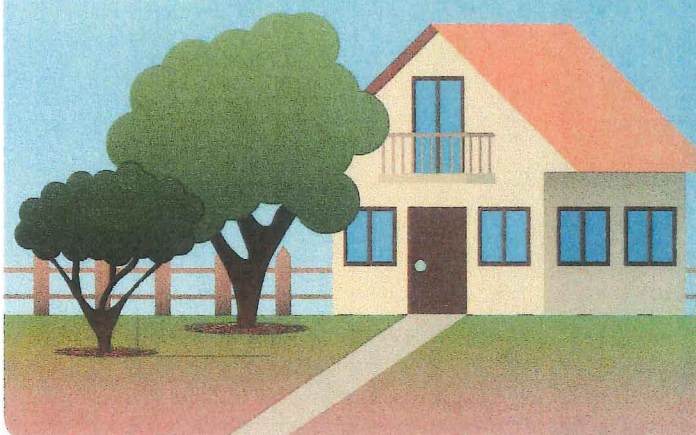


Tips for Tree Care During Drought



Our urban forest is a precious resource. A healthy tree canopy provides cleaner air and cooler temperatures, replenishes groundwater, enhances public health, and creates vibrant, livable neighborhoods.

As the California climate becomes hotter and drier, our urban forest will be even more valuable. Saving our existing tree canopy and planting new trees is wise, not wasteful.

Add Mulch, Save Water

Adding natural wood chip mulch underneath your tree will:

- Help your tree stay healthy and grow faster
- Reduce evaporation and keep moisture in the soil
- Protect roots from extreme temperatures
- Decompose and release nutrients into the soil
- Discourage competition from grass and weeds
- Reduce soil compaction



Spread mulch in a ring around your tree. Keep it 4 inches away from the trunk, spread it out to the drip line (the soil beneath the edge of the leaves), and pile it 6 inches thick.

Rocks, weed cloth, and artificial turf will increase water runoff and trap heat in the soil. These should not be placed around trees.

Take a Shower, Save a Tree

One person uses about 150 gallons of water per week on showers. Place a bucket under your faucet and collect water as the shower heats up.

Learn how you can re-use this water to keep your trees alive on the reverse side of this handout.

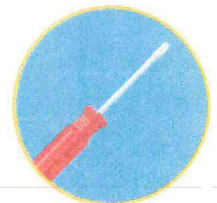


When to Add Water

The amount of water your tree needs will depend on your soil and tree type.

How do you know if it's time to water? Check the soil!

Use a screwdriver or soil probe to check the soil at least 6" deep near the drip line of your tree (the soil beneath the edge of the leaves). If the soil is hard, dry and crumbly, add water with a slow soak. If the soil is wet or sticky, allow it to dry before adding more water.



What to Avoid

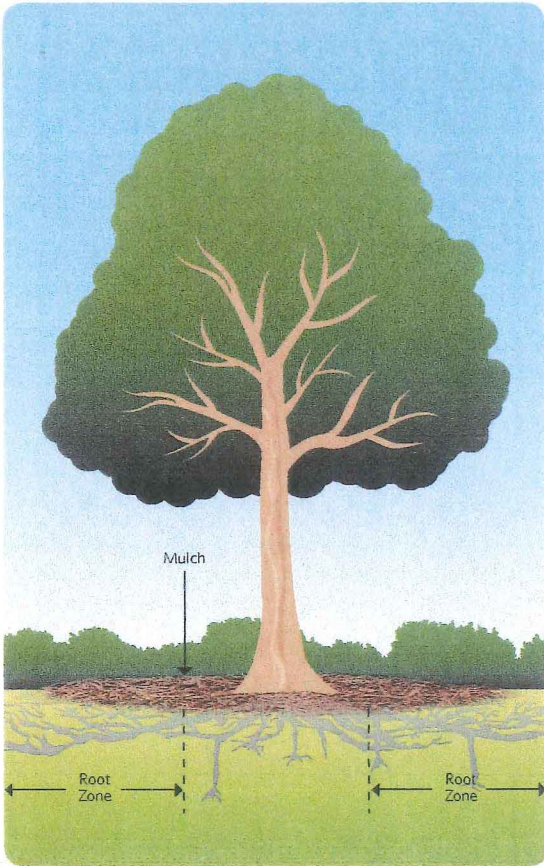
- Fertilizer: Adding fertilizer encourages leafy growth, which requires more water.
- Pruning: Wait until winter to make large pruning cuts.
- Gray water chemicals: If you re-use household water, make sure it does not contain harmful chemicals like boron or chlorine bleach. Biodegradable soaps are best.



