

## Conserving Water in the Garden

# Designing and Installing a New Landscape

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Water is quickly becoming one of Oregon's most critical natural resources. As the state's population increases and urban areas expand, water use and water rights are becoming increasingly contentious issues.

Typically, about 30 to 40 percent of urban water use is for outdoor activities. In addition to landscape maintenance, outdoor water use includes washing cars, driveways, and sidewalks, and filling swimming pools and children's water toys.

When installing a new landscape, there are several things you can do to reduce the amount of water it will need in the future. Many of these suggestions are based on the concept of "xeriscaping," a term coined in the 1980s to describe water-efficient landscaping. Key steps to establishing a successful water-efficient landscape include:

- Start with a landscape plan.
- Improve your soil.
- Select appropriate plants.
- Get your plants off to a good start.
- Choose the most appropriate irrigation system.
- Water wisely.
- Mulch.
- Take care of your plants.

Research has shown that these water-saving guidelines can reduce landscape water use by 60 to 80 percent.

### Start with a landscape plan

A water-efficient landscape begins with a plan. If you are familiar with the principles of landscape design, you might want to draw your own plan. Another option is to hire a professional to help with this critical step. In any event, think about who will use your landscape (adults, children, pets), how the landscape will be used (formal entertaining or informally), and what existing elements you want to keep.

In your design, group plants based on the amount of water they need. This will prevent you from overwatering the drought-tolerant species and underwatering those that need more water.

If you include hard surfaces such as patios or walkways, use permeable materials that allow water to soak into the soil. Examples include stone and gravel. Another option is to grade the site so that runoff is captured or redirected into the landscape where plants can use it.

### Improve your soil

Most new residential sites have very poor soil. During construction, most of the topsoil is removed, the



remaining soil is compacted by heavy equipment, and construction rubble is buried. A soil test will tell you whether nutrients are lacking. Dollar for dollar, soil improvement is the best investment you can make to ensure healthy plants and water conservation.

Organic matter such as compost, shredded bark, or peat adds nutrients, increases the soil's ability to absorb and store water, and increases air spaces in the soil. As a result, plant roots can penetrate the soil more easily and grow more deeply. In addition, water soaks into the soil instead of running off the surface.

For tree, shrub, and flower beds, till 2 to 4 inches of organic matter into the entire planting area rather than amending individual planting holes. This will create a better environment for root growth.

Turfgrass grows well in most soil types and rarely requires additional organic matter. As long as the existing soil is tilled to a depth of 8 inches, turf should grow well. To prevent runoff, make sure the final grade doesn't slope steeply toward a road or sidewalk.



## Select appropriate plants

Many sources list low-water-use or drought-tolerant plants, but the criteria used in developing these lists vary greatly. The most important thing is to select trees, shrubs, groundcovers, and perennials that are adapted to your region's soil and climate.

A good idea is to look for plants that are native to your area. However, just because a plant is native does not necessarily mean it is drought-tolerant. Likewise, many nonnative plants are well adapted to our region. In general, species native to Mediterranean climates are suitable for western Oregon. In eastern and central Oregon, plants native to the high desert Rocky Mountain plateau make good choices.

Most turfgrass species used in Oregon have similar water requirements. Ecolawns are a low-water alternative to traditional turf. They contain a mix of broadleaf plants (clover, English daisy, and yarrow) and grasses (generally perennial ryegrass). Ecolawns provide many of the benefits of traditional turf, including recreation, dust and noise abatement, and temperature moderation, but require less irrigation.

*Note:* It is very difficult to establish a new lawn during a drought. The soil needs to be kept



moist as the grass germinates, and the new lawn will need water almost daily at first. It's much better to wait until the rainy season or until you have adequate water supplies for irrigation.

## Get your plants off to a good start

Choose healthy plants and plant them correctly to get your water-wise garden off to a good start. Consult a nursery, your county Extension office, or reference books for planting instructions. All plants require supplemental water and some extra attention during the first, and possibly the second, growing season. See "Water wisely" at right for more information.

## Choose the most appropriate irrigation system

Wise watering involves applying water slowly, deeply, infrequently, and directly to the root system. As a result, water soaks into the soil rather than running off the surface or evaporating. The type of watering system you choose can make a big difference in how efficiently you water.

