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Irrigation systems are being developed that will be able to tell when soil conditions require additional water and also can be programmed to be operated and tracked off site.

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four sensing ports, which are designed to interact with various accessories to better control irrigation. Devices that can be attached to these sensor input ports include rain sensors, wind sensors, temperature sensors, rain gauges and soil moisture sensors. Most sensor ports

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► Simi Valley, CA-based **Rain Master** introduced its line of evapotranspiration (ET)-based irrigation controllers. The Internet-ready system offers water-saving features, including an automatic or manual ET adjustment, along with electrical- and water-flow alarm capabilities.

► Looking for a way to control weeds while still allowing water and nutrients to get to the landscapes you maintain? Try Bridgeview, IL-based **Ground Cover Industries'** new Architect's Choice landscape fabric. The brushed polypropylene fabric conforms easily to the ground and features a rough surface that holds mulch or stone in place.

— Frank Andorka

have an override switch and a system override indicator. Soon these sensor inputs will also be incorporated on lower end controllers and be more interactive with the overall irrigation system. The more information the irrigation system receives, the more accurate it becomes.

Regulate the pressure

Pressure regulation is accomplished different ways on an irrigation system — at the point of connection, at the zone valve and, in some cases, at the sprinkler. Various pressure regulating valves have been available for the water supply for many years using either a plumbing type product like a Watts U5-B or Wilkins 600, or with a large Cla-val type product. These products haven't changed over the years. Pressure regulation options for the zone valve have also been available for many years, but only in the last few years have they become reliable. Almost all valve manufacturers offer this option and the required maintenance is much lower than it was in the past.

Spray sprinklers are the only pop-up sprinklers that have pressure regulation available at the sprinkler. Keep in mind that pressure regulation is different than pressure compensation, which has been available from several manufacturers for years. Until last year only one manufacturer made a pressure-regulating

sprinkler and now there are at least three. Soon, we'll hopefully see pressure-regulating rotors that are already available on the golf market.

Why is pressure regulation important? Every sprinkler has an optimum range for operation. For each pressure the sprinkler throws a specific distance and uses a precise amount of water. From a manufacturer's standpoint, the more pressure ranges and distance a sprinkler can cover, the fewer sprinkler types need to be designed and built. However, each sprinkler still has an optimum pressure for how evenly or uniform the sprinkler applies water. The more uniformly the water can be applied, the less time the sprinkler needs to operate and the less water it will use.

This optimum pressure is usually in the middle of a sprinkler's pressure range. That pressure for spray sprinklers appears to be 30 psi. Rotors will probably vary with their size, but the pressure will be determined by manufacturer testing. Expect to see a lot of pressure regulation of individual sprinklers in the next decade. They'll cost more but they'll be worth it. In the meantime, pressure regulate the zone valves to save water.

Remote control

Remote control is a great service tool for the

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Ohio Turfgrass Foundation Research and Educational Center – 2000

Treatment	Rate	% Turf Density
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Fertilizer (46-0-0)	0.014 lb. N/1000 sq. ft.	72.00
Fertilizer (46-0-0) + Prospect Plus	0.014 lb. N/1000 sq. ft. + 48 oz./acre	77.00

Seeded on August 4, 2000 with G-2 creeping bentgrass at a rate of 2 lbs. per 1000 sq. ft. Density measurements were based on % cover taken visually on 10/4 (8 weeks after treatment)

Study Results: "... a significant increase in creeping bentgrass establishment two months after seeding with the application of fertilizer and Prospect Plus compared to the untreated control." A 22% improvement over check and more than a 12% increase over fertilizer alone!

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Tomorrow's irrigation specialist will require more education and may need a license or certification to install and maintain systems.

for communication between the controller and a PC or other devices.

Smart controllers

Once the irrigation system controller can communicate with other devices, the possibilities are limitless. Large-scale central control systems have been communicating with different devices for many years, some successfully, some not. This technology is filtering down to smaller irrigation systems.

The smart irrigation system of the future is likely to be semi-automatic and irrigate when needed instead of when told. Smart systems, for example, will have the ability to sense the soil moisture, determine if the irrigation system needs to water, turn it on and then shut off the system when the optimum soil moisture level is achieved.

A smart system will monitor the flow and pressure from a pump system, and if there's more or less flow available than the irrigation system is using, the system will turn on or off more sprinklers. A smart system, used with other equipment, will tell if there has been a significant pipe break or leak, determine if it's a main line or lateral, isolate the location, shut down that part of the system and continue to operate the rest of the system. It will also inform the responsible party, either through a page or phone call, about the location and problem.

There are also some irrigation trends we'll see in the next few years or sooner that aren't related to equipment but the environment. These include regulatory restraints and some installation procedures.

