

Landscape Irrigation

A "TAKE CARE OF TEXAS" GUIDE



One of the most important steps in maintaining a healthy landscape is effective irrigation. A properly watered lawn and garden is more resistant to pests and other lawn problems. However, much of the water used to maintain our landscapes is wasted through inefficient watering techniques. By developing a water-efficient lawn and garden, you can maintain a healthy and beautiful yard that benefits the environment.

Water-Efficient Landscapes

A water-efficient landscape starts with plant selection. Choosing plants adapted to the area will help make your landscape both beautiful and water-efficient. Plants native to your area typically require less maintenance and smaller amounts of pesticides, fertilizers, and supplemental water.

Keep in mind, though, that newly established landscaping will require more water than an established area. Adjust your watering schedule according to the needs of your plants.*

Watering Mistakes

Much of the water applied to lawns and gardens never gets absorbed by the plants. Common ways that water is wasted include:

- **Runoff.** Applying water too rapidly causes runoff, because grass and plants can only absorb so much water at a time. When runoff occurs, soil, fertilizers, and pesticides can be carried to nearby streams.
- **Evaporation.** Watering in the middle of the day or using a sprinkler that sprays a fine mist causes much of the water you apply to be lost through evaporation. Plants don't have enough time to absorb the water before it is evaporated by the sun.
- **Underwatering.** Watering too little is wasteful because it does little to alleviate any drought stress that the plants may have.
- **Overwatering.** Applying too much or too often causes the greatest waste of water. In addition to overwatering the plant,

excessive irrigation can leach nutrients deep into the soil away from plant roots, which increases the chances of runoff pollution.

Good Watering Techniques

The key to watering lawns is to apply water infrequently, yet thoroughly. This creates a deep, well-rooted lawn that efficiently uses the water that is stored in the soil. To know when to water your lawn, simply observe the grass. Wilting and discoloration are signs of water stress. At the first sign of wilting, you have 24 to 48 hours before damage occurs.

To water properly, apply 1 inch of water to the lawn as rapidly as possible without runoff.

An easy way to measure your application of water is to place a 6-ounce tuna can on your lawn. When the can is full, you have applied enough water.

If you start to notice runoff before the can is full, turn off the water. Then, wait for approximately one hour to allow the grass to absorb the water, turn the water on again, and wait for the tuna can to fill.

Water early in the morning, before 10 a.m. Avoid watering from mid-morning to late afternoon, when you can lose one-third of your water to evaporation. Also avoid watering in the evening, because lawns and plants that are left wet overnight are more prone to disease.*



*Always comply with your water system's water-use restrictions.

Irrigation Systems

The goal of any irrigation system is to supplement rainfall. You can achieve your landscaping goals while conserving water by using spray irrigation or drip irrigation. You may use permanent installations or temporary (hose-end) irrigation systems.

If you design and install your own permanent landscape irrigation system, it must meet required state and local design standards and requirements. To review the irrigation rules for Texas, please visit <www.tceq.texas.gov/licensing/irrigation/landscape.html>.



For your local rules, please contact your water utility.

If you do not install your own system, you should work with a licensed irrigator. A licensed irrigator can help evaluate your landscaping needs and develop plans that ensure the irrigation system works properly and conserves water. To locate a

licensed irrigator in Texas, visit <www.tceq.texas.gov/licensing/licenses/lilic>.

All permanent irrigation systems are required to be connected using approved backflow-prevention to ensure there is no cross-connection with the water supply.



Rainwater Harvesting

Rainwater harvesting can offer you another effective way to conserve water in your yard. An easy way to begin harvesting rainwater is by directing a gutter downspout into a barrel and using the collected water in gardens or on potted plants. Rainwater is free, and it's better for your plants than treated water, because it does not contain hard minerals.

For more information, see the publications *Rainwater Harvesting with Rain Barrels: A "Take Care of Texas" Guide* (GI-383) <TakeCareOfTexas.org/publications/gi-383.pdf> and *Rainwater Harvesting* (GI-404, reprinted courtesy of the Texas A&M AgriLife Extension Service) <TakeCareOfTexas.org/publications/gi-404.pdf>.



