

controllers use historical or real-time weather data to determine when and how much to irrigate.

Other irrigation controllers use soil moisture sensors to determine when to irrigate. When the soil is too wet, the sensor prevents the irrigation system from watering. When the soil becomes dry enough to add water, the irrigation system will come on for the appropriate amount of time. Unlike controllers adjusted for timing only, these innovative control systems will cost more, but they will prevent unnecessary irrigations and will provide water more closely matched to the true water needs of the plants.

### Keeping An Irrigation System Working Efficiently

Regular maintenance is required to keep an irrigation system operating efficiently. A diagram should be available from the irrigation contractor that shows the irrigation system design with zones and equipment layout (an "as-built" version of the irrigation system). This diagram should have information about nozzle sizes of sprinklers and sprays as well as the model of emitter and tubing for drip irrigation. The location, make and model for valves, filters and pressure regulators in the system should also be indicated on the diagram. This will help the owner or a contractor in replacing damaged parts with comparably operating equipment.

### Inspect the Irrigation System and Fix Broken Parts

Each year, typically in the spring, inspect the irrigation system by running each of the zones and watching how each component of the system is operating. Throughout the growing seasons, observe the system to look for broken parts or leaks. Repair or replace damaged or worn components as soon as problems appear. If there is a major problem in a zone, do not run that zone again until the problem is fixed.

As an irrigation system ages, its performance gradually changes and will deteriorate if left alone. Hire a professional irrigation auditor about every 5 years to test the system and make necessary updates and adjustments for these slow changes.

### Professional Irrigation Contractors Recommended

For an irrigation system to apply water efficiently, the designer and installer must understand the hydraulics of the system, the irrigation equipment and the variable water needs of the landscape. Poor irrigation design, installation and equipment are readily available, but the costs of watering, maintaining and fixing problems of such a system will become expensive and time consuming. A certified irrigation designer or contractor is recommended for design and installation of irrigation systems. To find out which irrigation contractors in your area are certified, go to the Irrigation Association website and look at their list of certified professionals in Georgia. The website is [www.irrigation.org](http://www.irrigation.org).



**Make Every Drop Count...  
Our Future Depends on It!**

For additional information on saving water in the landscape, see Georgia Cooperative Extension Bulletin 1073, *Xeriscape: A Guide to Developing a Water-wise Landscape on the Web* at <http://pubs.caes.uga.edu/caespubs/pubcd/B1073.htm>. Also visit <http://www.caes.uga.edu/topics/disasters/drought/> or contact your local county Cooperative Extension office by calling 1-800-ASK-UGA1.

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J. Scott Angle, Dean and Director



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# Efficient Landscape Irrigation Systems

Georgia's population growth is placing an ever-increasing strain on water supply.

In summer, residential water use increases significantly when citizens use water outdoors for landscape maintenance, recreation and cleaning.

As water becomes more limited, water conservation is essential. A water-wise landscape can reduce outdoor water use by as much as 50%.

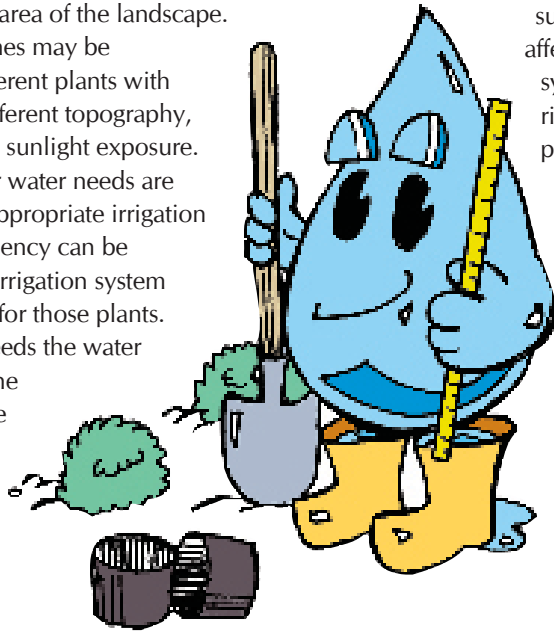


## Divide the Irrigation System Into Zones

Always design an irrigation system according to the lay of the land, the plant materials, and other things within the landscape that will be irrigated. Different areas and plants in a landscape will need different frequency and amounts of irrigation. Irrigation systems are divided into several independent irrigation zones. An irrigation zone is a group of sprinklers or emitters all controlled together at the same time. All the sprinklers or emitters in a particular irrigation zone must be compatible with the other sprinklers or emitters in that zone. Drip irrigation application will be in different zones than sprinklers, and spray applicators will not be in the same zone as rotating applicators. Mixing applicators with different application rates in a single zone is inefficient because the different kinds of applicators need to be controlled differently.

