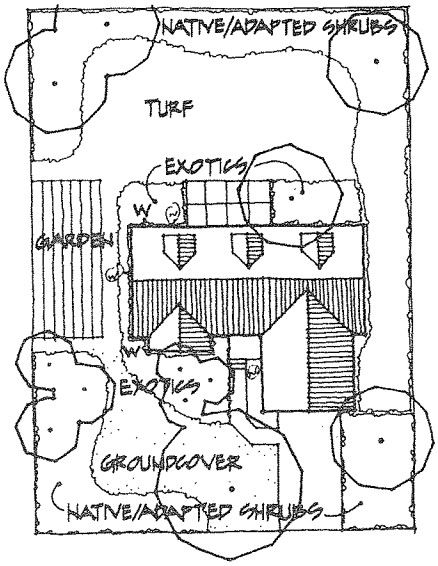
Seven Steps to Water Conservation

In 1981 a new word was coined in the Denver area that can serve as a guide to saving water while still maintaining trees and other plants in the landscape. The word is Xeriscape, derived from the Greek, xeros, meaning dry. Actually, a Xeriscape is not dry, but by applying the fundamental concepts of Xeriscaping you can dramatically cut the amount of water needed for a beautiful and functional landscape.

1. Plan and Design to Save Water

Start with graph paper and sketch in your house, property lines, water faucets, existing trees and other permanent features.

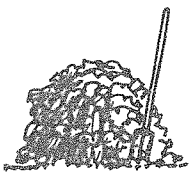
On established property, look for ways to modify the landscape to take advantage of the tips offered in this *Bulletin*. If developing a new landscape, be sure your design includes:



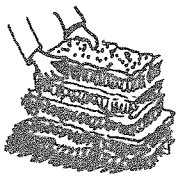
- Large deciduous trees placed to maximize summer shade on hot sides of the house. Combined with ground cover plantings, this can reduce surface temperatures 20 degrees.
- If room allows, a dense windbreak to cut down on drying winds.
- Microclimate zones, grouping vegetation based on water needs. For example, concentrate lawn areas (high water demand) only where needed. Create zones such as rock gardens, native shrubs, or drought tolerant wildflowers (low water demand) on southern exposures and little-used areas. The zone concept helps shrink the area requiring water and allows you to concentrate water where it is most needed.

What to do with old sod...

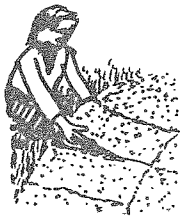
When you finally take action to get rid of water- and gas-guzzling grass, here are three ways to save the soil and recycle the grassy biomass:



1. Chop it up and add it to your compost pile.



2. Turn it upside down and stack it until the grass decomposes.



3. Turn it upside down and leave it in place as mulch.

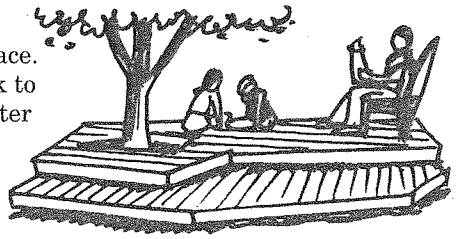
NOTE: When removing sod, do not dig too deeply or tree roots may be damaged.

2. Reduce Lawn Area

Lawn has been called a "botanical absurdity." Mowing and maintaining pure turf is a constant fight against nature and natural succession. This warfare requires water, fertilizer, weed-killing chemicals, lawn mower gas and oil, and large quantities of time! By reducing lawn area to what is actually needed for recreation or landscape enhancement, you can liberate your weekend, save money and help protect the environment.

To reduce lawn:

- Expand patio space. Use brick or deck to allow air and water to reach the root zone of trees.



