRELENTING EXAMINATION OF THEIR IRRIGATION PRACTICES

BY CHRISTOPHER S. GRAY SR.,
CONTRIBUTING EDITOR

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of head. MPR nozzles provide even watering rates between heads with different spray patterns. Always consult the manufacturer's performance charts that show the pressure, radius coverage and flow rates for all the nozzles so that selecting the proper nozzle can be done easily and correctly.

Perhaps the biggest problem with the standard stock nozzles is they're plastic, which means they wear out. Out of the box, plastic nozzles perform great. Over time, however, the water flowing through the plastic begins to wear it away and ultimately changes the shape of the nozzle orifice. As the nozzle orifice begins to enlarge, two significant problems arise — there's an increase in the amount of water applied to the turf, and a decrease to the distribution uniformity of the area irrigated.

Changing your nozzles from stock plastic to stainless steel will prevent these problems, while also improving the playability of the turf. The stainless-steel nozzles offer higher performance reliability with a greatly extended life-cycle. In short, no more worrying about expanding nozzle orifices and the inconsistent coverage, dry spots and ugly "donuts" that occur because of them.

Substituting stainless-steel nozzles also achieves a very high distribution uniformity (DU), which has become synonymous with healthier turf and better playing conditions. Because of the high DU, where the head is delivering consistent and uniform irrigation coverage, the irrigation cycles can be adjusted to shorter run times, which save an incredible amount of water.

Depending on your specific location and situation, replacing plastic nozzles with stainless-steel nozzles can annually reduce your water consumption anywhere from 6 percent to 20 percent. With that kind of savings, it can ultimately translate into hundreds of thousands to millions of gallons of water savings per year per golf course.

Installing micro-irrigation

If our golf courses were more like sod farms, flat and only covered with grass, our irrigation practices would be a lot more straightforward. But the reality of our world is that we have a lot of elevation changes throughout our course with an abundance of maintained turf that's surrounded by, or in the middle of, areas that simply don't need to be irrigated.

The best example that jumps to mind is all those bunker fingers that architects just love to draw up, and that superintendents get the joy to maintain afterwards. Irrigating these peninsulas of turf amid acres of sand with 90-foot throwing radius heads clearly validates the scrutiny we receive regarding the imprecision of our irrigating techniques. It's this very lack of exactness with our irrigation methods for which we receive more complaints than anything else.

We must harness more control over how and where we irrigate. And the best method for achieving this desperately needed level of management is through the use of micro-irrigation components in those areas requiring special irrigation attention. Micro-irrigation refers to low-pressure irrigation components that deliver water exactly where it's needed through various patterns of spray, sprinkle, mist or drop. There's such an array of varying patterns because each component is designed for specific applications. These components deliver the water much closer to the soil surface than typical golf course rotors, thereby significantly improving the efficiency of the irrigation system by minimizing conveyance loss through evaporation and runoff.

Taken as a whole, micro-irrigation systems account for more irrigated acres than all the golf courses combined. In fact, most of us probably already use micro-irrigation at our facilities in places like around the clubhouse and in ornamental plant beds. So being able to adapt similar micro-irrigation components for the special need areas on your golf course isn't really that outlandish or difficult to achieve.

What's important to remember when retro-fitting your existing irrigation system with a micro-irrigation block system setup is you must install a pressure-reducing valve at the point of integration. Most golf course systems run at an operating pressure of between 80 and 100 psi, which is required for the large gear-driven rotor heads to function properly. Micro-irrigation systems only require a fraction of that operating pressure at between 8 and 16 psi. So installing a quality, pres-

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sure-reducing valve is absolutely critical in maintaining this lower pressure environment, unless you want to watch the micro-irrigation emitters launch into the sky like model rockets.

One of the most effective micro-irrigation components for golf course special areas has been the stream rotor sprinkler. You may recognize these emitters because of the multiple streams, or “fingers,” of water that rotates when being used. With an effective throwing radius ranging from 15 feet to 30 feet, these smaller heads are perfect for use around the outside of the bunkers and on the bunker fingers, allowing irrigation of the turf with only nominal sand being watering

The water savings from employing a micro-irrigation system are impressive. In terms of actual, real water savings, it will directly depend on the size and scope of your implementation. Just consider the fact that flow rates for traditional gear-driven rotors are measured in gallons per minute, while micro-irrigation emitters are measured in gallons per hour. So it’s rather simple to determine that the more places you install micro-irrigation, the higher your water savings will be.

Maintaining a “wetable” soil profile

The old saying that “an ounce of prevention is worth a pound of cure” has never been truer than when managing the moisture content of your soil profile and keeping it “wetable.” But don’t confuse the term “wetable” with being wet. “Wetable” refers to the soil’s ability to absorb water, which prevents it from becoming hydrophobic, thereby reducing its water infiltration rate and distribution uniformity.

Hydrophobic soils occur during dry periods when the soil particles become coated with wax-like compounds that polymerize together, resulting in an increase of water repellency. These compounds of complex organic, acidic material physically block the water from penetrating into the soil. When this reaction occurs in the soil, the amount of plant-available water (PAW) becomes severely restricted to the turf and, as a result, localized dry spots start developing.

The obvious consequence of hydrophobic soil is wilting and thinning turf from the lack of PAW in the root zone. But even more troublesome is the amount of extra water and considerable work needed to return the soil profile back to being wettable.

The most effective weapon in our arsenal against hydrophobic soil is the regular use of wetting agents, which forces the water molecules to spread out by reducing surface tension. Wetting agents are an incredibly effective tool in achieving and maintaining a uniform moisture level and increased PAW in the soil profile, by specifically targeting and treating the wax-like coating on the soil particles.



Select the correct nozzle for the appropriate area being irrigated.

implementing an effective wetting agent program.

Updating your central irrigation program

Almost all of us utilize a computerized central-control system to help us manage and operate our irrigation systems at their potential. Central-control systems can be the most effective tools for achieving optimal water savings by simply operating our irrigation system at peak efficiency.

It’s important to remember that a central-control system is merely a computer that only knows what we tell it. In order to perform precisely, accurate information on the hydraulic piping and specifications of the output on every head in the field must be fed into the programming. This critical information is at the heart of the operational efficiency of the system, which is typically entered during the initial setup process of the central.

But when you start tweaking your system, by replacing plastic stock nozzles, adding micro-irrigation components or even something as minor as changing the spray pattern of particle heads, the programming in your central system must be amended to reflect the changes. If left unchanged, the differences will negatively affect your irrigation schedule’s efficiency.

Be prepared

In many ways, our industry is only beginning to become under fire for our water use. With the federal government starting to join the movement towards a more sustainable water future with its WaterSMART initiative, wide-sweeping regulations and mandates could be right around the corner for every golf course in the United States.

Being adequately prepared for this continued and strengthening wave of scrutiny from our critics will ultimately be the difference between those golf facilities that survive and flourish and those that don’t. Ensuring that we, as superintendents, utilize our irrigation system with precise and deliberate water applications with a high degree of overall efficiency is the first step in being prepared. ■

Christopher S. Gray Sr., superintendent and general manager of the Marvel Golf Club in Benton, Ky., is a contributing editor to Golf-dom and has been formally recognized for his irrigation practices.