

WATER CONSERVATION IN THE LANDSCAPE

CIS 990

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Increasing numbers of gardeners want to use environmentally safe and energy-conserving practices to maintain healthy, attractive landscapes. Their desire has produced a type of landscaping that reduces water use and maintenance, protects water quality, and decreases pest control needs while it increases the health and beauty of the surroundings. Water conservation in the landscape is an essential part of an environmentally sound approach to gardening.

By using the principles outlined in this publication, you can make more efficient use of water and still provide beauty and satisfaction in the landscape. As the demand for water increases, water-efficient landscaping will help conserve this limited resource.

Idaho — first in water use

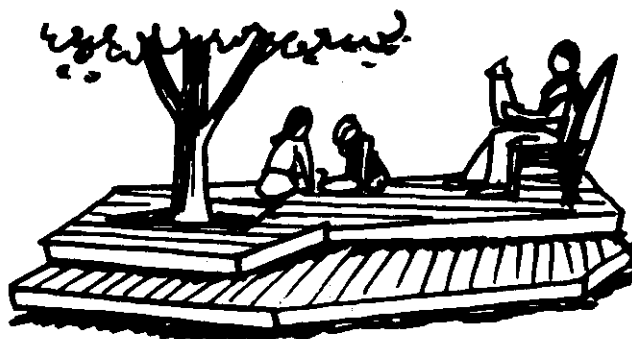
Idaho is number one in per capita consumption of water in the United States. Idaho residents and nonagricultural businesses use 311 gallons of

water per day compared with the national average of 147. The population of Idaho is expected to grow by 30 percent in the 1990s, increasing the need for affordable, consumable water of high quality. Conservation can help ensure that water will continue to be available.

Landscaping practices also affect the quality of our water. A recent Environmental Protection Agency study found that nitrates — an ingredient in many fertilizers — and a common home lawn and garden herbicide were chemical pollutants of groundwater.

Landscape water conservation

You can take many steps toward becoming a careful water user and still

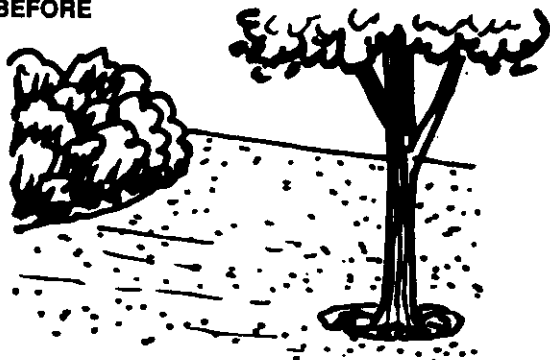


To reduce lawn expand patio space. Use brick or deck to allow air and water to reach the root zone of trees.

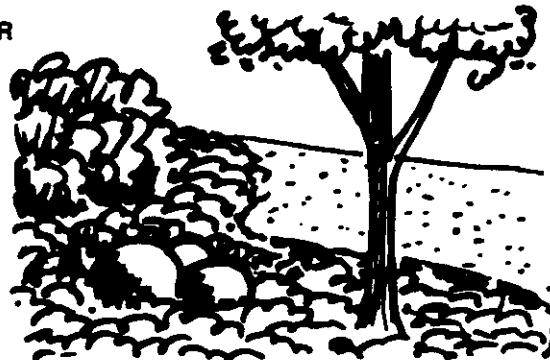
maintain attractive, healthy, and enjoyable yards and gardens. Water conservation does not mean replacing all lawns with pavement or having only cactus and rock gardens! Your existing landscapes already may incorporate one or two water conservation ideas. With a little extra effort, you can implement an entire water-wise landscape and significantly reduce water use. Water-wise gardening involves:

- Design that stresses water conservation
- Soil analysis and preparation

BEFORE



AFTER



Use mulch around trees and to gracefully extend the edges of shrub and tree zones into former lawn space.