For More Tips:
sactree.com



How to Water Your Tree Responsibly



Mature Trees (5+ years after planting)

The roots of a mature tree extend underground even wider than the branches extend above ground. Adding water near the trunk of a mature tree will not reach the roots.

Slowly soak the area throughout the root zone for several hours to reach the roots 12-18 inches below the surface.

You can use:

- A soaker hose
- An oscillating sprinkler on a low setting
- Drip emitters
- A bucket with a 1/8" hole drilled near the bottom. Fill with water collected from your shower and allow it to slowly drip into the soil. Move the bucket to various areas in the root zone and refill.

If your root zone extends under hardscape or beyond your property, slowly soak as much of the root zone as possible.

Special Note: Native trees, like valley oaks, which have never received regular irrigation may be harmed by adding extra water. Contact a Certified Arborist if you have questions about the health of your native or mature tree.

Young Trees (1-5 years after planting)

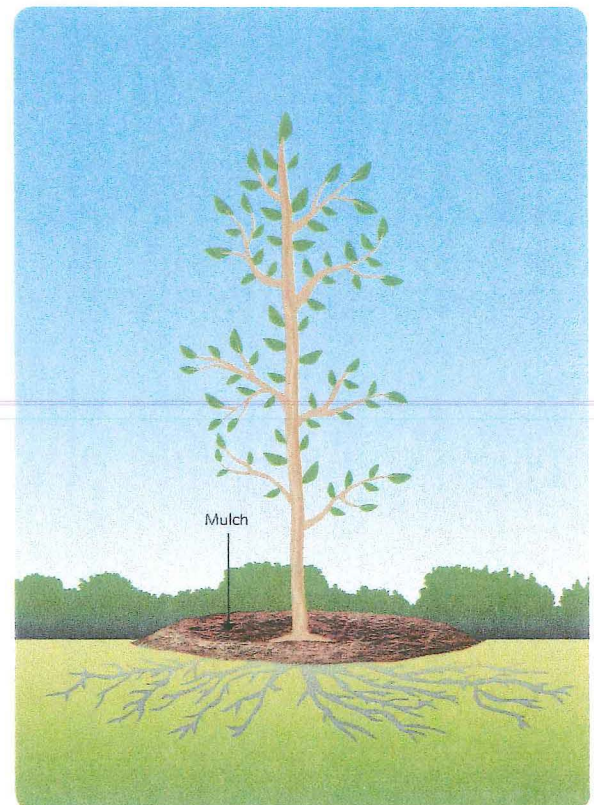
The roots of a young tree are mostly located near the trunk and grow 12-18 inches below the surface.

A young tree needs 10-15 gallons of water per week. Slowly soak the area near the base of the tree 2-3 times per week with 5 gallons each time. Check the soil moisture before adding water.

You can use:

- A hose on a slow trickle
- A soaker hose
- A bucket with a 1/8" hole drilled near the bottom. Fill with water collected from your shower and allow it to slowly drip into the soil. Move the bucket to various areas around the base of the tree to soak the entire root ball.

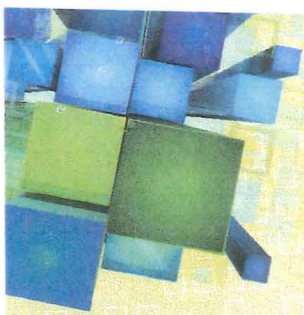
As your young tree grows, expand your watering area away from the trunk to include the growing root zone.



For More Tips:

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Water

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DESERT WATER

KEEP YOUR TREES ALIVE DURING THE DROUGHT.

Reduced grass watering may impact your trees.

California is facing a serious drought and communities throughout the state are required to cut back water use. **CV Water Counts and the local public water agencies** are working together to help the Valley meet savings mandates and use water more efficiently.

