

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

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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.



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implementing an effective wetting agent program.

Employing a regular regiment of wetting agent applications decreases overall water usage by guaranteeing that soils remain wettable so that water applied to the turf, either from irrigation or rain, will move quickly and uniformly into the soil profile. Varying reports suggest that reductions in water use of at least 20 percent, and, in some cases even higher, can be easily achieved from

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 part-circle 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. ■

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