



## Water Conservation:



An adequate supply of high quality water 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-to-famine cycle in Texas.

In urban areas of Texas about 25 percent of the water supply is used for landscape and garden watering. Much of this water is used to maintain traditionally high water-demanding landscapes, or it is simply applied inefficiently.

In an attempt to reduce the excessive water use, Texas Cooperative 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 reduce landscape water use effectively.

Earth Kind landscaping incorporates seven basic principles which lead to saving water:

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

By incorporating these seven principles, you can help preserve our most precious natural resource-water.

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 real-world 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
- Landscaping for Energy Conservation

As your interest and knowledge in these areas grows you will have an increased awareness of the many programs, practices and activities that are Earth-Kind. Working together we can make a difference in conserving and protecting our valuable natural resources.

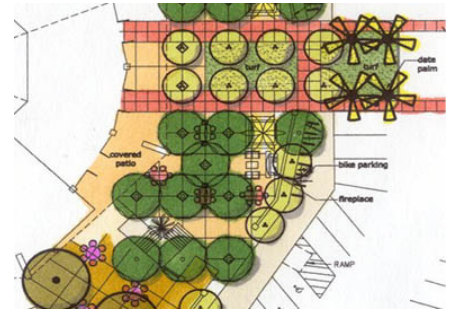


For more information  
see our Web site:

**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 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 organic material such as shredded pine bark, peat and rice hulls. For trees, however, incorporating organic matter is not necessary; for large turfgrass areas, it is not economically feasible.



## 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 a key to a beautiful, interesting landscape which conserves water. See our Web

site for a comprehensive listing of drought tolerant plants for your area.

## 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.

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.

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.



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 areas and small odd-shaped areas are difficult for any irrigation equipment to efficiently water. Try to eliminate long, narrow areas and maintain more blocky, square areas.



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## 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 and put to use. Some water is lost to runoff by being 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 deep-rooted lawn which is more water efficient and drought enduring.



## 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 enduring.

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.

## Sprinkler Irrigation:

Sprinkler irrigation is the most commonly used method of landscape watering. The two most common types of sprinkler irrigation systems are the hose-end sprinkler and the permanent underground system. Even though a permanent sprinkler system can be more water efficient than a hose-end sprinkler, both systems require little maintenance and apply large volumes of water in a short 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 fog of 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.



## Drip Irrigation:

Drip irrigation offers increased watering efficiency and plant performance when compared to sprinkler irrigation. In areas of the state with poor water quality (i.e., high salt content), drip irrigation also allows safer use of “salty water” in the landscape and garden.

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.





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## 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 centipede-grass 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 and elimination of water-demanding

## 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.

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

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



**EarthKind.tamu.edu**