

Earth Kind: Environmental Stewardship Program

Water Conservation:



Water supply has become a critical issue for the future prosperity of Texas. Booming populations have increased the demand on the state's already limited supply of high quality water. In addition, seasonal fluctuations in rainfall and periodic droughts have created a feast-or-famine cycle in Texas.

In urban areas of Texas about 40-50% of the domestic water supply is used for landscape watering. Much of this water is used to maintain high water demanding landscapes, or it is simply applied inefficiently.

In an attempt to reduce excessive water use, Texas Agrilife Extension is educating Texans on the principles of Earth Kind landscaping to help preserve and protect our most valuable natural resource. Traditional landscapes may incorporate one or two principles of water conservation, but they do not utilize the entire concept to effectively reduce landscape water use.

Earth Kind landscaping incorporates seven basic principles which can lead to significant water savings:

- Planning and design
- Soil analysis
- Practical turf areas
- Appropriate plant selection
- Efficient irrigation
- Use of mulches
- Appropriate maintenance

Earth Kind landscapes need not be cactus and rock gardens. They can be green, cool landscapes full of beautiful plants maintained with water efficient practices. The same green Texas-style landscape which we are accustomed to can be achieved and still conserve water.

Earth Kind uses research-proven techniques to provide maximum gardening and landscape enjoyment while preserving and protecting our environment.

The objective of Earth Kind is to combine the best of organic and traditional gardening and landscaping principles to create a new horticultural system based on realworld effectiveness and environmental responsibility.

The principal goals of Earth Kind include:

- Water conservation
- The safe use and handling of fertilizers & pesticides
- Reduction of yard wastes entering urban landfills

For more information
see our Web site:

EarthKind.tamu.edu



Start With a Plan:

Creating a water-efficient landscape begins with a well-thought-out landscape design. Sketch your yard with locations of existing structures, trees, shrubs and grass areas. Then consider the landscape budget, appearance, function, maintenance and water requirements. Local landscape architects, designers, nurserymen and county Extension agents can help in this decision making. Implementing your landscape design can be done gradually over several years. (See the Earth Kind publication on landscape design for more details).



Soil Analysis and Preparation:

To increase plant health and conserve water, add organic matter (such as compost) to the soil of shrub and flower bed areas. This increases the soil's ability to absorb and store water in a form available to the plant. As a rule-of-thumb, till in 4 to 6 inches of compost or organic material such as shredded pine bark, peat and rice hulls. For trees, however, incorporating organic matter is not necessary. Turfgrass can benefit from 1/4 inch of topdressing (finely screened compost) per year. Soil testing is offered by some local nurseries and the local Texas Agrilife extension office.



Plant Selection:

Select trees, shrubs and groundcovers based on their adaptability to your region's soil and climate. Texas is blessed with an abundance of beautiful native plants which are naturally adapted to the region. Most have lower water demands, fewer pest problems and less fertilizer needs than many nonadapted, exotic plants brought into Texas landscapes.

Through the support of the nursery industry, native Texas plants are becoming more available in retail nurseries and garden centers. Combining Texas natives with well-adapted non-native plants is the key to a beautiful, interesting landscape that conserves water. Visit the websites on the backpanel for a comprehensive listing of drought tolerant plants.

Grass Selection:

When considering a landscape's water requirement, it is important to note that turfgrasses require more frequent watering and maintenance than most other landscape plants. Carefully select grass according to its intended use, planting location and maintenance requirements.

Grasses available for use in Texas lawns vary significantly in water requirements. Planting the lowest water use turfgrass adapted to the region is an effective way to reduce landscape irrigation requirements.

St. Augustinegrass and bermudagrass are most often used for lawns in Texas. Zoysiagrass, buffalograss and centipedegrass are used less often but offer much promise for landscape water conservation.

Achieving a significant reduction in water consumption and landscape maintenance may also involve reducing the size of water-sensitive lawns through the use of patios, decks, shrub beds and groundcovers. Also, when designing, or evaluating turfgrass areas in the landscape, consider the ease or difficulty in watering the proposed area. Long, narrow or small odd-shaped areas are difficult for any irrigation equipment to efficiently water. Important note: Many cities have adopted ordinances and restrictions regarding the irrigation of these areas (i.e., the strip between the street and sidewalk). *City references are on the back of this brochure.*



Landscape Maintenance:

An added benefit of Earth Kind landscapes is less maintenance. A well-designed landscape can decrease maintenance by as much as 50 percent through reduced mowing; once-a-year mulching; elimination of weak, unadapted plants; and more efficient watering techniques.