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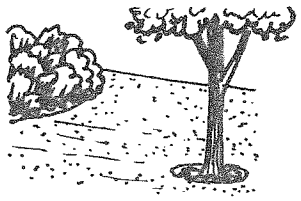

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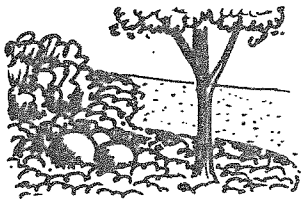
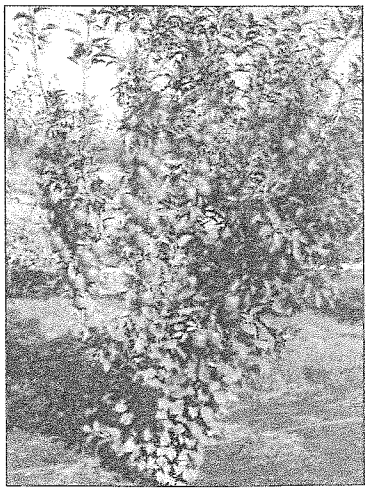


- Use mulch around trees and to gracefully extend the edges of shrub and tree zones into former lawn space.
- Develop wildflower zones and plant ground cover between trees and on steeper slopes (See references on page 8).
- Plant more shade trees and a shrub area for wildlife (See *Bulletin No. 13*).
- Consider a backyard orchard or dwarf fruit trees to combine beauty with the benefits of homegrown fruit.
- Use blue spruce, arborvitae, black locust or other suitable trees to form a wide, living fence. Add rows for extra width.
- Use large, open spaces to grow high speed trees like paulownia, hybrid poplars or willows for fuelwood cuttings. Stump sprouts will provide numerous crops without replanting.



Dwarf apple, peach, pear and cherry trees can fit any space 10' by 10' or more. Trees bear full-size fruit in 2-3 years after planting and mature at a height of only 7' - 15' for easy care.

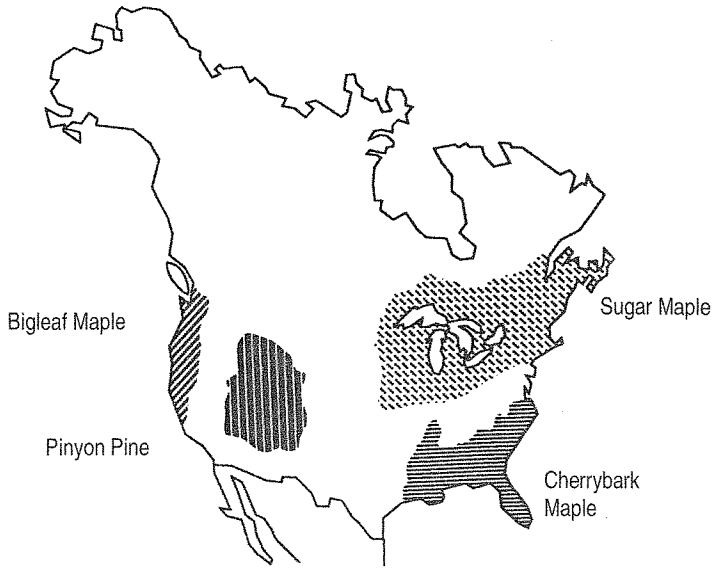
Horticultural Photography

3. Select The Right Vegetation

A tree, shrub or other plant that is naturally adapted to your soil and climate will need less supplemental watering and care. As a rule of thumb when deciding what to plant, consider native species that already grow within approximately 1/4 to 1/2 mile of your property. These species will be suited to your altitude, latitude and annual temperature extremes. In the Great Plains and Southwest, suitable native shade trees are quite limited. Here, as well as in other regions, non-native species can be selected that have proven to adapt well to the soil, climate, and microclimates of local planting sites. In fact, these "exotics," or non-natives, often have characteristics that are more attractive to homeowners than trees growing naturally in the vicinity. For a list of species recommended for your area, contact the Lady Bird Johnson Wildflower Center (4801 LaCrosse Ave., Austin, TX 78739) or visit www.wildflower.org.

When using a non-native species, check with local experts on its performance in your area over the past 15 years or more. Some introduced species do well at first, then develop pests or other problems that are expensive and disappointing.

