



Water Conservation



CONSERVATION in your BACKYARD

WE CAN ALL HAVE A HAND IN IT

Water conservation is important to manage water supplies sustainably. It protects the environment and allows water utilities to better meet current and future needs. Therefore, all Texans have a responsibility to conserve precious water resources:

- For future growth and future generations
- To reduce water costs because conservation methods are generally less expensive than other water supply options.
- To conserve energy



According to the water research foundation, Americans, on average, use 80 to 100 gallons of water in direct use each day. About 70 percent of this water use occurs indoors. The remaining 30 percent is used outdoors. In drier parts of the country the outdoor water use may be much higher. In a 2012, a study by the Texas Water Development Board estimated outdoor water use in Texas at about 31 percent.

Wise use of water for garden and lawn irrigation sets not only helps protect the environment but saves money and provides for optimum growing conditions.

Simple ways of reducing the amount of water used for irrigation include growing xerophytic species (plants that are adapted to dry conditions), mulching, adding water retaining organic matter to the soil, and installing windbreaks and fences to slow winds and reduce evapotranspiration.

Watering in the early morning before the sun is intense helps reduce the water lost from evaporation. Installing rain gutters and collecting water from downspouts also helps reduce water use.

On the Farm

If you didn't grow up on a farm, it may be hard to understand all the work necessary to grow our food. Much like growing a garden, but on a larger scale, farming requires planning, planting, watering, maintaining and harvesting.

Drip irrigation systems are frequently used by farmers dealing in high value crops, such as vegetables, and small fruits, such as grapes and berries, where lack of moisture can mean the difference between a profitable harvest or costly failure. These systems are similar to those used by the home gardener.

High-efficiency irrigation systems for row crops use less energy to pump water and, since they spray water downward, less water evaporates before it reaches the crop.

Farmers implement other water management practices to reduce the amount of water used to produce a crop.

What Plants Need

Water is a critical component of photosynthesis, the process by which plants manufacture their own food from carbon dioxide and water in the presence of light. Water is one of the many factors that can limit plant growth. Other important factors include nutrients, temperature, and amount and duration of light.

Plants take in carbon dioxide through their stomata--microscopic openings on the undersides of leaves.