Restrictions on the increase

Expect more regulation with the irrigation industry. This may be in the form of reduced water availability and residential irrigation system restrictions such as a ban on automated systems or new potable water taps, as is currently the case in some areas. Additionally,

groundwater sources from private wells will also be under increased scrutiny. Licensing or certification requirements for installation contractors will become more prevalent.

Bills are pending in New York and North Carolina, and more states will likely require that installers be properly trained and educated. This will involve either mandated licenses or voluntary certification of installers. There will be increased costs and the need for more education of the industry.

Step in this direction

Directional boring is another trend that will accelerate. Boring under roads, railroad tracks and other obstacles has been around for decades, but it has been limited to straight bores that were expensive due to the size of excavations required and amount of time and labor needed to complete the bores. New technology is now available from companies such as Ditch Witch and Vermeer.

The directional bores don't require the deep excavations, straight lines or time of traditional bores. The machines are almost 100% automatic and the operator uses a joystick much like playing a video game. Even though the operation is still performed by specialty contractors, the cost of boring is now competitive if not less expensive than open cutting, trenching and patching of a road crossing. The costs for directional boring continue to decrease and more irrigation systems are using this technology.

In summary, competition for water will force more restrictions on irrigation systems and those who install these systems. New technologies geared toward using less water and still meeting the watering needs of the area being irrigated are just around the corner. **LM**

— Brian Vinchesi is President of the American Society of Irrigation Consultants (ASIC) and President of Irrigation Consulting, Inc., of Pepperell, MA.

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contractor because it saves time and labor, and therefore cuts costs to not only the contractor but the end user as well.

Ten years ago, there were only two handheld remote controls available in residential/commercial irrigation. These controls were basically from third party manufacturers whose equipment could be added to any manufacturer's controller. Today, almost all manufacturers offer remote-ready controllers through their entire controller line.

Although we'll continue to see improvements in the on-site remote control of systems, the exciting area is in off-site remote control.

There are several ways this control can be accomplished, like off-site programming of the controller through a personal computer (PC)-based software program. You would then simply go to the site and upload it. Or, it can be a faceplate that can be removed from the controller, programmed, then put back into the controller. Most directly, it can be a modem, internet or satellite connection that interfaces directly with the controller.

For contractors with a large commercial or homeowner association customer base, this technology provides unlimited cost savings and potential increased sales.

Controllers of the future will be equipped with RS232 communication ports to allow

Sprayers, spreaders at a glance



Cutler-Malone units with air-powered delivery via hand-held spray wand

"A 1,000-gallon sprayer is easier on the truck full than it is three-fourths full," says Chuck Kolenut, General Manager of North-eastern Arborists. "A three-quarters tank starts sloshing — boom, boom, boom — and the material moves front and back and starts to throw the truck around. You hit the brakes harder and still feel the truck step forward." The result is either a heavier foot on the brake at intersections or a lot of wear on the clutch even when the truck is stopped. Given a choice, Kolenut says he would use up his brakes because they can be repaired in a morning. Lose a clutch and the truck is out of service for a day or two.

Be careful of total weight, too. A 200-gallon tank is a lot for a one-ton pickup. Sure, there's only 1,700 lbs. of water in the tank, but don't forget the weight of the material, the pump, the frame, and tools in the bed.

The sloshing problem will also show up if the truck has to swerve in traffic or take a steep curve. Be sure to use a solid frame and torque down on the mounts. Don't go cheap on the frame. "If the frame twists and the tank cracks and leaks, you'll end up paying more in fines than you'll ever save," Kolenut says.

BY CURT HARLER /
CONTRIBUTING EDITOR

Commercial sprayers are manufactured using stainless steel, fiberglass, polyethylene or brass. Each material has its place, and each has its cost. Brass, for example, is limited almost exclusively to fittings. It's too expensive and heavy to use anywhere else.

If weight is the major consideration, engineers look to poly tanks. It's great for backpack units; it's cheaper, too. However, there is a cost. Poly only lasts around 10 years — and truck-mounted poly tanks can become brittle in the sun. If they leak, there is a whole array of problems to be faced.

Fiberglass takes impact better than poly. Also, it can be shaped to any form and therefore can be mounted on a pickup truck and removed easily.

Stainless steel is used in top-notch products that last a long time. The trade-off is in weight. Landscape professionals in the market for a larger spray truck or a dedicated spray vehicle prefer stainless or fiberglass tanks.

Vehicle considerations

The most common spray equipment in the business is the pickup-mounted tank. But it's a spray tank, not a Sherman tank, so don't drive it like one. Tanks can wreak havoc with a pickup's mechanics, especially the clutch and brakes.



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