We urge you to keep trees alive during the drought – they take years of care and watering to fully develop, and cannot easily be replaced like grass, bushes and shrubs. **Reduced watering on your grass may harm trees that depend on turf irrigation water.**

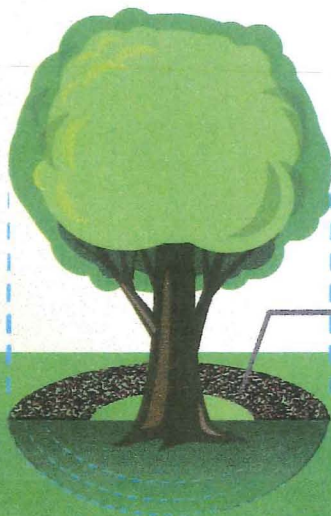


« "Two seasons without water can result in severe drought stress or even kill a tree."

« "Drought-stressed trees are more prone to damage from diseases and insects than non-stressed trees."

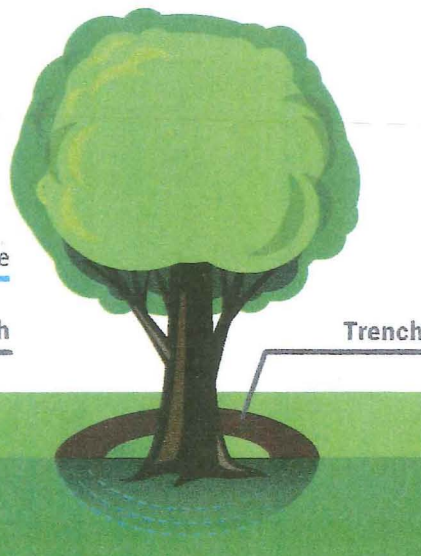
- Janet Hartin, UC Cooperative Ext. Advisor

TRY ONE OF THESE WATERING OPTIONS:



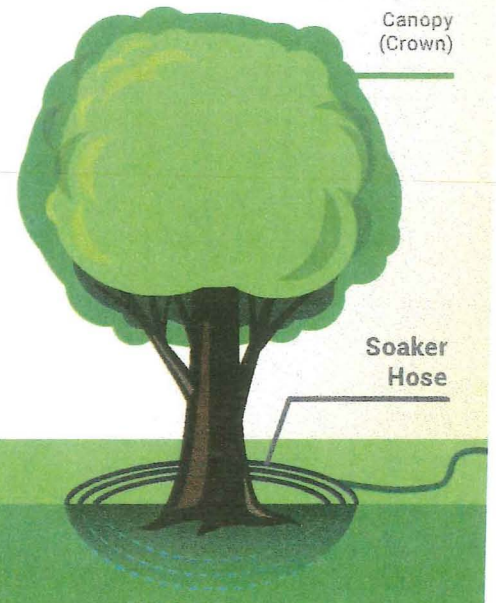
Use mulch in the root zone

Put mulch from the drip line to about 6-inches away from the trunk of the tree to help water absorb into roots slowly without evaporating.



Dig a trench for moisture

Dig a trench 6-inches away from trunk to help absorb water slowly. You can also dig a trench around the drip line and water deeply. Keep in mind that sandy soil needs to be irrigated with less water at one time, but more frequently.



Drench the roots

Pick up a soaker hose from your hardware store and lay it down in a spiral around the tree's root zone. The hose skin is porous and water will distribute over a larger area without using too much.

FACTORS TO CONSIDER:

SOIL TYPES and **WATERING** in the morning or evening when the **TEMPERATURE** is cooler.