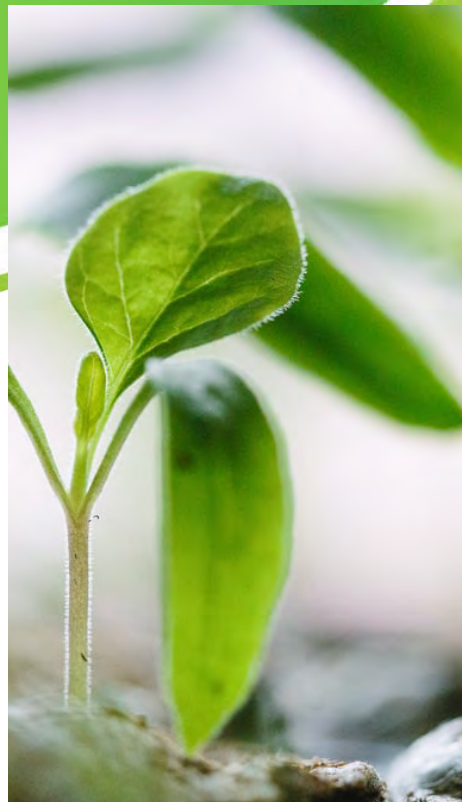
FUN FACT



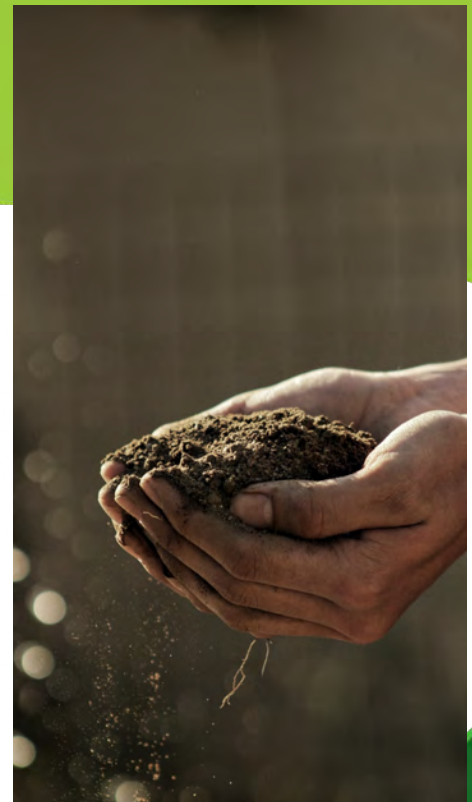
One acre-foot is about the size of a football field covered with one foot of water and is equal to 325,851 gallons.



Rain gauges help to prevent overwatering.



Be informed about how much water your plants need and when is the best time to apply water.



Healthy soils help plants grow and thrive.



Transpiration



Water is also lost through the stomata in the process called transpiration. Transpiration, along with evaporation from the soil surface, accounts for the total moisture lost from the soil. When there is a lack of water in the plant tissue, the stomata close to try to limit water loss. Wilting occurs when the tissues lose too much water. Plants adapted to dry conditions have developed numerous mechanisms for reducing water loss, including narrow leaves, hairy leaves, and thick fleshy stems and leaves.

Pines, hemlocks, and junipers are also well adapted to survive extended periods of dry conditions which they encounter each winter when the frozen soil prevents the uptake of water. Cacti, with leaves reduced to spines and having thick stems, are the best example of plants well adapted to extremely dry environments.

Choosing Turfgrass and Plants with Low Water Needs

Most residents in Texas take pride in caring for their lawns. They want beautiful manicured grass, but they may not think about the options they have in their area for low water plants and grass. The most water saving varieties are native grasses such as buffalo grass. When choosing a grass species best suited for your area, select a grass adapted to the climate and site-specific conditions. A good place to start in making your decision on grasses and plants for your backyard is with your local Texas AgriLife Extension agent in your county.



Source: Texas Farm Bureau

WATER IN TEXAS: Irrigation Facts

It takes water to grow food & fiber. Irrigation is critical to our food production & food security.

86%

Groundwater is the largest source of most agricultural irrigation in the state.

11.6%

Surface water used for irrigation in the state.

2.4%

Surface water and groundwater mixed used for irrigation in the state.

Understanding your soil types is a key to knowing the moisture requirements to have a plan for water use.



Web Soil Survey

Soil health is critical in the establishment of healthy grass and plants. Find out what soil type you have from the USDA-Natural Resources Conservation Service (NRCS) Web Soil Survey -<https://websoilsurvey.sc.egov.usda.gov/>.

Unlock the Secrets of the Soil



Learn what you can do to build a healthy soil for your garden or in your backyard. You can find soil health tips from NRCS' Unlock the Secrets in the Soil - www.nrcs.usda.gov

FUN FACT: A soil test is **KEY** to the establishment and maintenance of your grass and plants!!



Efficient Watering Methods



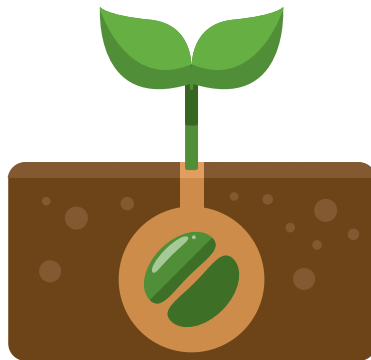
Now that you have identified your soil type, completed a soils test and you've chosen grass and plants well suited for your area, it's time to consider the type of watering application you will use in your backyard.

An irrigation system can be easy to install. Numerous products are readily available for home use. The simplest system consists of a soaker hose that is laid out around the plants and connected to an outdoor spigot. No installation is required, and the hose can be moved as needed to water the entire garden.

