

Watering Tips

Watering theory & techniques

- Water early in the morning when the air is cool, wind is low, and water pressure is higher on municipal systems.
- Deep watering throughout the root zone encourages deep rooting and sturdy, healthy plants.
- Water lawns to 8 or 10 inches deep, flower beds to a depth of about 12 to 15 inches. Most trees in Oregon have the majority of their absorbing roots in the upper 12 to 18" of soil, but deep growing sinker roots can go to about 3 to 4' deep. Roots of many shrubs can go several feet deep if soil conditions are suitable; camellia and rhododendron roots are exceptions in that they're closer to the surface.
- Use an application rate that permits water to soak in rather than run off from the garden area.
- Concentrate your watering in the root zone. The less water you apply between plants where the roots haven't yet extended, the less water you lose to evaporation, and the fewer weeds you are likely to have.
- Clay soils are slow to absorb or to give up water. So, even though you may need to use several on-off cycles to thoroughly moisten such soil, you can water relatively infrequently. Sandy soils allow water to run through quickly but will dry out rather rapidly. Loamy soils are somewhere in between.
- Get into the habit of measuring water depth and soil dryness on a regular basis. Let the soil dry out partially between watering to allow oxygen to re-enter the soil.
- Containers will need to be watered more often than garden beds because roots are confined to a small space.
- In the vegetable garden, try intensive beds – that is, space plants and rows close enough that the canopies will barely touch when the plants are full-grown. This results in a densely planted area which uses less water for more abundant harvests. An added benefit is that shaded soil loses water to evaporation more slowly than does exposed soil.
- Spread a 3" layer of mulch (e.g.: bark dust or compost) to conserve moisture and reduce watering requirements.
- Using black plastic mulch is another way to reduce evaporation in vegetable beds and, at the same time, heat the soil. With tomatoes and peppers, red plastic has the added benefit of improving yields. Warm soil is

a key ingredient to successfully grow vegetables in our climate.

- To effectively water newly planted trees and shrubs, form a catch basin by making a low soil berm at the outer edge of the root ball. Fill the basin with water, then let it soak in. Each time you water, fill the basin once for sandy soil, twice for loamy soil, and three times for clay soil.
- With containers, whitish deposits composed of various salts (soluble substances) from hard water and fertilizer may build up on the surface of the potting mix or on the exterior of clay pots, indicating insufficient drainage or not enough flow-through of water. To minimize salt buildup, add excess water that will run out the drain hole each time you water.

Ineffective watering

Excessively wet ground is common whenever garden soil has a high clay content or if the container-grown plant is sitting in a water-filled saucer. Too much water in the soil prevents air from reaching roots, literally drowning them.

Symptoms of over-watering

- Yellow or mottled leaves.
- Leaves turn pale green or yellow and then fall off.
- Plants grow poorly, and spindly stems flop.

Symptoms of under-watering

- Yellow or mottled leaves.
- Leaves look dull, somewhat grayed, and lack a reflective quality.
- The lawn loses its luster, takes on a blue-green cast, and doesn't spring back when you walk on it.
- Leaves wilt and don't recover when watered. But sometimes tomatoes will wilt in the heat of a hot day; if the soil feels moist, wait until evening to see whether they recover; if not, water the plants.
- Leaves may drop. Whenever a plant runs short of water, as at the beginning of a drought cycle, it sheds leaves to protect itself. Leaves often turn yellow before they drop.

Watering method

Overhead watering of trees and shrubs, whether by sprinkler or by hand, may provide an ideal environment for the spread of fungal and bacterial problems such as apple scab, black spot of roses, and various other diseases. Whenever possible, water

early enough in the day so that the leaves will dry before evening.

Whatever watering methods you prefer, check the moisture content of the soil several hours after you irrigate to determine how effective your efforts were. Your goal is to moisten the entire root zone of your plants. In general, that's to a depth of 12 to 15 inches for the majority of flowers and vegetables.

Hand-watering is a comforting practice for many gardeners. But it can deliver water faster than soils are able to absorb it, thereby causing wasteful runoff.

Sprinklers can scatter water where it isn't needed. And, as with hand-watering, water is often delivered faster than it can soak into the soil.

Use a sprinkler that will cover the garden only, not the surrounding area. A sprinkler leads to greater evaporation loss than other methods of watering, but you can minimize those losses by watering during the cool, wind-free time of day.

Low-flow systems such as soaker hoses and drip can deliver moisture directly to the root zone at a uniform rate throughout the growing season, thereby promoting the best possible growth. You can combine drip emitters, soaker tubing, and miniature sprayers and sprinklers for an effective and efficient watering system.

A properly functioning low-flow system avoids water wasted via runoff or evaporation. And because water is applied directly to the soil, leaf diseases are limited because leaves remain dry. Because systems such as these work on relatively low water pressure, they won't impact household water flow.

Low-flow systems, when compared to conventional methods of watering by hand or with sprinklers, can save up to 50% water. But such systems can also

waste considerable water whenever allowed to run for too long a time.

A low-flow system is easy to install because the supply lines can be placed on the soil surface rather than in a trench.

Some people prefer to begin with a kit to build their confidence, then will expand their system by purchasing additional component parts. You can often obtain free, informative manufacturers' instruction booklets at retail outlets.

A drip system, in its simplest form, begins at an outdoor spigot, then adds these components in this sequence: timer (mechanical or battery-run); backflow preventer; pressure regulator; filter; tubing adapter; supply tubing; and an end cap. Add pressure-compensated emitters where needed in order to supply plants with adequate water throughout each root system. Avoid overwhelming the pressure regulator by turning on the faucet only part way.

You may need to fiddle a bit to find the correct layout for your garden. But it will be easy to modify during setup and, even during later years, as the plants grow or when you change your plantings.

After you complete the installation, you'll need to do an easy experiment in order to obtain the answers for several critical questions: how far apart to place the drippers or soakers; how long to run the system; and how often.

Start by turning on the water for an hour, stop for at least an hour, then dig in the soil to see how wide and deep the moisture penetrated. If the water isn't deep enough for the root zones of the intended plants, move the dripper or soaker to a new place on the soil, then turn on the water for longer than the first time, wait an hour or so, and check the soil again. Repeat until you have the answers you need.

Additional information

Oregon State University publications are available at your county's OSU Extension Service office.

Some publications are available online at <http://extension.oregonstate.edu/gardening>

Conserving Water in the Garden: Designing and Installing a New Landscape (EC 1530-E, online only)

Conserving Water in the Garden: Landscape and Lawn Care (EC 1531)

Conserving Water in the Garden: Growing a Vegetable Garden (EM 8375-E, online only)

Gardening with Composts, Mulches, and Row Covers (EC 1247)

Water-Efficient Landscape Plants (EC 1546)

Gardening and Water Quality Protection: Understanding Nitrogen Fertilizers (EC 1492)

Sprinklers & Drip Systems (A Sunset Book)

Sprinklers & Watering Systems (Scott's)

Drip Irrigation for Every Landscape and All Climates (Robert Kourick)

Master Gardener™ Advice

- Call Home Horticulture Helpline: 503-655-8631 (Clackamas County), 503-821-1150 (Washington County), or 503-445-4608 (Multnomah County).
- For more 10-Minute University™ handouts and class schedule, visit www.cmastergardeners.org or www.metromastergardeners.org.
- Look for Master Gardeners at area Farmers' Markets.