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- Practical irrigated lawn areas
- Appropriate plant selection
- Effective and efficient water management
- Use of mulches
- Proper landscape maintenance

Design that stresses water conservation

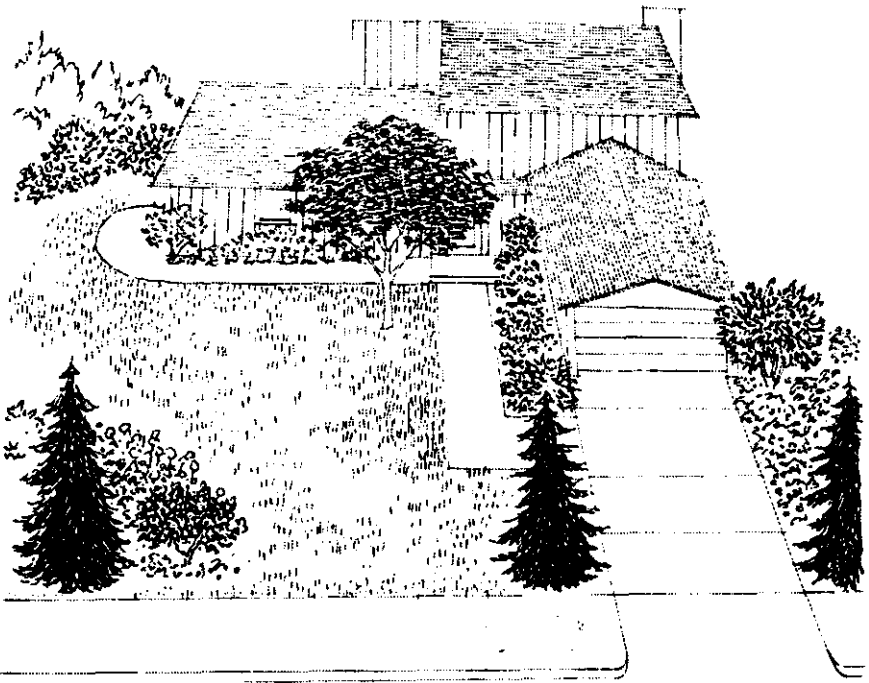
To create a water-efficient landscape, start by making a sketch of existing structures, shrub areas, trees, and lawns. Decide what changes you'd like to make based on potential use of the area, sun exposure, maintenance level, water requirements, water availability, personal preference, and landscape budget.

Group plants by water need, preferred soil type, microclimate, and maintenance requirements. For example, you could group plants requiring little water in an area that will not be irrigated frequently or in an area with sandy soil, which will not retain moisture. (A microclimate is an area with a specific climate due to its location, such as the cool, shady, north side of a structure. Choose shade-adapted plants for this microclimate.) Sketch out how the area will look when it is finished. You can complete the design gradually over several years.

Soil analysis and preparation

Study the soil carefully, and match plants with their preferred soil type and pH. Light, sandy soils fail to retain nutrients or water as well as clay or loamy mixtures. Clay soils may have poor aeration and drain poorly. Some plants grow in clay better than other plants do.

Adding organic matter to the soil conserves water and improves any soil as it increases overall plant health. Organic matter added to sandy soil helps to absorb water and nutrients and to hold them in the root zone. Organic matter also loosens heavy soils and improves drainage, aeration, and workability.



Before: The large lawn requires frequent watering, and many shrubs are poorly adapted to a dry climate.

Spread organic matter such as shredded bark or leaves, straw, peat moss, compost, sawdust, and grass clippings 2 to 3 inches deep on the surface of the soil and thoroughly till it in. Bark, leaves, straw, and sawdust take extra nitrogen to decompose. Add nitrogen along with these materials, especially if you add them in spring. Nitrogen will speed decomposition and prevent a possible nitrogen deficiency in the plants you grow in the area. You could also compost these materials before adding them to the soil, decreasing the requirement for extra nitrogen.

Preventing compaction and providing mechanical aeration increase the ability of the soil to absorb and store water.

Practical irrigated lawn areas

Lawn grasses require more frequent watering and maintenance than most other landscape plants. Carefully consider the intended use of the yard before deciding how much lawn to install.