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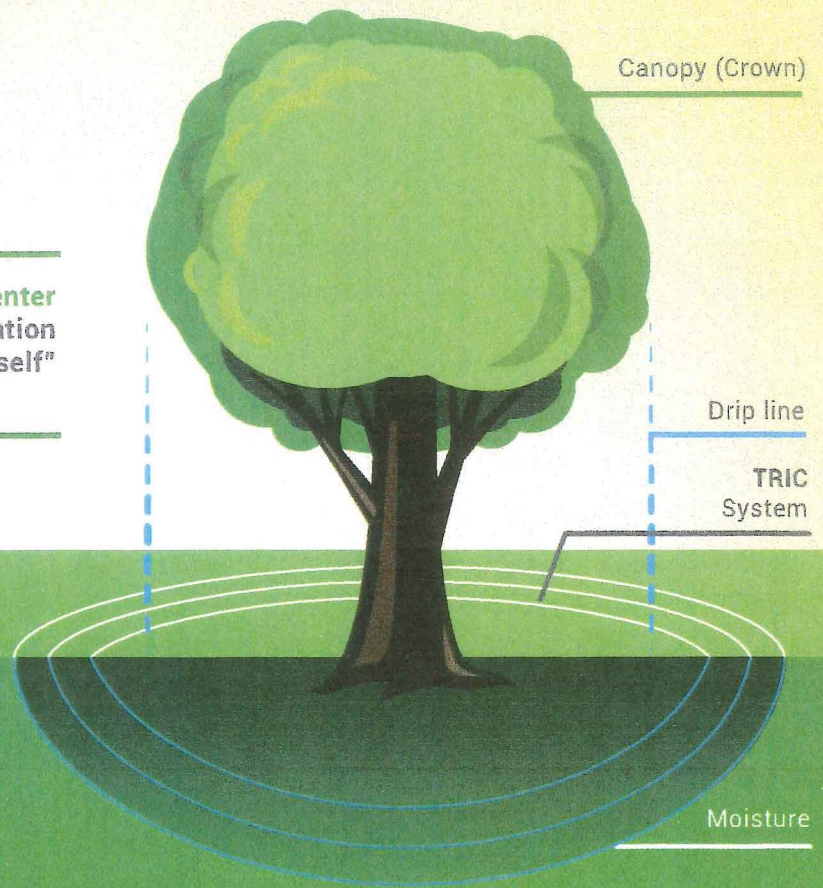


TRIC SYSTEM: AN EFFICIENT WAY TO KEEP YOUR TREES THRIVING

Try a tree ring!

What is the TRIC system?

Developed by UC Davis and the California Center for Urban Horticulture, a Tree Ring Irrigation Contraption (TRIC) is a unique, "do-it-yourself" method to keep your trees thriving.



WHAT YOU NEED:

- Netafim (0.6 gph, 12" spacing) drip tube
- Hose water timer
- 1.2" PVC threaded cap
- 3/4" PVC threaded coupling
- 3/4" female thread to hose swivel adapter
- Barb to 1.2" male thread adapter
- Barb to 3/4" male thread adapter
- Filter (at least 120 mesh)
- 8" hold down metal wire stake for 1.2" drip tubing

HOW IT WORKS:



1. 100ft drip tubing is placed around tree, in 1ft increments outside the drip line.



2. Tubing is connected to a water system using adapters, caps, and filters.



3. The Netafim drip tubing is used for it is pressure compensating which eliminates the need to use a pressure regulator.



4. The timer will shut off water when the appropriate amount has been provided.

A variety of factors, like temperature and soil type, affect how your tree should be watered and reduced water on your grass may harm trees that soak up irrigation water. Select the right solution for your yard, and make sure you're looking for signs of drought stress and watering in the tree's root zone.

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How to keep your trees alive during California's drought

As SLO County residents scale back their landscape irrigation, trees — especially pines — have been put in danger of disease and death

By Stephanie Finucane

sfinucane@thetribunenews.com July 13, 2015

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Don't show this again



Benito Maldonado with Davey Tree works to cut down a dead eucalyptus along Dana Foothill Road in Nipomo to prevent it from falling across the street and into PG&E power lines along the road.

JOE JOHNSTON — jjohnston@thetribunenews.com | [Buy Photo](#)

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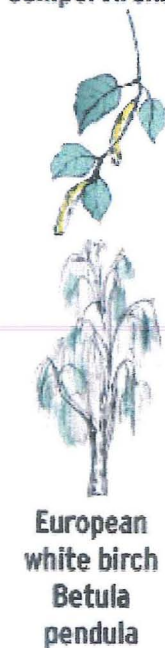
STRESSED-OUT TREES

These are some of the trees showing the most drought stress in California. They may need extra attention:



1. Coastal redwoods:

These trees are native to California's wettest areas with 100 inches or more of rain. With browned needles, they're frying and dying in dry areas and can be fire hazards.



2. European white birch:

A common lawn tree, they have short life spans, usually 35 to 40 years and need consistent moisture. For older birches, the drought has hastened their demise and made them a target of pests, especially birch borers.

3. Pines, several varieties:

As ever-

Don't show this again



Jeffrey pine
Pinus jeffreyi

greens, they try to grow and maintain leaves year round, but lack of water makes for weak branches and needle drop. Beetles target sick pines.

