

The 7 Basic Steps

Water-efficient landscaping uses simple, common-sense gardening practices. Many of these principles have been used in traditional landscaping for years as separate or partially combined principles. The seven basic steps incorporate all of them into one holistic method resulting in a unique landscaping approach that combines all the necessary elements to achieve a water-conserving landscape.

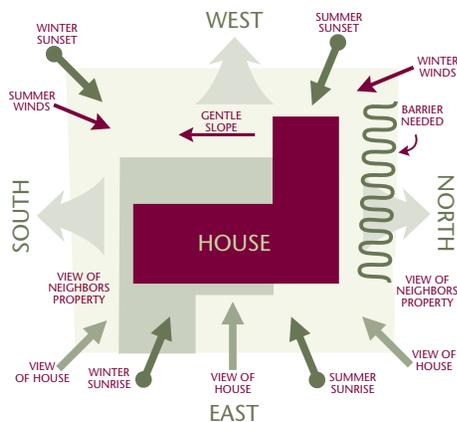


1: Planning and Design. The planning and design of your landscape is one of the most important steps. Whether you are starting from scratch or changing your existing landscape, begin by creating a plan. Your plan can range from a drawn sketch to a professional survey. A thoughtful design can allow you to install your landscape in phases and avoid costly mistakes. Be sure to include the location of existing structures, trees, shrubs, paths or walkways, and important views you want to keep (or eliminate), as well as the sun orientation and the direction of the wind.

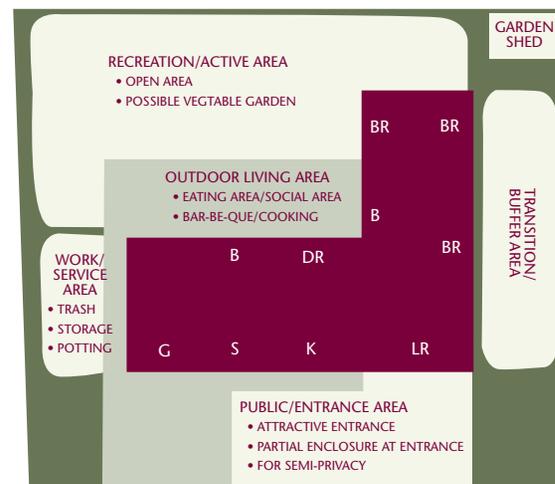
Your yard is made up of numerous microclimates. A microclimate is the climate of a small area that is different from the areas around it. It may be wetter or drier, warmer or colder, or more or less prone to frost than other areas of your yard. Microclimates in your yard can be influenced by your house, balconies, rooftops, fences, walls, large rocks or trees, and paved surfaces. It is important to note these areas in your plan.

You may want to begin by dividing your yard into four different light exposures - north, south, east, and west. What kind of light is available during various parts of the day - bright sunlight, filtered sunlight or shade? Remember, morning sunlight is cooler than afternoon sunlight. You can then identify specific types of plants you want to incorporate into your landscape. For example, a shade tree planted in the southeast section of your property will provide cooling for your home and landscape.

NOTE: Before selecting a tree, take the time to look over your site for things such as overhead utility lines as well as underground utility lines. Think about how the tree will look at maturity and how that will work within the location you are thinking about. Work with your local nursery to select the right tree. For more help in planting the right tree in the right place visit www.treesaregood.com.



- EXISTING SITE CONDITIONS •
- NOTE ON SOIL TYPE • SOIL IS MAINLY CLAY WITH SOME SAND IN IT, FAIR TO POOR DRAINAGE. CHECK WITH COUNTY EXTENSION OFFICE TO HAVE SOIL TESTED.



- DIAGRAM SPACE NEEDS •

By identifying and understanding microclimates, you have the ability to put the right plant in the right place, creating a healthier, water-efficient landscape. If you need help with your landscape layout, consult with a garden center or a landscape professional. For more information, refer to the resource section of this guide.

2: Compost and Cultivate. Soil improvements are very important to water-efficient landscaping. Understanding the basic characteristics of your soil is key for plant selection and watering practices. A productive soil provides physical support, water, air and nutrients to plants as well as soil-dwelling organisms. Roots and soil organisms breathe just as we do and require sufficient air and water to live. As a result, a good soil is not “solid,” instead between 40 and 60% of the soil volume is pores. The pores may be filled with either water or air, which makes both available to plants. The largest pores in the soil control aeration and movement of water through the soil and are largely the result of animal and earthworm burrowing or root growth. The smaller pores can store water.