Watering:

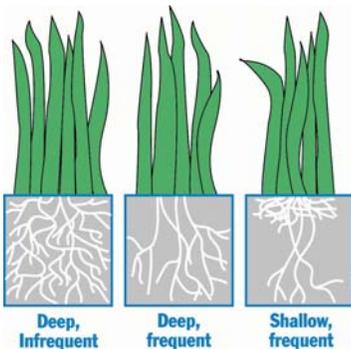
Of the tremendous amounts of water applied to lawns and gardens, much of it is never absorbed by the plants. Some water is lost to runoff because it is applied too rapidly, and some water evaporates from exposed, unmulched soil; but, the greatest waste of water is applying too much too often. In addition to overwatering the plant, excess irrigation can leach nutrients deep into the soil away from plant roots, increasing the chances of polluting groundwater. Similarly, runoff caused by excess irrigation can carry polluting fertilizers and pesticides to streams and lakes. The waste or pollution of high quality water through inefficient irrigation practices can be eliminated through proper watering techniques.



Lawns:

Most lawns receive twice as much water as they require for a healthy appearance. The key to watering lawns is to apply the water infrequently, yet thoroughly. This creates a deep, well-rooted lawn that efficiently uses water stored in the soil.

To know when to water the 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 to water before serious injury occurs. Apply 1 inch of water to the lawn as rapidly as possible without runoff. Watering only when needed and watering thoroughly produces a deeprooted lawn which is more water efficient and drought enduring.



Cycle Soak Method: This method of irrigation applies water slowly so the soil can actually absorb all that is applied. Instead of running each sprinkler zone for 15 or 20 minutes each, run each zone only the amount of time that the soil can absorb the water (which means it's not running off onto the sidewalk or street). Depending on the slope of the yard, this could vary widely from zone to zone. **Each landscape owner will have to test their zone run times to see when the water begins to run off.**

Once you have determined the maximum amount of water each zone can take before runoff, split the total irrigation time into two or three parts. This involves irrigating the zone, shutting it off to allow time for the water to soak in and then irrigating the remainder of the time. Schedule the run times about one hour apart until the soil is moistened to a depth of 6-8 inches. Most irrigation controllers can be programmed to automatically run the cycle soak method.

The lawn has been successfully watered when...

About an hour after watering, push a soil probe (or a very long screwdriver) into the soil. It will slide easily through wet soil but will be impossible to push through dry clay. The landscape has been successfully watered when the probe easily slides to a depth of 6 – 8 inches.

The plant's root system will reach for this deep moisture and will be well protected from the summer heat. By using this method, irrigation should **not** be necessary again for at least 3-5 days, depending on weather conditions.

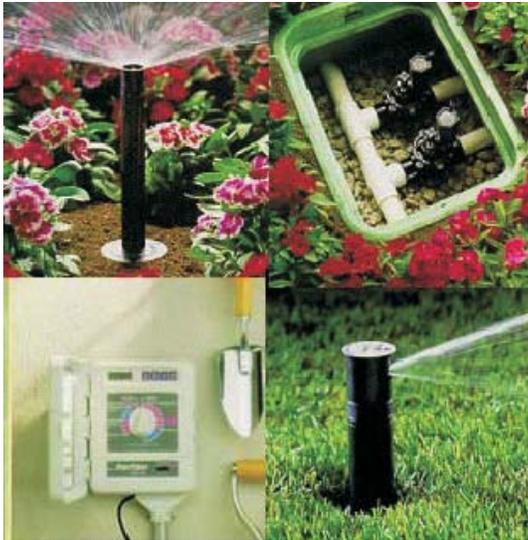
Trees and Shrubs:

All trees and shrubs need more frequent watering from planting time until becoming well rooted, which may take two growing seasons. Once established, plants can then be weaned to tolerate less frequent watering. Proper weaning develops deep roots and makes the plants more drought tolerant.



As with lawns, water established trees, shrubs and groundcovers infrequently, yet thoroughly. In the absence of rain, most trees and shrubs benefit from a once-a-month thorough watering during the growing season. Remember, normal lawn watering is not a substitute for thorough tree and shrub watering.

The feeding root system of a tree or shrub is located within the top 12 inches of the soil and at the dripline” of the plant. The dripline is the area directly below the outermost reaches of the branches. Apply water and fertilizer just inside and a little beyond the dripline, not at the trunk. Simply lay a slowly running hose on the ground and move it around the dripline as each area becomes saturated to a depth of 8 to 10 inches. For large trees, this watering technique may take several hours.