SOURCE: Sacramento Bee research

Brown lawns — or “golden,” as they’ve been christened by some PR campaigns — are cropping up in many California neighborhoods. They may not be pretty, but they are a sign that water conservation has become a way of life in drought-stricken California.

Unfortunately, trees — which are much more precious and harder to replace than turf — also are falling victim to drought.

Pines are especially vulnerable; the drought leaves them in a weakened state, when they’re more susceptible to bark beetle infestation. Other trees are at risk, too.

“We’re seeing a significant amount of mortality, primarily in pines, but (also) die-back and stress in oaks, countywide,” said Dan Turner, former county fire chief and current business manager for SLO County’s Fire Safe Council.

With so many dead trees, fire is a big concern, **especially in heavily forested communities**, but there are other worries as well

Trees provide a host of benefits that make them worth saving — not the least of which is improving air quality. Trees, as we all learned in science class, store carbon dioxide, absorb other pollutants and emit oxygen. Without them, air quality would suffer.

Trees also are good for our bottom lines.

Consider: Consumers are apt to spend more time in downtowns with tree-lined streets. Homebuyers are willing to pay more for houses with attractive trees in the yard. And by providing shade for homes, trees can cut down on use of air conditioning in warm regions.

They also make a hot day at the park a heck of a lot more enjoyable.

So how are our trees doing?

In terms of actual counts, at least 12.5 million trees have died in California’s national forests, according to aerial surveys conducted this year. The Sierra Nevada and Southern California have been hit particularly hard.

Closer to home, the biggest die-off has occurred in Cambria, where an estimated 40 percent of pines are dead or dying, though in some areas the percentage is **as high as 80 percent to 90 percent**.

Elsewhere in the county, the situation isn’t so bleak, though the drought has taken a toll.

In the city of San Luis Obispo, in normal rainfall years, around 15 or 20 trees are removed from city parks and streets because they’ve died of natural causes.

"This year, we (took out) more than 100," said city arborist Ron Combs. That includes 68 Monterey pines removed from city parks.

Tree removal projects are in the works in other communities as well. The county's nonprofit Fire Safe Council awarded several grants to fund removal of hazardous trees and brush in Cambria, Pismo Heights, Lake Nacimiento and Santa Margarita.

Other agencies are tackling the problem, too; county public works has taken out more than 165 trees in Cambria that could fall and block a road, impeding evacuations in case of fire.

PG&E has stepped up its inspections and is trimming or removing dead trees (as well as live branches) that pose a hazard to power lines.

Some of the tree removal is free of charge to property owners.

PG&E, for example, doesn't charge property owners for removing or trimming trees on private property when it determines the growth poses a hazard to power lines.

However, as a general rule, property owners are legally responsible for the trees on their property, and they can be ordered to remove fire hazards, including dead brush and trees.

Tree removal can be costly — as much as \$1,200 per tree or more.

That's another reason it makes economic sense to help trees survive the drought.

"Long and deep, once a week," is the watering advice that Combs, the city arborist, gives for clay soils. Trees in sandy soil may need more frequent watering; check the soil to best determine how often you need to water.

One overarching point to keep in mind: Trees should be the first priority for outdoor watering. Golden-brown lawns can bounce back; dead trees can't.

How to water your trees like Mother Nature

1. **Water the drip zone:** This is how nature designed trees to be irrigated. Rain hits tree leaves, cascades off the canopy like an umbrella and drips to the ground. That outer edge is the drip line where the strongest feeder roots gather moisture. More rain drips between branches and leaves under the canopy like a leaky umbrella; that's the drip zone where more feeder roots do their work. Few feeder roots are close to the trunk, don't water there.
2. **Deep and slow:** Water trees deeply and infrequently, once a week or less. To water deeply, water slowly and directly away from the trunk so soil can absorb the moisture. Make sure water reaches the tree's feeder roots in the top 12 inches of soil.
3. **Time it right:** Water early in the morning or after sunset; that's when trees naturally replace water they've lost to heat during the day. That also cuts evaporation.
4. **The right way:** Apply water directly to the drip zone with a hose on a gentle trickle, soaker hose, drip lines or buckets placed away from the trunk. Apply water in several places, spaced 2 to 3 feet apart, allowing the water to soak in. Try this: Take a 5-gallon bucket and puncture two or three holes in the bottom. Place the bucket directly on top of the soil under the tree's canopy and fill with water. The water will slowly seep into the soil. Move the bucket and repeat until the root zone is irrigated.
5. **Go deeper:** In hard clay soils, auger holes 1 foot deep every 3 feet around the tree near the drip line. Fill those holes with compost, then water; that vertical mulching will encourage deeper root growth. Some arborists and landscape services also offer water injections, pumping pressurized water directly into the root zone.