Drip irrigation systems are also a great way to help reduce water use and meet the needs of plants. With this method, small amounts of water are supplied to the base of the plants. Since the water is applied directly to the soil, rather than onto the plant, evaporation from leaf surfaces is reduced. The water is also placed where it will do the most good, rather than sprayed over the entire yard and garden.

The basic elements of a drip system consist of the head, the tubing, and the emitters.

The installation of these components will create a better operating system as part of your water supply. The major components of this may include a pressure regulator, a filter, an anti-siphon valve, and an automatic timer. While this may sound complicated, some drip systems are designed to be used with low water pressure, under 25 pounds per square inch (psi), while others are designed to operate within a wide range of pressures, usually from 10 to 70 psi.



Normal city water pressure is about 55 psi. Check to see if a pressure regulator is needed for the drip system you are planning to use.

- Because of the small size of the openings in the emitters, they easily can become clogged by sediment in the water. A filter should be installed to keep emitters operating freely.
- Install a back-flow preventer. This is a valve that prevents the accidental backflow of water in the system getting into the water line. This is required by city ordinance in most municipalities.

A timing device can be added to automatically turn the system on and off. This can be as simple as a battery-operated hose attachment or a more permanent timer that is wired into your landscape irrigation system.



Plastic Tubing Considerations

Plastic tubing is used to get the water from the source to the garden. This comes in many sizes. A variety of fittings are available to go around corners and to connect pieces.

Check with the supplier for the maximum length of tubing that can be run in anyone direction. A general recommendation is that 400 feet is the maximum for 1/2-inch tubing.

By making just a few adjustments in your watering methods can create an excellent growing environment for your grass and plants while still conserving large amounts of water.



Consider what you intend to water with the drip system

You may need several different systems to best meet the needs of various plants. Not all plants have the same water requirements and soil conditions in various parts of your yard may vary.

Trees, because of their large size and deep root systems, probably will require less frequent but longer irrigation sets. Well mulched vegetable gardens high in organic matter or shady flower gardens probably will require shorter watering times than gardens with sandy soils or those in full sun. Once you have thought about your watering needs, discuss your ideas with at a garden or irrigation supply store. Most drip irrigation suppliers can help you design a system to best meet your gardening needs.



Above ground low pressure drip irrigation system.



An example of a back-flow preventer required by most city ordinances.

How irrigation water is delivered to the plant

Emitters deliver the small amounts of water to the plants. Depending on the style, emitters can either be attached directly to the pipe or attached to "spaghetti tube," a small flexible tube that can be placed next to plants or in pots. Emitters let water drip out very slowly, or small spray emitters can be installed to provide a spray pattern, similar to a lawn sprinkler.

Emitters vary in the amount of water delivered per hour. Some deliver as little as one half gallon of water per hour while others deliver up to 10 gallons per hour. Spray emitters also are available in various flow rates as well as with different spray patterns and coverage areas.

While these systems need more planning, they are relatively inexpensive and simple to install. In most cases, no special tools or skills are needed. Plastic tubing is punched with an inexpensive tube punch that assures the proper hole size. Emitters or spaghetti tubes snap into the hole. No gluing is required. Some systems come with pre-assembled emitters at regular intervals. Drip systems require periodic maintenance. You will also need to check emitters to make sure they are working properly as they can become clogged.



Drip tape has small openings called emitters to deliver the water. There are also many dripper options that can be inserted into the tape.





take care of water resources because it isn't a limited supply!

CONSERVATION MATTERS

Find helpful **RESOURCES** for water conservation at **WATERGROWS.ORG**



WATER GROWS...

LET'S MAKE IT LAST

WaterGrows.org



United States Department of Agriculture
Natural Resources Conservation Service

USDA is an equal opportunity employer, provider and lender.



USDA NRCS Texas 07



NON-DISCRIMINATION STATEMENT

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotope, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [How to File a Program Discrimination Complaint](#) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

USDA is an equal opportunity provider, employer, and lender.

USDA Natural Resources Conservation Service
CONTACT:



254-742-9800



texasNRCSinfo@usda.gov



www.tx.nrcs.usda.gov

June 2021