

Tree Care during Drought

Stanford University | Water Planning & Stewardship

Replacing and Watering New and Established Trees

Trees require more care and attention during a drought than at any other time. Trees native to California can most effectively survive a drought. If you are considering replacing a tree, please see Stanford's Water Wise Garden at suwater.stanford.edu/water-wise-garden for examples of California native trees and plants. When planting a new tree, know the tree's light preferences and space requirements for height and root growth. The right tree in the right place is key! It is also important to check the roots before buying a tree. Do not buy girdling roots nor plants with any wounds and do not take off "feather" shoots (the many branches up the main stem).

New plants need to be irrigated regularly. Watering established plants depends on age, setting, and root depth. To water more efficiently, put trees on their own irrigation controller zone. As a general rule, **young trees should be watered about once a week with 15-20 gallons of water and mature trees about once or twice a month with enough water to wet the soil at least 18 inches below the surface.** Be careful of overwatering. Overwatering pushes air out of the soil, making it difficult for plants to receive enough oxygen to survive.

To Deep-Water a Tree two common methods can be used. A soaker hose or drip system can be wrapped under the tree canopy towards the edge of the canopy or, to ensure water is penetrating slowly to a depth of 12" inches below the soil surface, a soil needle/deep root feeder (attached to a hose) can be used. To determine how to water regularly or moderately, please determine your tree species and research its specific water needs. Generally, the soil around the tree should be watered early in the morning or after sunset. Leaves, branches, or trunks should not be watered.



Common Established Trees and Water & Light Needs

See a greater list at <https://web.archive.org/web/20161211084451/https://bgm.stanford.edu/print/250>

Drought Tolerant Trees:

Requires No Supplemental Water*:

- Valley Oak/Quercus Lobata (Full Sun)
- White Oak/Quercus Alba (Full Sun)
- Maul Oak/Quercus Chrysolepis (Full Sun)
- Coast Live Oak/Quercus Agrifolia (Full Sun)
- Blue Oak/Quercus Douglasii (Full Sun)

Moderate Summer Irrigation:

- Western Redbud/Cercis Occidentalis (Full Sun)
- Hybrid Madrone/Arbutus Marina (Part/Full Sun)
- California Bay Laurel/Umbellularia Californica (Full Sun to Part Shade)
- California Buckeye/Aesculus Californica (Irrigation delays leaf drop; Full Sun)

*Even a drought tolerant tree may require supplemental water during prolonged years of drought to mimic natural conditions.

Other Trees:

Low, with Deep Monthly Watering in Summer:

- Incense Cedar/Calocedrus Decurrens (Full Sun to Part Shade)
- Black Oak/Quercus Velutina (Full Sun)

Regular Water and Well-Drained Soil:

- Giant Sequoia (Full Sun to Part Shade)
- Coast Redwood (Full Sun to Part Shade)

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Trees provide many benefits to homeowners. Not only does a tree increase property value and home efficiency, but it also provides shade, reduces heat load, and slows down winds. A tree also cleans up air pollution and sequesters carbon dioxide and water.

There are over 40,000 trees of over 400 species covering 150 genera and 60 families on the farm. Over 27,000 trees grow on main campus alone! Tree maps showcasing Stanford's most popular trees are available at trees.stanford.edu.

Essential Steps for Maintaining a Healthy Tree

Watching for Warning Signs – Prevention is Key!

- If your tree is defoliated or partially defoliated, if the leaves start to roll, or if the leaves are discolored, something is wrong. First, check the moisture level, then the bark and the leaves. For advice, consult a trained arborist.

When Pruning

- Make sharp, downward, clean cuts.
- Research what time of year your tree requires pruning. Pruning at the wrong time might weaken your tree.
- During a drought, perform only safety pruning. Remove broken, dead, or insect-infected branches.

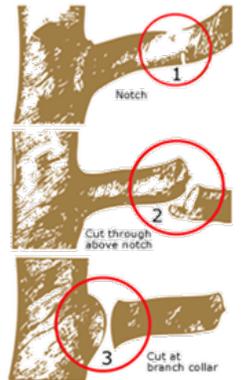


Photo Credit to the New Jersey Forest Service

When Mulching

- Keep area around trunk clear. Create a donut shape by placing 3-4 inches of mulch around the berm and base and pulling any mulch 2 inches away from the trunk.
- Ground covers can also be used instead of mulch.
- You can combine compost, mulch, and rocks for better results.



Photo Credit to the New Jersey Forest Service

When Fertilizing

- Avoid quick-release fertilizer and never fertilize when it is hot.
- Do not use fertilizer with nitrogen greater than 10%.
- Fertilize woody plants sparingly.
- Yellow leaves, slow growth, and dropping leaves may indicate a nitrogen deficiency.

After A Drought: Trees Are More Susceptible to Diseases

Bugs – Varieties & Signs

- **Bark Beetles**-black/brown, hard-shelled, 1/8" to 1/3" long. "Shot hole" exit holes in bark.

Fungus – Varieties & Signs

- **Pitch Canker Disease** – branch tips brown and dieback, new growth wilts, site of infection exudes resin.
- **Sudden Oak Death (SOD)** – bleeding cankers on trunks, leaves spot and brown, twigs dieback.

Other

- **Amarillaria Root Rot**– appearance of mushrooms or Phytophthora root rot.
- **Verticillium** – a disease caused by a soil-borne fungus that enters a tree through the root system and spreads through to the trunk, interfering with water movement.

For more information, please visit

<https://web.archive.org/web/20161211053714/https://bgm.stanford.edu/groups/grounds/seasons>