6. **Easy does it:** Let up on pruning, fertilization and other normal maintenance that encourages tree growth. Prune only if absolutely necessary. Do not fertilize a tree under drought stress.
7. **Mulch:** Fallen leaves form natural moisture control and also break down, adding nutrients to the soil. Mimic that with mulch. Spread organic mulch (wood chips, bark, straw, shredded leaves, pine needles, compost, etc.) in a circle around the tree, 2 to 4 inches thick and at least 3 feet out. Spread mulch like a donut, not a volcano. Leave a 6- to 8-inch circle clear around the trunk to avoid rot. Avoid rocks as mulch; they absorb heat, stress roots and increase a tree's water needs.
8. **Eliminate competition:** Remove the lawn growing directly under the tree and replace with bark or other organic mulch.

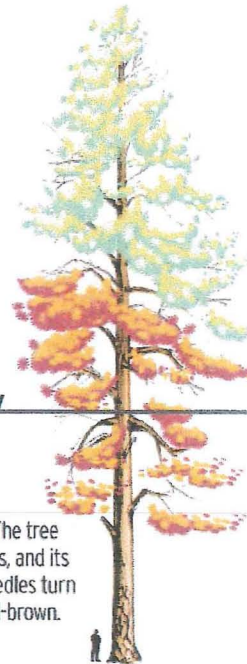
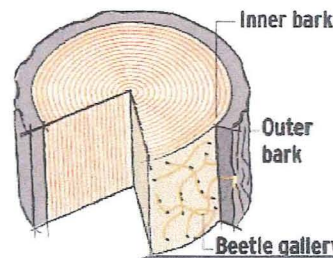
How bark beetles attack

In drought conditions, native beetles can kill large numbers of trees in California's forests. Water plays a critical role in a tree's natural defense against the insects.

1. Bark beetles are small, hard-bodied insects that attack trees by boring through their outer bark. Attacking beetles release pheromones that attract other beetles, resulting in mass attacks that can spill over to nearby trees.



Successful beetle attack "Pitchout" tree defense



THE SACRAMENTO BEE



The western pine beetle, one of several native bark beetles

2. When bark beetles attack a tree, the tree releases a resinous pitch that drowns the beetles and pushes them out of the hole. When short on water, the tree can't produce enough pitch to ward off mass attacks.

3. Once past the protective outer bark, the beetles feed on the moist inner bark - carving tracks, known as galleries, where they lay eggs. The hatching larva make more galleries, which cut off the tree's ability to transport nutrients.

4. The tree dies, and its needles turn red-brown.

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SOURCES: U.S. Forest Service

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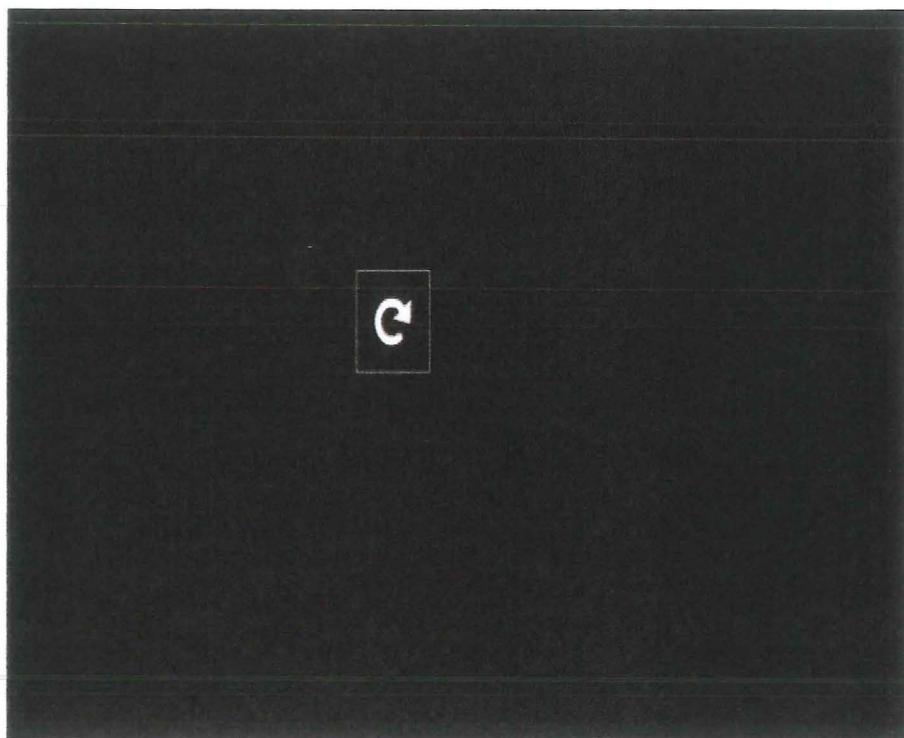
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BEAT THE DROUGHT