When planting grass in dry regions, find alternatives to the beautiful but ever-thirsty bluegrass. Tall fescues are often suggested as substitutes.



The natural ranges are shown in many tree identification books. This information can be a useful first step in selecting a tree best suited to the amount of precipitation and other climatic factors where you live.

4. Work With Your Soil

Test the pH of your soil and be sure that the species you plant or retain are suited to that level. It is impractical to try altering the pH of soil enough to affect tree growth.

To increase the ability of soil to absorb and store water:

- Prevent compaction and aerate regularly.
- Till in several inches of compost (be careful of roots).
- For mulch, use organic materials such as leaves, grass clippings, or wood chips. They slowly decompose and help build a more sponge-like soil structure.
- Limit the input of manufactured chemicals.

5. Use Mulches

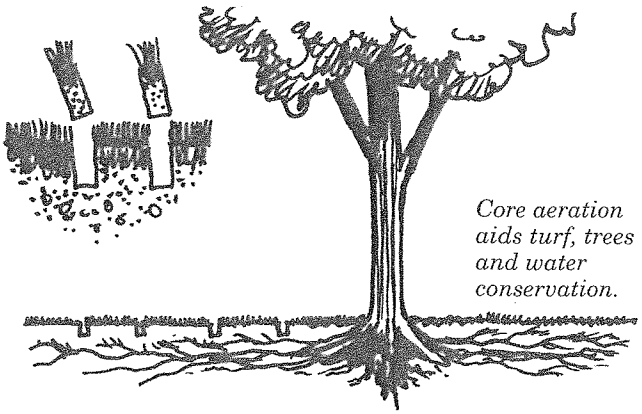
Mulch is a soil covering usually used for weed control and to protect the base of trees from lawn mowers and weed cutters. However, it is also a real friend to the water wise. Whether the mulch is an inorganic covering such as black plastic or an organic material such as wood chips or pine needles, mulch conserves water in at least four ways:

- Reducing lawn space.
- Retaining soil moisture.
- Preventing the growth of grass, weeds or other vegetation that would compete with tree roots for soil moisture.
- Organic mulches slowly decompose, helping to build soil structure that is better aerated and more sponge-like.

6. Provide Regular Landscape Maintenance

Maintaining your landscape regularly can save water several ways:

- "Core aeration," sometimes called "core cultivation," is the removal of small plugs of grass and topsoil. This is done with a machine that is available from many rental companies or through lawn care and landscaping services. This annual lawn treatment can shrink your water bill as much as 50 percent by allowing water to penetrate sod and thatch. It allows you to water more efficiently by allowing water to reach not only the grass roots, but the feeder roots of trees that invariably spread beneath the lawn.
- When using a sprinkler system, water between midnight and 10 a.m. to help prevent diseases and to reduce evaporation.
- Don't over-fertilize. Excess growth demands excess water. Find out from a county agent, or other expert who does not sell fertilizer, the minimum number of times you need to fertilize, the most effective times of year, and the minimum application per square foot.
- Control weeds. They rob moisture from the soil.
- Set your mower high. Taller grass helps reduce moisture evaporation by shading the ground and it develops deeper roots. It can even help keep weeds under control.
- Check your irrigation system frequently.



