

SPRINKLER TECHNOLOGY ADVANCES

New nozzle types join tried-and-true favorites to give landscape irrigators more choices

BY RON HALL EDITOR-AT-LARGE

THE GOAL OF any turfgrass irrigation system is to provide the precise amount of water to meet plant needs — no more, no less. While this may be possible in a manufacturer's sprinkler testing chamber, it's a bigger challenge on customers' landscapes.

Factors such as wind, slopes and depressions within an irrigated area,

and the design of the landscape itself, test any system's efficiency. To address these and other variables, manufacturers offer a range of sprinklers to irrigate landscapes, which themselves, of course, vary greatly, from small ornamental beds to acres of turfgrass.

Sprinklers are generally divided into two categories:

1. Fixed spray heads disperse a fan-shaped pattern of water. Interchangeable

nozzles determine the pattern and the distance the water is thrown, although generally not beyond 15 to 20 feet. Spray heads need 20 to 30 psi of water pressure to operate properly.

2. Rotors are usually spaced farther apart than spray heads and operate by rotating streams of water back and forth across the turfgrass. Of the several different types, the most common are impact and gear-driven rotors. Rotors need more water pressure to operate than spray heads — 45 psi or a little higher — and they irrigate a larger radius of landscape than spray heads.

Too much pressure?

A landscape's size and design often dictate the installation and use of both spray heads and rotors. Therefore, controlling the pressure within the optimum pressure ranges at the nozzles of the sprinklers is a challenge, yet crucial to efficient irrigation. Too

A properly designed and well maintained irrigation system dispenses water evenly across a landscape.



Manufacturers offer many different nozzle selections for sprinklers.

much pressure breaks up the spray pattern, causing small droplets (misting) that reduces the radius of the spray pattern. Too little pressure, and the drops of water are too large, and the area immediately surrounding a sprinkler gets too little water.

"The big challenge when installing systems is that the water pressure can vary all over the place," says Jeff Marcinowski, rotor product manager for Rain Bird, "from neighborhood to neighborhood, from property to property, and even on the same property, from the top of a hill to the bottom of a hill, for example."

There are several ways to control

pressure delivered to sprinklers, but that's a subject for a future article. Instead, let's address sprinklers and nozzles, specifically their role in delivering irrigation uniformly across turfgrass.

How well they do this is known as distribution uniformity (DU). Poor DU causes some areas of the landscape to receive too little water, resulting in dry (brown) spots. Customers don't like dry spots, so they run the system to green them and over-water the rest of the landscape.

DU breakthrough

The design of the sprinklers is not the culprit behind poor DU; rather, it's improperly spaced, poorly maintained or broken sprinklers. In fact, a number of sprinklers on the market have proven their reliability over time, and continue to be offered for sale and pro-

vide high levels of irrigation efficiency, like Hunter Industry's MP Rotator and the sprinklers that fall under Rain Bird's Rain Curtain Technology and MPR Series Nozzles to name just two.

This spring a new nozzle technology promises to improve irrigation efficiency even more. Toro Irrigation's Precision Series Spray Nozzles drew a lot of attention at this past fall's Irrigation Association Conference, and was selected as the best new product competition in the Turf/Landscape category.

These spray nozzles dispense water by creating one or more high-frequency oscillating streams to achieve desired radius and arc. The nozzles reduce water flow to 1 in. per hour — about one-third less than competing products, says Jeff Fisher, a product marketing manager at Toro Irrigation. They also feature matched precipitation rates.

"The nozzle is a one-to-one replacement for what is already in the

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SPRINKLER TECHNOLOGY

Toro's new Precision Series Spray Nozzles feature unique oscillating spray action.

ground," says Fisher. "You just take out the old ones and put new ones in. It's like replacing a light bulb with a new compact fluorescent bulb. You can easily train technicians to do this."

The new nozzles will save 30% to 40% of irrigation water over competing brands without the need to change run times," claims Fisher. Production began in February, and the nozzles will be on the market this spring, he says.

Quality engineering

Tour an irrigation product manufacturing facility, and you will appreciate the challenges of designing and producing products that deliver landscape irrigation water where it's needed — and in consistent, precise amounts.

On a recent tour of the southern California campus of Hunter Industries, we witnessed irrigation products being manufactured and tested. Our mid-

afternoon visit gave us a glimpse into the engineering that goes into every spray head or rotor, the products you typically see operating during testing.

Our tour through the Hunter molding shop revealed the care taken in production of the company's MP Rotator rotors, a popular product line introduced in 2002. During the molding and assembly process, these matched-precipitation-rate rotors undergo multiple cycles of quality control. In all, 19 critical dimensions of these rotors are measured — many via magnification — to guarantee that they're defect-free and meet the company's claims of high uniformity and lower application rate.

Proven technology

Another proven and popular technology is the Rain Bird Rain Curtain Nozzle Technology that is featured on all of the Azusa, CA-based manufacturer's rotors. Two patented nozzle designs — one for small- to mid-range nozzles and the other for long-range rotors — are used to deliver water for even distribution.

Rain Bird's Marcinowski says the design of the nozzles ensures the delivery of large droplets for accurate longer-range irrigation, while also providing excellent close-in watering for even water distribution.

This technology, along with the company's MPR (matched precipitation rate) Nozzles and its PRS Stems and Dials complete what Marcinowski describes as the "three-legged stool of irrigation efficiency."

Referring to his company's wide selection of spray heads, rotors and nozzles, Marcinowski comments it provides end users "the ability to use the right product for the right application."

The comment, in fact, fits the product category as a whole, regardless of manufacturer. There's a variety of highly engineered products from which to choose; the challenge being to match the right products for each site's unique irrigation challenges. **LMH**

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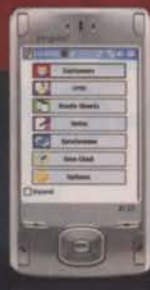
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