## Group Plants With Similar Water Needs

An irrigation zone is designed to apply water efficiently to a particular area of the landscape. This means irrigation zones may be separated to manage different plants with different water needs, different topography, different soils or different sunlight exposure. When plants with similar water needs are grouped together in an appropriate irrigation zone, the water use efficiency can be maximized because the irrigation system provides water correctly for those plants. For example, turfgrass needs the water distributed evenly over the turf area, so sprinklers are best for turfgrass areas. Perennial plantbeds and garden plants are more efficiently irrigated with drip irrigation than sprinklers.



## Rain Shutoff Sensors Stop Unnecessary Irrigation

A sensor that stops the irrigation system when it is raining saves water. Place one kind of rain sensor above the irrigation system, exposed directly to the rain in the air. Soil moisture sensors buried in the soil also sense when rain has infiltrated into the soil and prevent irrigation while the soil has plenty of moisture from the rain.

## Low Pressure Won't Let the Water Spread Out

Irrigation systems that run without enough pressure waste water. Systems with little pressure will not spread the water evenly, so dry spots and wet spots may appear in the landscape. When using water from a public utility, low pressures may occur when a system has been in place for many years, and the number of downstream users has increased a great deal. Often, new residential or commercial developments extend the length of a water main to new users and will cause a change of pressure for the upstream water users. When the water supply pressure changes enough to affect the performance of the irrigation system, replace nozzles to get the right flow and sprinkler patterns. Low pressure in a particular zone may be caused by a leak within that zone.

When low pressure is suspected and the cause is not obvious, call in an irrigation professional to diagnose the problem and determine the best solution.

## High Pressure Irrigation is Blowing in the Wind

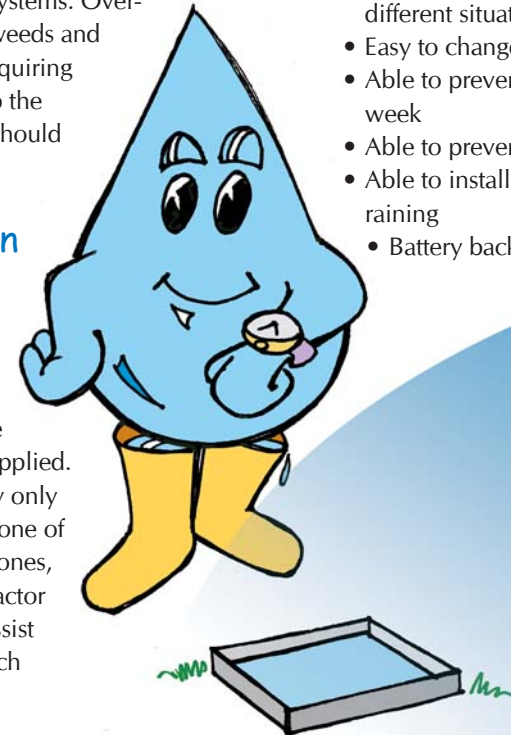
Water is wasted when pressures are too high. Over-pressurized sprinklers create a fog or mist around the sprinkler head. Much of the misty water will evaporate before reaching the ground, and the rest of the mist is not applied where it is needed. Fix an over-pressurized irrigation system or zone by placing pressure regulators in appropriate places. Use pressure regulation on individual applicators, for a single irrigation zone, or for the whole system, depending on the situation. Call an irrigation professional to diagnose and recommend the best way to provide the pressure regulation that is needed.

## How To Operate A Landscape Irrigation System Efficiently

The objective of an efficient irrigation system is to maintain the health of plants. It is often challenging to apply the right amount of water only when plants need it. In Georgia, over-watering is one of the biggest problems with using irrigation systems. Over-watering encourages diseases, weeds and insects in the landscape, thus requiring more work and expense to keep the plants healthy. Irrigation water should supplement rainfall.

## Know the Application Rate for Each Irrigation Zone

Without knowing application rates for a system, it is impossible to know whether the right amount of water is being applied. A single irrigation should supply only enough water to refill the root zone of plants. A drawing of irrigation zones, provided by the irrigation contractor with the installed system, can assist with the application rates for each



zone. If this has not been provided for you, a certified landscape irrigation auditor can perform an irrigation audit to determine this information. Homeowners can do their own tests for application rates by catching irrigation with cans or pans in each zone, timing the catches, and using this information to calculate an application rate.

## Flexible Timing Works Best for Control

Today's technology provides many tools that make it easier to irrigate plants only when the water is needed. Sensors that stop the irrigation system when there is rainfall is the simplest step to making the irrigation system supplement rainfall. It is important to have a quality irrigation controller that allows flexibility in programming and ease in adjustment for season and weather changes. Irrigation controllers set on a time schedule for irrigating need these capabilities:

- Able to easily adjust the timing for seasonal changes
- Able to have at least two programs saved for different situations
- Easy to change programming
- Able to prevent watering on certain days of the week
- Able to prevent watering on alternate days
- Able to install sensor that stops irrigation when raining
- Battery backup to retain programming during power outages

New irrigation controllers, using better information than the time of day and day of the week to determine when to irrigate, are becoming commercially available. These newer technologies limit irrigation applications to when the plants need water, making them highly efficient. Some of the newer irrigation