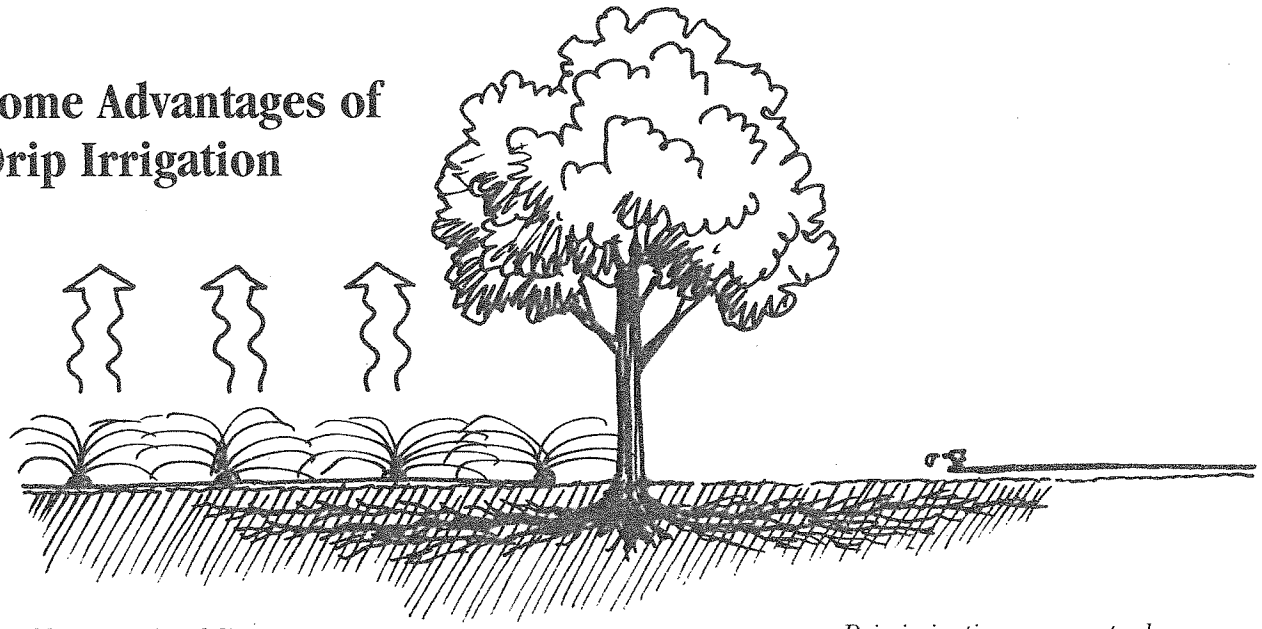
Core aeration aids turf, trees and water conservation.

7. If You Must Apply Water, Install Drip Irrigation

Drip, or "trickle," irrigation once was complicated and unreliable. Today, this technology is readily available for home use and has reached a state of high-level performance. In dry regions or areas subject to drought, it is the best possible method for watering trees and shrubs. This is because it enables you to provide the exact amount of water needed by each plant and to place the water directly on the root zone. Systems can be installed either beneath the ground or on the surface. They range in size from those used to water a few backyard trees to those used for irrigating orchards, windbreaks, or Christmas tree plantations.

All it takes to get started in drip irrigation is a kit available at most garden stores. It is a good idea to start small, then expand as you become more familiar with the equipment and the water needs of your trees. But considering the advantages over more traditional methods of watering, it is definitely a good idea to get started!

Some Advantages of Drip Irrigation



Sprinkler irrigation delivers water indiscriminately, much of it lost through evaporation and runoff.

Drip irrigation saves water by delivering it directly to the soil of the root zone.

For Shade Trees

- Cuts water use by up to 70% because less is lost to runoff, evaporation, sidewalks, weed patches and other non-target areas.
- Saves on water bills.
- Reaches trees or shrubs in odd locations that may be missed by sprinklers.
- Saves the time and effort of watering with a hose or bucket. You can turn the system on and off manually, use a timer set at regular intervals, or connect the timer to soil moisture sensors for full automation.
- Controls the exact amount of water applied so that each plant receives only the amount it needs for optimum growth.
- Reduces stress caused by wet and dry cycles or soil temperature fluctuations.
- If needed, fertilizer can easily be added directly into the system. Through pin-point application, the amount used can be reduced by up to one half.
- Reduces the amount of mortality among newly planted trees and shrubs.
- Helps prevent disease by not wetting the leaves.
- Erosion in hilly terrain and water loss in windy weather are eliminated.
- Continues to irrigate without disrupting work or other activities.

Additional Benefits for Fruit Trees

- New trees grow faster and bear fruit 1-2 years sooner.
- Fruit is produced that is uniformly larger.
- Helps reduce alternate-year bearing tendencies, resulting in more consistently high yields.
- In commercial operations, can often pay for itself in as little as one or two years.