Tree, shrub, and flower beds, as well as vegetable gardens, are most effectively irrigated with drip or trickle systems. Some drip systems have individual emitters spaced along a hose. Soaker hoses, on the other hand, slowly release water along their entire length. Another option is a garden hose with a slow stream of water.

Sprinklers are much less efficient because they lose water to evaporation and apply water to areas where it is not needed. In some cases, however, sprinklers might be the only alternative.

Automated sprinkler systems are especially prone to encouraging waste. Studies show that people with automated underground irrigation systems use up to twice as much water as those watering manually with hoses and sprinklers. The convenience of an automated system makes it easy to overwater because you pay less attention to your landscape.

## Water wisely

People waste water; plants don't. Landscape water loss typically occurs in two ways:

- Water is applied too rapidly and runs off the soil surface rather than soaking into the soil.
- Water is applied to bare soil surfaces and evaporates.

Applying the right amount of water, at the right time, and in the right way is the most important thing you can do to conserve water.

## Watering new trees, shrubs, and groundcovers

If it doesn't rain, most trees, shrubs, and groundcovers benefit from a once-a-month thorough watering during the growing season. The majority of tree and shrub feeder roots (those that take up water and nutrients from the soil) are in the top 12 inches of soil and extend as much as one and a half times past the canopy diameter (Figure 1). To be most effective, apply water in this area. Saturate the area to a depth of 8 to 10 inches. Figure 2 shows how long this will take with various soil types.

You can use a drip system with individual emitters or a soaker hose laid throughout the area. Another option is a garden hose with a slow stream of water. For larger trees and shrubs, you will need to move the hose around in order to get good coverage. This technique might take several hours for large trees.

### Watering young lawns

How much and how often are the two biggest questions associated with watering newly established lawns. Newer lawns are less able to withstand drought than well established lawns. To maintain a lush, green lawn, apply 1 to 1½ inches of water during the dry season. For most soil types, you should water one to three times per week in order to apply the right amount of water and avoid runoff from applying too much water too quickly.

### Water infrequently and deeply

By thoroughly soaking the root zone, you will encourage roots to develop deep in the soil, where moisture is held for a long time. These deep roots will help the plant endure drought better. Frequent, shallow watering encourages plants to develop shallow root systems, which make them susceptible to even moderate water shortages.

As the growing season progresses and your plants develop deep roots, you can gradually lengthen the time between waterings.

### Maintain watering equipment

To maximize efficiency, keep equipment in good shape. This is

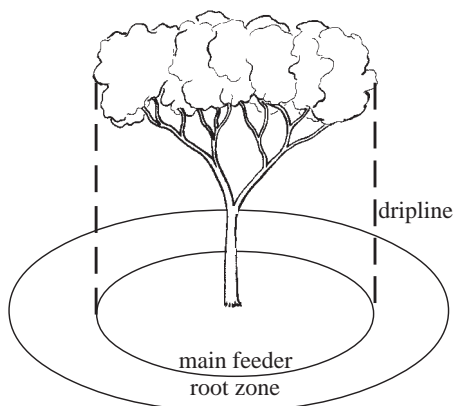


Figure 1.—The feeder roots extend to 1½ times the diameter of the canopy.

especially important with automatic sprinkler systems. Repair or replace broken or damaged nozzles or heads, ensure that the timing mechanism and rainfall shutoffs are working, and make sure you know how much water is being applied. Check your system weekly and adjust the days and run times as needed to avoid overwatering.

### Water at night or in early morning

Less water is lost to evaporation early and late in the day when temperatures are lower, humidity is higher, and the air is calmer. The disadvantage of watering before or after daylight is that you won't see your system operate, so you will not know if you are overwatering or underwatering unless you check your plants and soil periodically.

### Mulch

Water is lost when it evaporates from exposed soil. Applying a 3- to 5-inch layer of mulch to tree, shrub,

and flower beds can significantly reduce water evaporation. Various types of mulch are available, including organic mulches (wood chips, shredded bark, compost) or inorganic types (lava rock, river rock, landscape fabrics). In addition to reducing water evaporation, mulch can suppress weed growth, prevent soil compaction, and moderate soil temperatures.

### Take care of your plants

No landscape is maintenance-free. In order to enjoy the benefits from the hard work you put into designing and installing your water-wise landscape, you must care for it properly.

### Pruning

New trees and shrubs generally need minimal pruning just to remove diseased or broken limbs.