Native, undisturbed soils in the Willamette Valley are usually silt loam or clay loam and are suitable for the growth of most plants. However, the soil that remains after construction of homes are usually dramatically modified from the native soil that existed prior to construction. This soil is often composed of subsoil material excavated during road or foundation construction. This subsoil overlays the native soil and is compacted during construction by machinery. The

result is soil that is low in organic matter and nutrient content. Compaction also prevents root growth and water percolation into the soil, reducing plant growth and water availability.

In disturbed and compacted sites, consider testing the soil before planting to find out what it requires. Soil issues requiring particular attention include soil compaction and soil pH, but also organic matter content and nutrient availability. Many companies will test soil for homeowners. For a list of these, check with your local OSU Extension office for a copy of EM 8677, *A list of analytical laboratories serving Oregon*.

One of the easiest ways to improve the soil and create a better environment for your plants is to amend your soil with compost and organic matter. Working amendments into soil will help to alleviate compaction problems and improve the ability of the soil to accept and store water. Amending your soil often means that you can reduce the amount of water a newly planted garden requires. Adding organic matter will also increase the activity and the number of soil organisms.

Over time, a well-amended soil will supply more of the nutrients your plants require, which will reduce fertilizer requirements. Soils amended with organic matter are a better sponge for water, allowing more water to go into the soil, and less water to run off the surface. Because surface runoff is reduced, pesticides and fertilizers are retained in the soil and prevented from washing off into nearby rivers and lakes. A well-balanced soil is key to maintaining healthy plants and lawn. For more information on the benefits and use

of various soil amendments, check with your local OSU Extension office for a copy of EC 1561, *Improving garden soils with organic matter*.

3: Create Functional Turf Area. Grass requires more water and maintenance than most other plants, so it is important to evaluate your landscape to see where grass is practical and functional. A lawn should be designed to serve multiple purposes - for play areas, picnics, and pets. In many cases, grass can be replaced with other, less-thirsty seed mixtures like ecoturf or materials such as groundcovers, low-water-use plants, mulches, or hardscape features.

Steep slopes, sharp angles, and narrow driveways or sidewalk strips are difficult to water-efficiently and are usually hard to mow. Consider ground covers, low-water-use plants, and mulches for these areas, or where foot traffic is infrequent or undesirable. Ground covers offer much of a lawn's neatness and uniformity with less maintenance. Hardscape features are another way to enhance the functionality of your yard while helping you rely less on irrigation. In high use areas consider putting in pathways or patios made of wood, rock or gravel that allows water to drain through them and into the soil beneath.

Keep these water-saving guidelines in mind when evaluating your lawn area:

- Place the lawn where it will be the most useful.
- Keep the physical layout of the grass area in easy-to-irrigate shapes.
- Edge the lawn's perimeter so that it is easier to mow.

- Don't plant grass on steep slopes.
- Consider placing beds of water-thirsty plants near the lawn so they benefit from additional water.
- Consider letting your lawn go dormant; it will turn green again with the autumn rains.

4: The Right Plant in the Right

Place. Different plants need different amounts of water, sun, and shade to survive. Once you have identified your microclimates you can select plants suited to these specific areas of your landscape.

How will you fit the appropriate plants into the microclimates you have identified? Are the plants you want actually suited to the weather conditions of the Willamette Valley? To help answer these questions, the USDA developed a rating system that divides the United States and Southern Canada into eleven zones. Each zone is based on a 10 degree Fahrenheit difference in the average annual minimum (i.e. winter) temperature and will help you match plants with appropriate hardiness to low winter temperatures. The Willamette Valley, including the Portland Metro area, is rated as zone 8 (10 to 20 degrees F). The USDA Hardiness Zones are not the same as the Sunset Climate Zones. The Sunset Climate Zone for the Willamette Valley is 6.

In addition to managing your yard's microclimates, look at creating watering zones in your landscape. Within each watering zone, all of the plants should have the same general watering needs, allowing you to give each plant only the amount of water it needs. Matching water requirements helps prevent over

or under watering which can cause stress and promote disease. Watering zones help you avoid wasting water, while reducing the amount of time, effort, and natural resources needed to maintain your garden. Consider dividing your landscape into three watering zones: high, moderate, and low watering zones.

