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ROOM FOR IMPROVEMENT

Our industry has made great gains in irrigation system efficiency and application methods, most notably because of the need to conserve one of our most precious resources ... water.

Superintendents always have been stewards of conscientious irrigation applications. Golf course irrigation systems have a direct impact on turf playability; therefore, no superintendent benefits by poorly watering a property. That said, there's always room for improvement. And, as water becomes more scarce and expensive and lessens in quality, the need for effective delivery becomes more attractive – to golf course managers and all parties involved, from pump manufacturers to sprinkler technicians.

Irrigation consultants tend to spend most of their time evaluating the muscle of every irrigation system – the sprinklers. Proper head spacing, application and nozzle selection can supply any golf course

with years of efficient and effective water delivery. Without proper sprinkler selection and installation, system management limitations will plague a course forever with compromised turf conditions that are costly to care for. Moreover, a facility will incur unnecessary expenses in the short-term and higher operating costs, in utilities and water, in the long-term.

It's critical we communicate to those writing the checks that monies spent upfront will deliver significant dividends, such as decreased costs and increased course playability and improved turf health, throughout time. It takes powerful communication skills to persuade ownership (public and private) a poorly designed system, although costing fewer dollars upfront, isn't in the best interest of the course's long-term health and viability.

Again, our focus is on the element that performs the work – the sprinklers. Their spacing needs and application performance need to be presented in a fashion that educates decision-makers. Such information may be boring to a layman, but it's crucial for a 25- or 30-year investment on a renovated or new irrigation system.

The golf industry in the U.S. consumes an estimated 476 billion gallons, or 1.5 million acre feet, of water annually. Each golf course will use an average of 28.5 million gallons, or 88.2 acre feet, in a given year. It's a matter of time before every course will be "encouraged" to use water more efficiently, while finding new ways to conserve.

Irrigation product manufacturers are committed to providing more efficient sprinklers, helping golf courses reduce their dependency on water without sacrificing course conditions. More effective water use results in improved turf quality. This is a win-win situation: The clubs enjoy much higher-quality playing conditions, while reducing water and power use, as well as potential chemical applications.

There are various methods used to measure irrigation design quality and sprinkler efficiency – the most common being a percentage of distribution uniformity, which measures how evenly a sprinkler distributes water over a given area.

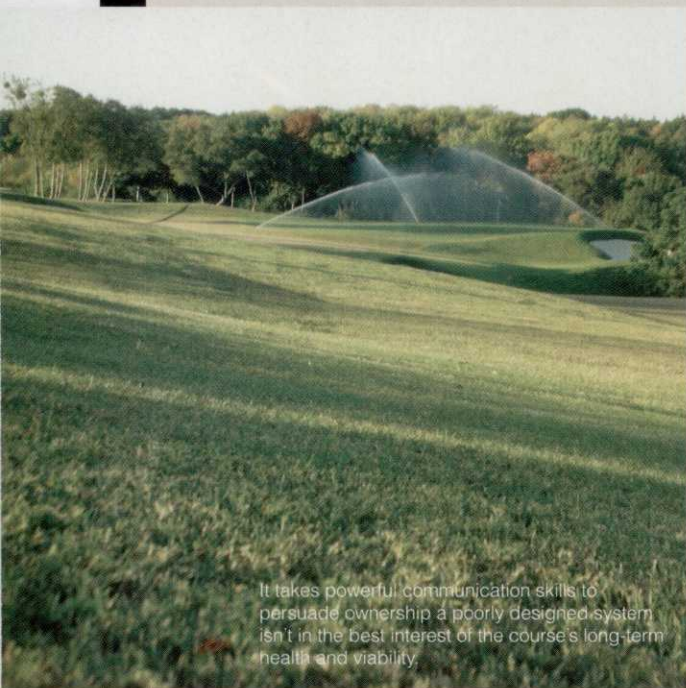
To calculate distribution uniformity, a series of collection cups is spaced evenly around the sprinkler head, typically in a triangular or rectangular pattern. After watering for a set time, the amount of water in each cup is measured. The average volume of water caught in the cups in the least watered area, usually the lower quantities, is divided by the average volume of all cups.

Another common measurement of sprinkler efficiency is the scheduling coefficient. The scheduling coefficient is a runtime multiplier calculated by dividing the average water application rate by the application rate in the critical dry areas (the driest usually being 5 percent). Ideally, the calculated scheduling coefficient value will fall below 1.5, with 1.1 being considered excellent efficiency. A perfectly even application of water, though virtually impossible, would result in a scheduling coefficient value of 1.0.

The take-away in both of these examples is that a higher distribution uniformity and/or a lower scheduling coefficient shows the greatest amount of efficiency and, therefore, uses less water and resources. Furthermore, we have technologies that project irrigation efficiencies when sprinklers are moved or changed out altogether.

With all of the facts in hand, most facilities could realize a 20- to 30-percent increase in irrigation system efficiency. By simply paying attention to design and product-application details, improved efficiency will conserve water and utilities while providing better playing conditions for golfers.

It's essential owners and regulators have a basic understanding of the above concepts to grasp why and how they need to make fundamental improvements to their facilities' irrigation systems. **GCI**



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