



Sprinkler systems for non-field applications

Editor's note: Jim Laiche, business development manager for Toro Irrigation, answered a few questions on upgrading or installing new sprinkler systems.

SportsTurf: Say I'm a turf manager responsible for improving the irrigation system for landscaped areas at a campus, in a park or around sports facilities. How should I evaluate what I have and find out what I need?

Laiche: This is a broad based question, but in most cases evaluating and possibly upgrading both the delivery method (sprinkler heads and nozzles) and the control system will provide the best results. Most people believe simply upgrading a control system will make their plant material look better while using less water. It does, if you are already running a well-designed and maintained in-ground irrigation system.

Things to look for in the field:

- Head to head coverage from

sprinkler heads (one sprinkler head throwing water to the next)

- Adequate water pressure at the sprinkler heads; too high makes the sprinkler heads mist while too low creates dry areas around sprinkler heads (doughnuts)

- Properly adjusted sprinkler heads, coverage area is correct
- Areas with low head drainage
- Zone audit. This measures the DU (distribution uniformity) of sprinkler heads in an area. It essentially is a measurement of the lightest watered areas to the heaviest. Many irrigation professionals provide this as a service.

- Measurement of PR (precipitation rate). This indicates how fast sprinkler heads apply water to an area in Inches per hour. This

information is necessary if converting to an ET or weather-based control system.

Once you have the field sprinklers analyzed and perhaps modified, then you look at the control system. Most irrigation managers can only modify their irrigation controller programs a few times per year. With a central control system they essentially change daily with changing weather conditions. Most systems tie directly into an onsite weather station or an internet-based ET (evapotranspiration). This value is used to adjust sprinkler runtimes up or down depending on local conditions. Hundreds of controllers are shutdown automatically for rain and other site conditions.

Things to identify on your control system:

- How often can you make changes to the programs?
- How long does it take to shut down for a rain event, do all controllers shut down?
- Do runtimes meet both the local weather conditions for time of year and the soil infiltration rates?
- Is the system running at times it should not?
- Can I manage a large water source that supplies irrigation to multiple controllers?
- Do I have hand-held control on every controller?
- Do you need water use records from irrigation?
- Do you often have breaks in the system that go undetected?

ST: How do you determine costs of putting in sprinkler system vs. using a system that involves manpower and moving hoses around?

Laiche: With manual irrigation you have to consider the hourly cost of labor, transportation expense and wasted water. This can add up quickly and results in very inefficient irrigation practices. Compared to manual irrigation, you can save 30 to 40% of your water cost and 90% of your labor by automating the irrigation.

ST: What's the newest in water-saving technology in this product category?

Laiche: High efficiency spray nozzles improve uniformity while reducing water by up to 30%. Rotating spray nozzles distribute water up to 26 feet from a spray head body. Weather-based stand-alone controllers adjust the runtime based on both local and historical temperatures and solar radiation.

Central control systems run large groups of controllers from a single location. You can adjust with local weather station, plus monitor and record flow. Soil moisture sensing reads soil moisture, temperature and salinity and reports back to a computer. Adjustments can be made to the irrigation system based on real-time soil conditions. ■

Using smart water technologies

Editor's note: Troy Leezy, marketing manager for Hunter Industries, and a certified irrigation designer, water auditor and water conservation manager, wrote this update

WITH INCREASING FOCUS on water conservation and efficient irrigation practices come new opportunities. Whether it is a product upgrade or replacing an aging irrigation system, a wide variety of efficient product solutions exist in the

market today. Many of the new products available today do not require much or any effort above and beyond traditional installation practices and offer a reasonable timeframe for return on investment.

While exploring any upgrade solutions, strong consideration should be paid to getting site pressure as close to optimum as possible for the sprinkler types to be used. Pressure is as important as proper spacing to achieve the greatest possible efficiency in any system. High pressure is as much an enemy to efficiency as low pressure and should be a priority regarding initial design or existing system evaluations. There are a wide variety of solutions on the market today to address high pressure. Pressure can be easily adjusted at the valve with an add-on regulator that allows the installer to select the ideal pressure the sprinkler requires. Additionally, many manufacturers offer pop-up spray sprinklers with built-in pressure regulators pre-set to optimum nozzle requirements or a simple add on pressure regulator at the valve can be an easy solution.