Choose the grass species carefully. Much research is being done to determine water requirements of grass spe-

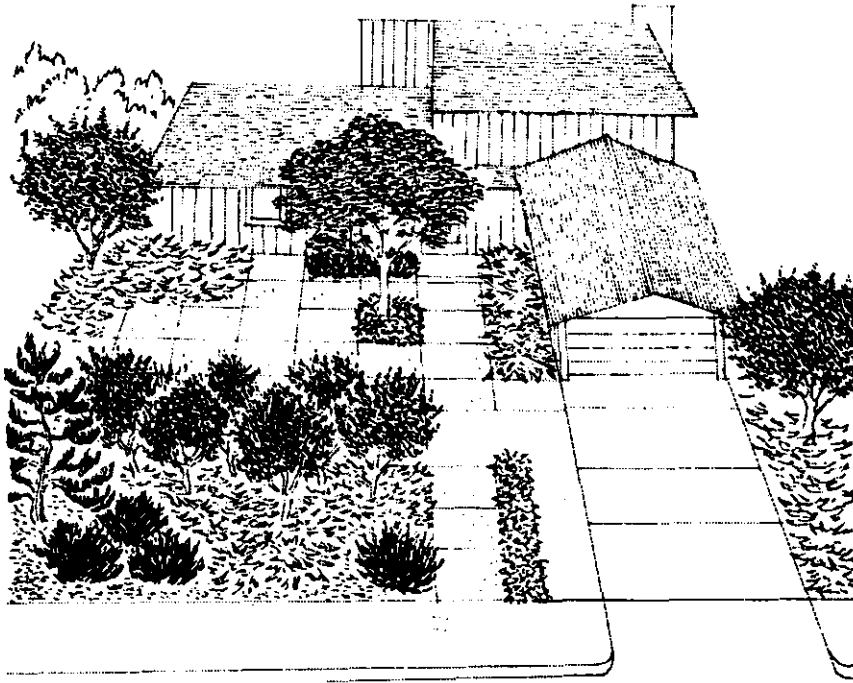
cies and to develop grasses with lower water requirements, such as turf-type tall fescue.

Consider ease and efficiency of watering when deciding on lawn size, shape, and location. Out-of-view property perimeters such as road and driveway edges can be planted with drought-tolerant grasses and ground covers or mulched with attractive rock or bark. Irrigating long, narrow grass areas and small, odd-shaped spaces is often an inefficient use of water. A mulch or ground cover other than grass may be the best choice for these areas.

Patios and decks are useful instead of lawn for outdoor living areas. Shrub beds and ground covers instead of lawn can create an attractive visual effect.

Appropriate plant selection

Select plants adapted to the growing conditions. These plants should thrive in the soil, be adapted to the climate (cold hardy and able to withstand summer temperatures), and have a good level of resistance to the diseases and insects common to the area. Many native species are well adapted and need little irrigation.



After: Lawn has been replaced by pavers, mulched shrub areas, and plants with low water needs, making the area water conserving as well as low maintenance.

Many well-adapted exotic plants also are available and require low water input. Limited use of annuals, which generally require heavy watering, can provide summer color.

Effective and efficient water management

Apply water so that it is available to the plants. Applied too rapidly, water is lost to runoff. Applied on exposed, unmulched soil, water evaporates. Other causes of wasted water are evaporation into the air from sprinklers and runoff from nonabsorbing areas, such as sidewalks and streets.

The greatest waste of water is applying too much, too often. Not only does this practice waste water, but it leaches nutrients deep into the soil and away from plant roots, increasing the chances of polluting groundwater. Water lawns infrequently but deeply (moist to a depth of 12 inches). Deep, infrequent watering promotes a deeply rooted lawn that is more water efficient and more drought tolerant.

All trees and shrubs require frequent watering for a year or two after planting. After they are established,

however, they adapt to less frequent watering. Most well-established trees and shrubs require several deep waterings in the root zone during the growing season (moist to a depth of 12 to 18 inches). Applying the proper amount of water can take several hours, especially for large trees. The actual time depends on soil characteristics and the irrigation system. Soaker hoses and drip irrigation work well for this type of watering.