### Mowing

New lawns need regular mowing (once a week during the growing season if necessary) to maximize turf density and prevent excess evaporation from the soil surface. See Table 1 for proper mowing heights for various types of grass. Mow at the upper end of the range to encourage maximum root development, which will slightly improve drought tolerance. (See Table 1, page 4).

It usually is not necessary to dethatch or aerate a new lawn until its second year. (See EC 1018, *Removing Thatch and Aerating Lawns*, for more information.) Dethatching and aerating established turf will help it develop a deeper root system and make it better able to withstand drought.

### Fertilizing

Proper fertilizing can conserve water. During a water shortage, reduce or eliminate fertilization of trees and shrubs. As a result, the

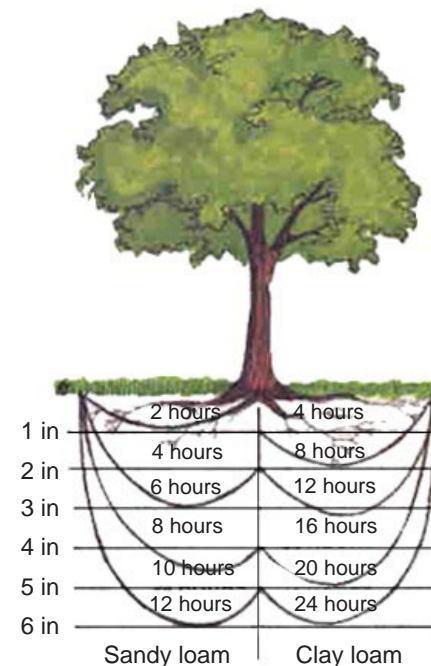


Figure 2.—Infiltration rates for sandy loam and clay loam soil. Silt loam soil absorbs water at a rate between these two extremes.

**Table 1.—Mowing height**

1½ to 2 inches	½ to 1 inch*
<ul style="list-style-type: none"> <li>• Perennial ryegrass</li> <li>• Fine fescue</li> <li>• Tall fescue</li> <li>• Kentucky bluegrass</li> </ul>	<ul style="list-style-type: none"> <li>• Bentgrasses (alone or in a mixture)</li> <li>• Annual bluegrass</li> <li>• Roughstalk bluegrass</li> </ul>

\*Although the optimum height is ½ to 1 inch, acceptable turf can be maintained at heights up to 1½ inch. With a mowing height over 2 inches, the turf quality drops dramatically.

plants will grow more slowly and use less water.

Fertilize your lawn in April to maximize root development and enhance general plant vigor. Apply 1 to 1½ lb N/1,000 sq ft. If severe drought develops, avoid fertilizing during summer. Fertilize in the fall at a rate of 1½ to 2 lb N/1,000 sq ft to help turf recover rapidly and minimize weed encroachment.

## For more information

*Deer-resistant Ornamental Plants*, EC 1438. 75¢

*Gardening with Composts, Mulches, and Row Covers*, EC 1247. \$1.00

*Maintaining a Healthy Lawn in Western Oregon*, EC 1521. \$1.50

*Plant Materials for Landscaping: A List of Plants for the Pacific Northwest*, PNW 500. \$2.50

*Removing Thatch and Aerating Lawns*, EC 1018. No charge.

*Selecting, Planting, and Caring for a New Tree*, EC 1438. \$2.00

*Southwestern Oregon Tree Selection Guide for Coos, Curry, Douglas, Jackson, and Josephine Counties*, EC 1505. \$5.50

*Sustainable Gardening: The Oregon-Washington Master Gardener Handbook*, EM 8742. \$20.00

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## Available from county offices of the OSU Extension Service

There may be a charge for photocopying these publications.

*Conserving Water in the Garden: Caring for an Established Landscape.*

*Conserving Water in the Garden: Growing a Vegetable Garden.*

*El Riego en Los Huertos y Jardines (Watering Vegetable and Flower Gardens)*, EM 8765-S.

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## Summary

With a little planning and work, it's easy to save water in your landscape. Keep these tips in mind:

- Select plants that are adapted to your growing region.
- Group plants according to water use.
- Know your soil type and improve its water-holding capacity.
- Mulch.
- Select an efficient watering system.
- Understand how and when to water.
- Keep your irrigation system in top working order.



Drought cycles will continue to occur, and Oregon's increasing population will strain already limited water supplies even more. Planning now for the future of your landscape is an important and environmentally sound decision to make.

Using water wisely benefits everyone!