The simplest form of water conservation upgrade can be a wireless rain sensor, which saves an average 10% of water use. On the high end of control upgrades are “smart” irriga-

tion controllers that adjust irrigation schedules on a daily basis depending on weather conditions. Studies have shown smart controllers can save up to 30% of water use depending on prior management practices. New products are arriving on the market that are more cost effective and user friendly, making smart controllers an easier sell, especially on residential projects.

Replacing existing spray nozzles with rotary nozzles, such as MP Rotators, or incorporating them into a new system design provides greater water savings and drastically increased efficiency. In many cases, rotary nozzles can be successful in improving poorly performing spray systems due to low pressure. Because rotary nozzles require less water to operate, they have the advantage of reducing friction losses in an existing system and improving the operating pressure at the head. Additionally, due to lower water requirements of the nozzles, more area can be irrigated with fewer zones, reducing system costs with fewer valves, smaller controller sizes, less pipe, wire, fittings, and labor.

Drip tubing with pre-installed, in-line emitters offers substantial advantages over traditional irrigation methods in not only water savings, but also time and cost considerations.

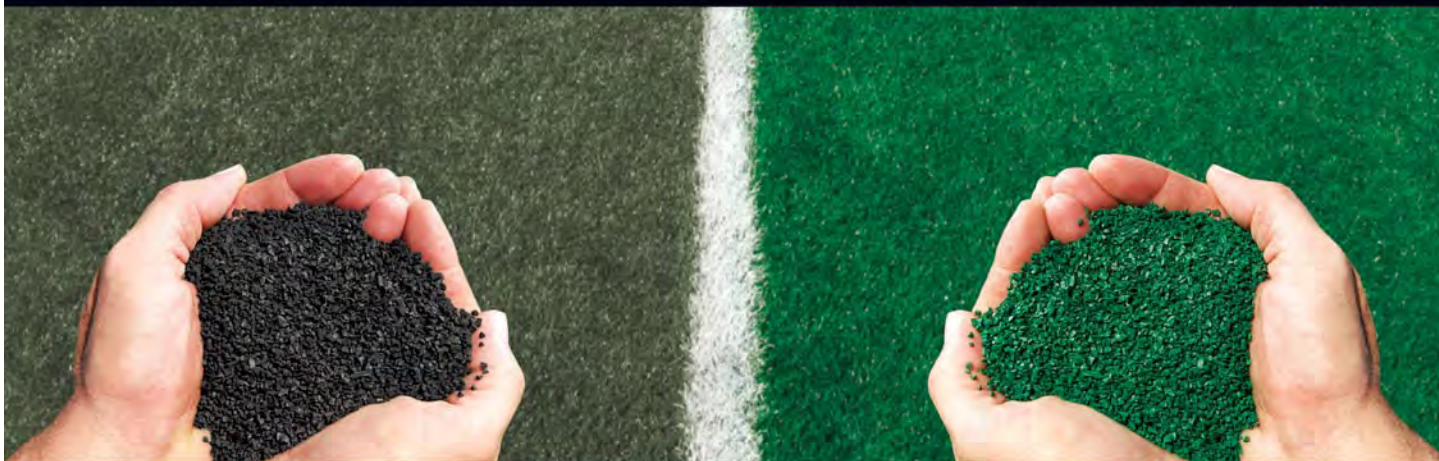
In many cases the tubing can be simply “snaked” through planters and then mulched over. Winterization can be a snap by incorporating threaded caps on line ends that can be removed for blow out.

On any projects with elevation changes, check valves should be installed, at the very minimum, on the lowest heads. One hundred feet of 1-inch pipe on single zone can waste 4 gallons of water per zone cycle through low-head drainage. On a 12-zone system, that equates to 48 gallons per irrigation day. Beyond saving water, check valves will also protect the sprinkler from the water hammer that occurs every time the valve turns on and water rushes to fill the empty lateral line, greatly increasing sprinkler longevity.

One last note when working on improvement of older existing systems: sprinklers should be reset to proper grade level, screens cleaned, and nozzles replaced. Nozzles on both spray heads and rotors will wear over time and lower the ability for water to be sprayed efficiently. It is a good idea to check with your local irrigation distributor to see if there are newer, more efficient nozzles available for existing, installed sprinklers. ■

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