Drip irrigation or pop-up sprinklers that apply water directly to where it is needed are extremely water efficient. Use them throughout the landscape when possible.

Run sprinklers between late evening and midmorning to reduce waste through evaporation. Mechanical or electronic timers on hoses, drip lines, and sprinklers turn off the water automatically after the desired amount has been applied.

Use of mulches

Mulch is a layer of nonliving material that covers the soil surface. This layer may be composed of organic materials such as bark, compost, wood chips, straw, sawdust, and grass clip-

pings or of inorganic materials such as rock and permeable or impermeable plastic sheeting. Impermeable plastic mulches can decrease soil aeration and encourage shallow rooting, while rock can compact the soil and heat up an area. Fine mulches, such as sawdust, may also encourage shallow rooting.

All mulches conserve water by reducing soil moisture evaporation and weed growth. Organic mulches prevent soil compaction, add organic matter, and moderate soil temperatures. Rock and plastic sheeting do not. Inorganic and organic materials are often combined. For example, permeable plastic sheeting can be covered with a bark layer.

Proper landscape maintenance

To reduce water use in the landscape, check the sprinkler system periodically (especially if it is an underground system), time insect and disease control correctly to reduce plant stress, and eliminate weeds.

Proper maintenance of the lawn is critical. Mow the grass at the recom-

“Xeriscape,” a term patented by the National Xeriscape Council, emphasizes the use of drought-tolerant (xeric) plant species combined with creative landscaping practices to conserve water. “Mesiscape” originated in Massachusetts where the climate is moderately moist (mesic), but water quality and quantity are still critical factors. Mesiscape emphasizes using landscape techniques that enable moderately drought-tolerant plants to grow in dry conditions. Xeriscape and mesiscape apply to Idaho with its dry environments in the southern and central regions and seasonally moist northern environments. Xeriscape and mesiscape include many techniques formerly associated with low-maintenance landscaping.

mended height for the species. Heights of 2 to 3 inches allow the grass to develop a deep, water-efficient root system. This taller grass forms a living mulch, shading the ground to reduce soil moisture evaporation and retarding weed growth. As the grass grows taller and matures, it requires less water and less frequent mowing. Leaving grass clippings as a mulch improves soil structure, soil fertility, and water retention. (Clippings do not cause thatch in lawns.)

Fertilize only as often as necessary to maintain a healthy, green landscape. Avoid lush, rampant growth. Timing of fertilizer applications will depend on the plants in the landscape and the existing fertility of the soil. Have a soil test run every 3 to 5 years to determine the need for nutrients. Moderate use of fertilizer can save time, labor, money, and water. It will also reduce the potential for groundwater contamination.

Seed new lawns and plant new plants in the early spring. New plants require

less water to become established during this cooler period and can develop deeper, water-absorbing roots before the onset of warm summer weather.

Further reading

University of Idaho Cooperative Extension System publications:

To order, contact the University of Idaho Cooperative Extension System office in your county or write or call Agricultural Communications, Idaho Street, University of Idaho, Moscow, Idaho 83844-2240 (208-885-7982).

CIS 168, *Landscape Your Home Grounds*, 35¢

CIS 731, *Thatch in Lawns*, 25¢

CIS 837, *Mulches for the Home Landscape and Garden*, 35¢

CIS 858, *Using Bark and Sawdust for Mulches, Soil Amendments and Potting Mixes*, 35¢

CIS 887, *Idaho's Water Resource*, free
WQ-1, *Activities in Water Quality*, free (Unavailable from Ag Publica-

tions. Contact Bob Mahler, Department of Plant, Soil and Entomological Sciences, College of Agriculture, University of Idaho, Moscow, ID 83844-2339.)

Books:

Ellefson, C., T. Stephens, and D. Welch. 1992. *Xeriscape gardening: water conservation for the American landscape*. New York: Macmillan Publishing Co.

Knopf, J. 1991. *The Xeriscape flower gardener: A waterwise guide for the Rocky Mountain region*. Boulder, Colorado: Johnson Publishing Co.

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