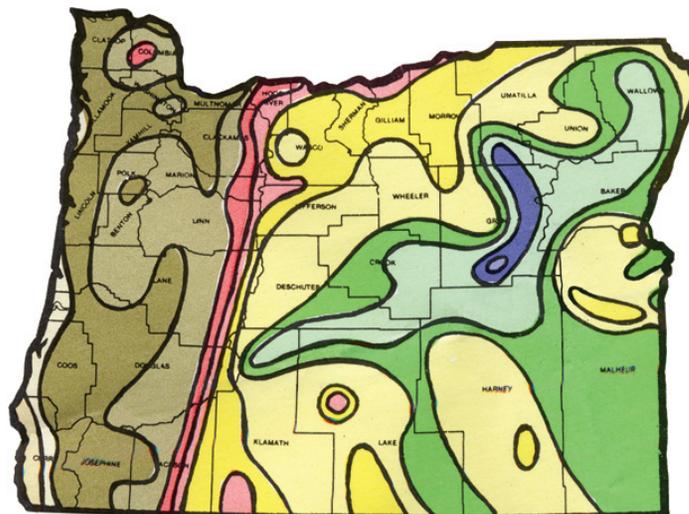
High watering zones may be small, visible, highly maintained areas such as home entrances or lawn areas. This is where your thirstiest plants should be planted. These areas are typically located near the water source so they are easy to water. Moderate watering zones may need occasional watering in addition to natural rainfall to maintain healthy plants. Plants in low watering zones can typically survive on natural rainfall once they are established. These plants are typically located in the outer areas of the yard.

5: Water Wisely. The most common problem in the home landscape is over watering. When this is combined with poor soil quality it can reduce plant growth or even cause plant death, but more importantly, it's wasteful. A well-planned, well-designed, well-timed irrigation system saves money and promotes plant health by applying the right amount of water without excess. Soaker hoses or drip irrigation are the most water-efficient systems for trees and planting beds.

Overhead sprinkling generally is less efficient than watering at the soil surface, because more water is lost to evaporation and wind. Water is also often applied faster than the soil can absorb it; so it runs off or is lost to evaporation, and never reaches the plant roots.

USDA Plant Hardiness Zone Map

Oregon



Average Annual Minimum Temperature

Temperature (°C)	Zone	Temperature (°F)
-45.6 and Below	1	Below -50
42.8 to -45.5	2a	-45 to -50
-40.0 to -42.7	2b	-40 to -45
-37.3 to -40.0	3a	-35 to -40
-34.5 to -37.2	3b	-30 to -35
-31.7 to -34.4	4a	-25 to -30
-28.9 to -31.6	4b	-20 to -25
-26.2 to -28.8	5a	-15 to -20
-23.4 to -26.1	5b	-10 to -15
-20.6 to -23.3	6a	-5 to -10
-17.8 to -20.5	6b	0 to -5
-15.0 to -17.7	7a	5 to 0
-12.3 to -15.0	7b	10 to 5
-9.5 to -12.2	8a	15 to 10
-6.7 to -9.4	8b	20 to 15
-3.9 to -6.6	9a	25 to 20
-1.2 to -3.8	9b	30 to 25
1.6 to -1.1	10a	35 to 30
4.4 to 1.7	10b	40 to 35
4.5 and Above	11	40 and Above

The amount you water should be based on soil conditions and plant needs. Watering thoroughly, but infrequently, will help roots grow deeper, so that more stored water is accessible to the plant from the soil reservoir.

Generally, turf requires more water than other plants, so irrigate turf areas separately from other plant areas. Typically, trees, shrub beds, and perennials don't need as much water as lawns. Water needs vary according to specific weather conditions, so it is important to adjust your watering schedule to compensate for changes in the weather. Learn how to set you controller so that you can adjust the watering time up as weather warms and down based on cooler weather and autumn rains.

During the summer an established lawn needs about 1 inch of water each week (including rainfall), and up to 1.5 inches per week during long hot, dry spells.

To figure out how to measure 1 inch of water, try this:

- Set out five empty straight sided cans (such as tuna or pet food cans) throughout the lawn.
- Turn on the sprinkler for exactly 15 minutes.
- Measure the depth of the water in each can, then add up the numbers and divide by five. This gives the average water depth of all the cans.
- Find the average water depth on the chart to the right. The box to the right of that number is the total weekly watering time needed from your sprinkler.