Irrigation Systems:

The goal of any irrigation system is to give plants a sufficient amount of water without waste. By zoning an irrigation system, grass areas can be watered separately and more frequently than groundcovers, shrubs and trees. Both sprinkler and drip irrigation can be incorporated to achieve water conservation in the landscape. The two most common types of sprinkler irrigation systems are the hose-end sprinkler and the permanent underground system. A permanent sprinkler system can be more water efficient if properly designed and installed, but both systems require maintenance and can apply large volumes of water in a short period of time.

If you have a permanent sprinkler system, make sure the sprinkler heads are adjusted properly to avoid watering sidewalks and driveways. Also, a properly adjusted sprinkler head sprays large droplets of water

instead of a fine mist which is more susceptible to evaporation and wind drift.

With either hose-end sprinklers or permanent systems, water between late evening and mid-morning to avoid excessive waste through evaporation.

Note: The Texas State Legislature has mandated new guidelines on contractor licensing, system design and the proper installation of permanent sprinkler systems. Check with your city regarding ordinances that govern irrigation systems.

Drip Irrigation:

Drip irrigation offers increased watering efficiency and plant performance when compared to sprinkler irrigation.

Drip irrigation slowly applies water to soil. The water flows under low pressure through emitters, bubblers or spray heads placed at each plant. Water applied by drip irrigation has little chance of waste through evaporation or runoff.

Seeking professional irrigation advice and experimenting with available drip irrigation products in small sections of the landscape are the best ways to become familiar with the many benefits of this watering technique.





Mulching Conserves Moisture:

Mulch is a layer of nonliving material covering the soil surface around plants. Mulches can be organic materials such as pine bark, compost and woodchips; or inorganic materials, such as lava rock, limestone or permeable plastic, not sheet plastic.

Use a mulch wherever possible. A good mulch conserves water by significantly reducing moisture evaporation from the soil. Mulch also reduces weed populations, prevents soil compaction and keeps soil temperatures more moderate.



Proper Mowing and Fertilizing Conserves Water:

Mowing grass at the proper height conserves water. Mow St. Augustinegrass and buffalograss at 3 inches; for Bermudagrass mow at 1 inch; for centipedegrass and Zoysiagrass mow at 2 inches.

Applying fertilizer to the lawn at the proper time and in the proper amount can save time, effort and money through reduced mowing and watering. Fertilizers also can be a major source of pollution of streams and groundwater if excessive amounts are applied.

Fertilize the lawn once in the spring and again in the fall to produce a beautiful turf without excess growth which demands frequent watering. Use a slow-release form of nitrogen in the spring application and a quick-release form in the fall. Apply only 1 pound of actual nitrogen

fertilizer per 1,000 square feet of lawn at one time. By using this fertilizer schedule, no other fertilizer is needed to maintain most shrubs and trees in the lawn area.

Other Cultural Practices To Save Water:

Other cultural practices that add to the efficient use of water by plants are periodic checks of the irrigation system; properly timed insect and disease control; elimination of water-demanding turfgrass and plant materials; harvesting the rain with rain barrels; using more efficient irrigation equipment such as ET (weather based) controllers and installing rain and freeze shut off sensors.

Note: Irrigating during freezing weather can ice roadways and create a safety hazard to drivers and pedestrians. In some communities this can lead to a citation and/or fine.

Water Conservation Commitment:

For each person in Texas, water must always be a vital concern. Water is a limited and fragile resource. The water used to irrigate landscapes is considered a luxury use of water by many people. Nonessential use of water implies a special responsibility to efficiently use the resource and to protect its quality.

Water conservation in the landscape does not mean planting a harsh cactus and rock garden. It means common sense landscaping to protect water quality and quantity. It also means following the principles of water conservation to insure continued prosperity for the residents and businesses of Texas.

Before you install or update your landscape, be sure to check with your city regarding current landscape ordinances as well as your deed restrictions that may be imposed by your Homeowners Association.

By following these guidelines and tips, you can proudly create your own Earth Kind landscape.



EarthKind.tamu.edu

See the Earth Kind Web site for more ways to preserve and protect the environment...

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THIS BROCHURE WAS PRINTED IN COOPERATION WITH THE FOLLOWING ORGANIZATIONS:



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For more information about water efficient landscaping for Texas visit these websites:
www.txsmartscape.com
<http://urbanlandscapeguide.tamu.edu/waterwise.html>
www.wateriq.org