CLAREMONT SAVING TREES DESPITE WATER RESTRICTIONS FOR DROUGHT



Claremont is pouring resources into saving its trees despite severe statewide water restrictions.

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By Leo Stallworth

Tuesday, August 25, 2015 05:45PM

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WEATHER



Southern California weather forecast Sunday



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CLAREMONT, Calif. (KABC) -- Claremont is pouring resources into saving its trees despite severe statewide water restrictions.

The city is keeping tabs on its 24,000 public trees to prevent them from rotting out and falling over. For the few trees that do die, city arborists identify them and work on plans to uproot them.

"Trees provide a benefit that grass just doesn't. It provides shade. It provides oxygen. It provides mental health," said Bevin Handel, a spokesman for the city manager's office. "We want you to get rid of your grass. We don't want you to get rid of your trees."

Watch Leo Stallworth's full report in the video above.

Eyewitness News is committed to helping you Beat the Drought, and we want to hear your ideas too! Join the Circle of Eyewitnesses and tell us what you're doing to save water. Share your pictures or video on Twitter, Instagram or Facebook with #ABC7Drought.

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HOME & GARDEN

Arborists' advice on caring for trees during drought

By **Julie Chai** | August 7, 2015 | Updated: August 7, 2015 11:23am

"Brown is the new green" signs are sprouting in yards all over the Bay Area as more residents are letting their landscapes go dry in response to the drought. But one place you may want to continue letting water flow is to your mature trees.





Photo: Brant Ward, The Chronicle

Nicholas Crawford, master arborist with Davey Tree Expert Co., checks a drip watering system in S.F. that he recommends for mature trees.

"The crunch that everyone's trying to resolve is that they're cutting back on water use because we have to, but they don't want to lose trees, especially mature trees that have been growing for decades," says Nicholas Crawford, board certified master arborist with the Davey Tree Expert Co. in San Francisco.

"The risks of not watering trees outweigh those for other landscape plants and turf. Lawns can go dormant and will rebound, but with trees, you don't have that option."

When the weather is warm and it hasn't rained for a couple of months, trees may suffer from drought stress. That shows up as leaves that are wilting, browning at the edges, dropping at an unusually high rate, or a canopy is more sparse than normal.



Along with increasing property values, trees help clean the air of pollutants, control erosion, reduce runoff after storms and create shade that lessens the need to use energy for cooling. The more mature the tree, the greater the benefit.

If a lawn, perennials or shrubs die from lack of water, they're relatively inexpensive to replace. But losing a mature tree can be pricey.

Removing a dead tree can cost hundreds or even thousands of dollars, depending on the size and situation; if you choose to have a new one planted, you'll incur the costs of installation as well as of the tree itself. And over time, you'll end up using more water.

"When you replace a tree, you end up with a much smaller tree, you re-set the environmental benefits, and it takes much more water to grow that tree to its mature size than if you'd provided supplemental water to your mature tree during the drought," Crawford says.

Evergreen trees are most at risk. While it's normal for deciduous trees to create and lose a new set of leaves every year, evergreens rely on leaves that are more than a year old to generate enough energy to survive. And if drought causes premature leaf loss, the tree declines.