Average Water Depth in the Cans (<i>in inches</i>) After 15 minutes	Number of Minutes Needed to Water 1 inch
1/8	120
3/16	80
1/4	60
5/16	46
3/8	40
1/2	30
5/8	24
3/4	20
1	15
1 1/4	12

If water puddles or runs off to another part of the landscape, the soil may have a lot of clay and/or your irrigation system is applying water too fast. To manage this condition, spread the total watering time out over multiple days with a one to two hour break between short watering periods. For example, if the chart recommends watering 40 minutes per week, then run the sprinklers for ten minutes, wait an hour, then water for another ten minutes, and do this on two days of the week about three days apart from each other.

ET - Water to the weather. Plants transpire water into the air and water is evaporated from the soil. This process is called evapotranspiration or ET. Replacing this transpired and evaporated water is the most efficient way to water. *For local information on ET refer to the More Information section on the back cover of this guide.*

6: The Use of Mulch. Mulch comes in two forms, organic and inorganic. Both provide a protective layer of material that covers the soil surface. Unlike a soil amendment, mulch is not tilled into the soil. Organic mulches include aged manure, compost, bark, or wood chips. Inorganic mulches include gravel and river rock, or landscape cloth. Mulches are available in many shapes, sizes and colors, so the kind of mulch you choose really depends on your preference. There are a number of benefits to using mulch, including the following:

- Evaporation is a major source of water loss from the soil, and occurs because of the combined action of sun and wind on the soil surface. A layer of mulch can significantly reduce the amount of evaporation taking place and increase water available in the soil.
- A mulch layer will reduce the impact of raindrops on the soil surface, decreasing the likelihood of a compacted layer, and allow water to infiltrate the soil to a greater depth, reducing soil erosion and runoff.
- Mulch provides some control of weeds in landscapes or gardens. Management of weeds is desirable for aesthetic reasons, but it also will improve plant growth by decreasing competition for water.
- Organic mulches reduce soil absorption of heat by reflecting sunlight. Soils mulched with organic matter tend to maintain a more consistent temperature throughout the day, and year, compared with bare soil. By contrast, plastic mulches have a tendency to increase soil temperatures.

- Mulching can also improve the soil structure and biology. The use of organic mulches stimulates the activity of beneficial soil organisms, and provides habit or cover for these organisms including earthworms.
- As mulch decomposes, nutrients are slowly released to the soil for plant use.

Mulch should be applied annually or as needed in the spring to conserve moisture and prevent weed seeds from sprouting or in the winter to protect soil from erosion and help plant roots retain warmth. Use 1 to 2 inches of compost, leaves, sawdust, or 2 to 4 inches of coarsely shredded bark or wood chips. If the mulch is too deep, water will have a difficult time reaching the plant roots.

7: Keep Up the Maintenance. Routine maintenance such as pruning, pest control, and fertilization will keep your plants healthy and your landscape at its peak. A healthy landscape is more resistant to summer heat, freezing, insects and disease. The following are a number of maintenance tips.

Aerate your lawn annually and de-thatch as needed to ensure that the roots are receiving the right amount of water and oxygen.

Weeds compete with plants for nutrients, light and water, so weed frequently by hoeing or pulling them by hand. Remember, a good layer of mulch will help with weed suppression.

Make every drop count — check your irrigation system regularly to make sure it provides the right amount of water, at the right place, at the right time. Also check for leaks and broken sprinkler heads. Don't water your sidewalk or driveway — they won't grow no matter how much you water them!

If you need help with your water-efficient landscape, consult a landscape professional, seek advice from your local garden center, or consult with an OSU Master Gardener. For more information, refer to the resource section of this guide. Most of all enjoy, your time in your yard and the benefits from reducing your water usage.

Plant Legend

Oregon Native

✓ - Plant is native to Oregon

Height

Individual plants may vary in height depending on age and condition.

Spread

Individual plants may vary in width depending on maturity and space allotted for the plant.

Evergreen/Deciduous

E - Evergreen, retains some or all of its foliage year round.

D - Deciduous, loses leaves during the plant's dormant season.

Water

Refers to the plant's water needs after they are established. All plants require more water when first planted.

L - Low-water-use: plants perform well with minimal supplemental irrigation once established.

M - Moderate-water-use: plants perform well with some supplemental irrigation once established.

Wildlife

Flowers, leaves, or berries provide value for birds and mammals.