Spray Irrigation

Spray systems can be part of a permanent irrigation system or temporary system that consists of "hose-end" sprinklers that you can set up and move around.

Your area may have specific requirements for permanent irrigation systems, including obtaining a permit for the system and installing the appropriate backflow-prevention assembly. You should contact your local water supplier before planning or installing an irrigation system to ensure that you comply with any requirements.

When used properly, permanent sprinkler systems can save time and money. Many underground irrigation systems use timed controllers that turn off the system when a measured amount of water is used. Rain and moisture sensors help prevent watering in the rain and are now required in most areas in Texas. Check with your local

water supplier to make sure your irrigation system meets the requirements that are in place for your area.

Permanent sprinkler systems require maintenance and adjustments. This can be done by you, a licensed irrigator, or licensed master plumber.

- Check your settings at least quarterly to make sure that water is being applied properly and make adjustments as needed. It is important to ensure you are providing adequate water but are not overwatering. Depending on where you live, you may need to winterize your system in the late fall to prevent freezing of system components.
- Check your sprinkler heads regularly. Remove any dirt or debris that may be clogging the nozzle and make sure that water is flowing at the proper pressure.
- Check for leaks, and repair them promptly. Sprinkler-head repair can be done by you, a licensed irrigator, or a licensed master plumber.

Different areas of your yard may have different watering requirements. Some plants and trees may require less water than grass does. You can reduce the sprinkler run time for these areas. A licensed irrigator can advise you on irrigation application rates for your geographic area, topography, soil conditions, and other factors.

For "hose-end" sprinklers, make sure the sprinkler heads are adjusted to avoid watering sidewalks and driveways or other hard surfaces. A hose-end

sprinkler head should spray large droplets of water instead of a fog of fine mist, which may be affected by wind drift. Set a timer, so that you remember to turn off the hose-end sprinkler.

For more information on irrigation systems, see *Landscape Irrigation: A Consumer's Guide to Landscape Irrigation in Texas* (GI-390) <www.tceq.texas.gov/goto/gi-390>.

Drip Irrigation

Drip irrigation can offer a more efficient method of watering than spray irrigation, particularly in small areas. Drip irrigation applies water to the soil slowly and under low pressure through emitters, bubblers, or spray heads placed at intervals. Because drip irrigation systems distribute water slowly, the run time may be significantly longer than for a traditional sprinkler system. However, there will be less evaporation and loss due to runoff.

Drip irrigation installation can be inexpensive and, with maintenance, can last as long as other irrigation systems. You can install drip irrigation systems on or below the ground's surface. Consult a licensed irrigator to determine the appropriate type of drip irrigation system for your needs.

Drip irrigation can be used for watering vegetables, ornamental and fruit trees, shrubs, vines, and container-grown plants outdoors. Drip irrigation is not well suited for solid plantings of shallow-rooted plants such as grass and some ground covers.

Some of the benefits of drip irrigation are as follows:

- Drip irrigation can reduce water loss by 60 percent or more, compared to spray irrigation.

Because drip irrigation applies water just where it is needed, there is little chance of waste through evaporation or runoff.

- The soil moisture remains relatively constant.
- Water contact with the leaves, stems, and fruit of plants is minimized, preventing disease.
- Rows between plants remain dry, which reduces weed growth.
- Once installed, little labor is required to operate or maintain a drip irrigation system.

Operating a drip system involves deciding how often to turn it on and how long to leave it on. The object is to maintain adequate soil conditions without wasting water by overwatering.

- For newly seeded gardens, the system should run only a short time every day for a few days, to keep the surface soil from drying out.
- Plants loaded with fruit will need an inch of water every other day.*

Soaker Hoses

Soaker hoses can offer an easier and cheaper alternative to drip irrigation. A soaker hose is a porous hose that you can connect to an outside faucet, garden hose, or rain barrel and lay out along the base of plants. This system works well with plants that are close together, like ornamental beds with clumped flowers or ground covers.

However, you should not use a soaker hose to irrigate plants, trees, or shrubs that are spaced far apart, because the area between the plants will be excessively watered, which wastes water and could lead to weaker plants.

