

Irrigation & Effective Moisture Management

Soil water availability.

- Water is most available to roots when the soil is at field capacity (soil pores contain air and water), but not when fully saturated (no air and plants might wilt!), nor when very dried out (permanent wilt point).
- Soil with good pore space can store more water than compacted soil.
- Soil that is constantly wet will become compacted and lack enough oxygen for roots to function well.
- Best results come with allowing the soil to alternate between fully moist and partially dried out.

Water slowly, deeply and less often to promote deep rooting and to save water.

- Apply water at a rate the soil can take it in without running off: water – rest – repeat. Water in short consecutive intervals to increase the depth of water penetration.
- Clay loams need more time for water to soak in, and also take longer to dry out.
- Sandy soils are moistened more rapidly, dry out more rapidly, and hold less water than clay loams.

How much water and when.

- Use a rain gauge to track how much rain or sprinkler water has fallen on the ground.
- Use a hand trowel or soil probe to inspect soil moisture before and after watering.
- New plants need more frequent watering than those that have been in the ground for more than a year or two (including newly planted drought resistant plant species).
- A moisture sensor on automatic systems can reduce over watering during and after penetrating rains.
- Adjust watering schedules according to the weather throughout the growing season. Take advantage of summer moisture, watering right after if needed to add to the depth of moistened soil.
- On average, water established landscapes deeply about once per week; less often during cool, damp weather and for established drought tolerant plantings, more often when hotter weather occurs.
- Watering in evening or early morning allows plants to rehydrate before the heat of the day.
- Avoid watering mid-day on sunny days, except to rescue wilting plants, to water containers, and for using bubbler heads or soaker hoses for very drought stressed plants.
- Water to avoid drought stress early in the season, and taper off watering rates toward the end of summer so plants can harden off for the fall.

Water application methods.

- Whatever the method of delivery, coarse, heavy water droplets soak in the best.
- Regularly inspect the delivery of water from pop-up irrigation heads, as plant growth can block spray and create dry zones in the bed. Update the position of irrigation heads or consider converting pop-up irrigation to drip emitter systems which can use up to 50% less water.
- Soaker hose, drip-emitter tubing, drip irrigation and bubbler heads use less water and deliver moisture directly to plant root zones.
- When soil becomes so dry it repels water, use a wetting agent or watering aid that will break the surface tension so water can be absorbed into the soil. This is helpful for containers and landscape plantings.

Gardening practices that help manage moisture.

- Remove weeds while they are small.
- Weed and mulch around new transplants and stressed plants.
- Set up shade tents to relieve drought stress on new plants.
- Fertilize only when needed and in moderation to avoid pushing excess soft growth that will increase plant water needs.
- Apply coarse-textured mulch to suppress weeds, reduce evaporation, and aid water infiltration.
- Use coarse mulch with woody and leafy debris to promote soil building organisms that work through bioturbation to promote soil aeration and improve organic matter content for better moisture holding capacity.
- Manage thatch and practice mulch-mowing to improve water penetration in lawns.
- Mow lawns ½-inch taller in summer

Avoid these practices that can lead to greater water use and reduce plant health:

- Running sprinklers for a few minutes every day or two leads to shallow rooted plants that are prone to more drought stress during hot weather, and it uses more water than deep, infrequent watering.
- Overwatering damages soil structure and aeration.
- Overwatering is unhealthy for turf and garden plants.
- Insufficient water early in the summer, especially for new plantings, can lead to drought stress that plants may not recover well from.
- Wetting plant leaves with fine spray during the heat of the day does not relieve drought stress.
- Fine textured mulch, especially fine bark, can prevent water from percolating into the ground.
- Bare ground will lose water more rapidly than ground under coarse mulch.

Additional Resources

<https://cascadewater.org/water-efficiency/natural-yard-care/>

- How to use a rain gauge
- Basic irrigation
- Setting an automatic irrigation controller
- Converting a sprinkler system to drip irrigation

Sunset New Western Garden Book, 9th ed., A Practical Guide to Gardening: Water Conservation and Watering sections.

[Bioturbation with and without soil fauna](https://wimvanegmond.com/) video from the Micropolitan Museum, <https://wimvanegmond.com/>

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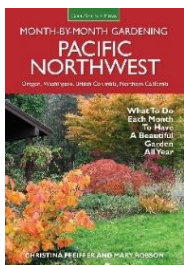
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Pacific Northwest Month-by-Month Gardening by Christina Pfeiffer with Mary Robson.

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