

## Water in Times of Drought—and Flood

Trees are some of the oldest and largest living organisms on our planet. A large tree can move up to 100 gallons of water from the soil to its leaf surfaces every day. Coastal redwoods can tower over 300' tall and giant banyon trees in Calcutta have crowns so wide that it can take up to 10 minutes to walk around the base of the tree.

Although the trees in our yards may not reach this same stature, they are still impressive organisms. Trees shade our homes in the summer and block winds in the winter, reducing energy costs. A single tree produces enough oxygen for four people every day. Their height and width often give trees an impermeable appearance. What can really harm a tree?

Water, especially in years of establishment is crucial to tree health—and life. Although establishment years are important, all trees need water, more as they grow larger. Trees may give the appearance of strong, immortal organisms, but they are living, just like the most delicate petunia, and need care.

Some gardeners assume that a wet spring means little watering during the summer. This common misconception doesn't take into account potential root damage, especially to trees, that occurs with saturated soils. In addition to needing water, roots also need oxygen. When soils are wet for long periods of time, plant and tree roots can "drown." This means that when hot weather approaches, trees are working to take up water with a less extensive root system. Signs of stress—leaf scorch and leaf drop—will appear. These signs are identical to those seen during times of drought. Although the causes of stress differ, the result is the same, the tree cannot take up the amount of water it needs to thrive.

During wet springs and times of drought, trees and plants need to be coddled through the summer. Trees benefit most from deep but infrequent watering. For newly planted trees, at least 10 gallons of water a week is needed, more on sandy soils. Applying this water in one setting means it will soak deep into the soil and evaporate more slowly than a shallow watering.

One preferred watering method for small trees is to drill a hole (1/8") into a 5-gallon bucket, near the bottom. Fill the bucket with water and allow it to dribble out in the tree's root zone. Refill the bucket and repeat, guaranteeing 10 gallons of water will be applied.

For larger trees, those transplanted more than 2 years ago, 10 gallons of water isn't enough. For these trees, a perforated soaker hose is an easier way to water. To avoid under watering parts of the tree—a notorious problem for soaker hoses—attach each end to a Y-adapter. This will help equalize pressure and provide more uniform watering. A Y-adapter with a shut off valve is especially helpful to control the flow of water. If you notice water running off the soil, turn the pressure down. Water running off will not soak down to the root zone. Set the soaker hose in a circle just inside the tree's dripline (as far as the branches reach).

Slightly hoeing the area where you set your soaker hose may help water infiltrate more easily. To check how deep the water has soaked use a metal rod, wooden dowel or something similar and push it into the ground. Dry soil will be harder to push through. A penetration depth of 12" is needed for both new and established trees. Monitor the time it takes water to reach 12" the first few waterings, then set your timer for this time for later watering without checking the depth each time.

For young trees especially, mulch can help even out moisture issues. A ring of mulch around trees can suppress weeds and grass that compete with the tree for moisture. Bare soil, without this competition, will not hold water like covered soil.

Some homeowners prefer the look of river-rock to wood mulch, but users beware, it has its downsides. Rock is a heavy material to put onto tree roots. Although damage wouldn't be apparent, possibly for years to come. The weight of rocks has the potential to crush tree roots, especially if applied in a thick layer. Rock also heats up in the summer sun and could cause or worsen trunk scorching issues. Organic mulches, like wood chips and compost, don't cause these issues.

Regardless of mulch type, one thing holds true for all, mulch should be applied like a donut, not like a volcano. A mulch volcano is when mulch is piled up against tree bark and then tapers out to the dripline. Mulch piled like this can damage tree bark and offer a haven for insects and animals who like to munch on trees. Spreading the mulch out like a donut, with a hole in the middle for the trunk and the root flare, is the proper application method.

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