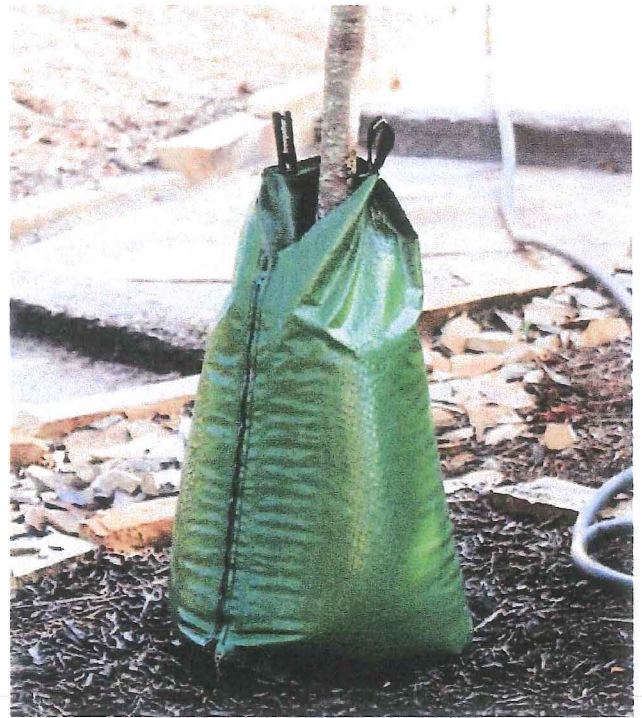


Photo: Home Gardening Products

A Treegator Slow Release Watering Bag on a newly planted tree..





Photo: Brant Ward, The Chronicle

Arborist Nicholas Crawford exposes the drip system on an S.F. median. He says risks of not watering trees outweigh the risks incurred by other plants and turf.

"When the leaves are dropping and turning brown, the stress is so great that it's hard to recover," Crawford says.

Julie Chai is a freelance writer. E-mail: home@sfchronicle.com

Watering trees during the drought

You can protect your trees by giving supplemental water. Crawford says that, for most trees, 80 percent of their roots are concentrated in the top foot of soil, so make sure water penetrates the soil 6 to 12 inches deep below the tree's canopy; irrigating more deeply than that doesn't provide much of a benefit.

Water in the cool morning hours to minimize evaporation, using the methods below for landscape and street trees.

Mature landscape trees (more than 1 year old): Once a month, saturate the soil a foot deep under the canopy. It's best to set up drip irrigation, a soaker hose or an oscillating sprinkler to run for 20 for 30 minutes.

Mature street trees: Much of the root systems may be covered by concrete or other paving, so it can be hard to reach the area under the canopies. During drought, water these trees once a month using a hose at a very slow flow — so that water doesn't run off — for 20 minutes. Or you can drill a hole in a 5-gallon bucket, let it drain onto the exposed soil under the canopy, and refill enough times to give the tree 15 gallons of water. For smaller trees, you might opt to use a slow-release watering bag, such as a Treegator (www.treegator.com).

Davey and other companies perform subsurface watering with a high-pressure soil probe, a tool attached to a hose that's plunged into the soil so water reaches the root zone. This service costs about \$165 for a large tree or a couple of smaller trees. While homeowners can buy soil probes to use on their own, Crawford says that residential water pressure is typically too weak to penetrate the soil in a useful way, especially if the soil is very compacted.

Resources

For more information on caring for trees, check the following websites.

Canopy: www.canopy.org

Davey Tree Expert Co.: www.davey.com

Friends of the Urban Forest: www.fuf.net

Trees are Good: <http://>

www.treesaregood.org



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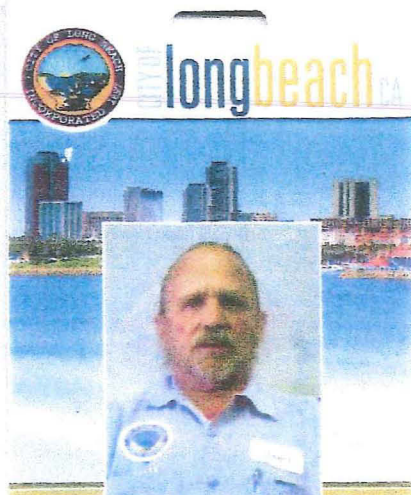
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