Cross-Connection Control and Backflow Prevention

To maintain the quality of our drinking-water, irrigation systems must be designed, installed, and operated to control possible cross-connections and prevent backflow into the water supply. Without proper backflow prevention, the stagnant water from the sprinkler system could be drawn into the drinkable water supply for your home. For more information on backflow, see *A Consumer's Guide to Backflow Prevention in Texas* (GI-411) at <www.tceq.texas.gov/goto/gi-411>.

WHAT IS A CROSS CONNECTION?

A cross-connection is a physical connection between drinkable water and a liquid or gas that could make the water unsafe to drink.

WHAT IS BACKFLOW?

Backflow is water flowing against its intended direction, which can contaminate the water supply. Backflow can be caused by either a loss of pressure in the supply lines or an increase in pressure on the customer's side.

There are several ways that you can prevent backflow in your irrigation system:

- Make sure that the end of your garden hose is never submerged in water not suitable for drinking.
- Install a hose bib vacuum breaker on each of your outside faucets. These inexpensive devices are available in most hardware stores and are designed to allow water to flow in only one direction.
- Schedule a licensed backflow-prevention assembly tester to perform a test to confirm that your backflow-prevention assembly is operating properly. Keep in mind that you must have the licensed tester examine all backflow-prevention assemblies upon installation. Check with your water provider about more stringent regulations that may apply and the required frequency for testing of your backflow prevention assembly.



For More Information

If you are thinking about installing your own irrigation system or would like to know more about the requirements for irrigation systems and licensed landscape irrigators, the rules explaining those requirements can be found in Title 30, Texas Administrative Code, Chapter 344.

To locate a licensed irrigator or licensed backflow prevention assembly tester, please visit <www2.tceq.texas.gov/lic_dpa/index.cfm>. It is important to always check the licensing credentials of anyone you may potentially do business with.

The TCEQ's *Landscape Irrigation Program: Implementation* (RG-466) <www.tceq.texas.gov/goto/rg-466> explains the new rules (effective Jan. 1, 2009) for landscape irrigation for licensed professionals, consumers, system owners, and water utilities.

The *Environmental Protection Agency's Cross-Connection Control Manual* offers information on cross-connection controls and methods of backflow prevention. Go to <www.epa.gov/hscep> and search for "cross connection".

Always contact your local water supplier before planning or installing an irrigation system to ensure that you comply with any requirements.



Need More Information on Yard Care?

Landscape Irrigation complements the *Guide to Yard Care*, which is meant to be a general overview of ways you can help take care of Texas in your own yard. For more detailed information, see the following other TCEQ "Take Care of Texas" guides at <TakeCareOfTexas.org/publications>:

- *Guide to Yard Care* (GI-28)
- *Mulching and Composting* (GI-36)
- *Rainwater Harvesting with Rain Barrels* (GI-383)
- *Managing 10 Common Texas Yard Pests* (GI-405)
- *Managing Lawn Problems in Texas* (GI-407)



Watch our video of **How to Start Composting in Your Own Backyard**, featuring Travis County Master Gardener Patricia Mokry, who explains simple ways to begin and maintain various types of compost. <www.tceq.texas.gov/goto/composting-video>

Also available is our video on **Building a Rain Barrel**, a step-by-step demonstration on how to build a rain barrel using a 32 gallon plastic trash container. <www.tceq.texas.gov/goto/rain-barrel-video>



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Additional Resources

General Information

Take Care of Texas

TakeCareOfTexas.org

Texas Water Development Board

www.twdb.texas.gov/conservation

Texas A&M AgriLife Extension Service

agrilifeextension.tamu.edu

Environmental Protection Agency

www.epa.gov/watersense/outdoor

Yard Care

Texas A&M AgriLife Extension, EarthKind

earthkind.tamu.edu

Texas A&M AgriLife Extension Service

Integrated Pest Management

landscapeipm.tamu.edu

Lady Bird Johnson Wildflower Center

Native Plant Selector

www.wildflower.org/plants

For more information, contact:

Take Care of Texas, MC 109

Texas Commission on Environmental Quality

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