Resources

U P D A T E

Prioritize Watering Trees

Trees take many years to grow and can't be quickly replaced like shrubs or a lawn. Yet, trees provide numerous benefits. Learn about simple ways to water trees to reduce the stress that invites disease, pests and death.

Inside this newsletter you will find a 12-page publication: *Waterwise Tree Care.* Please share it.

Help us spread the word about keeping trees alive and healthy during this unprecedented drought. Here are some resources to share: It's easy to share from our Facebook page: www.facebook.com/RCRCD

Listen to Inland Urban Forest Council talk about simple ways to water trees on Riverside's Green Power Report from 8-25-2015 at: http://www.greenriverside.com/gpr

Watch and share Claremont's video about the value of trees and their care at: https://vimeo.com/135712099

©2015-Photo by Melissa Badalian.

You may see large "price tags" hanging in trees around town. The tags cite the benefits of trees with links back to the publication (inside), which can also be found at http://www.rcrcd.org/Publications/WaterwiseTreeCare.pdf

Most importantly, if we continue to lack substantial rain, extend watering your trees through fall and into winter.
Well-timed fall and winter watering may reduce the amount of water your trees will need in spring.

RCRCD's mobile Irrigation Water Management (IWM) Lab provides on-site inspection and testing of irrigation systems from drip/micro sprinklers to water cannons for agriculture, golf courses, apartments, and industrial/commercial centers. The evaluation also includes testing soils for macro nutrients. After onsite evaluation, the lab provides a written report about system operation, maintenance, cultural practices, and soils. The mobile lab has conducted irrigation system evaluations at over 3,000 sites covering more than 15,000 acres since 1987.

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Jose Iniguez, irrigation auditor, evaluated a sprinkler system for uniform distribution of water.

RCRCD
Riverside-Corona Resource Conservation District

RCRCD provides resource management assistance to private and public landusers and conducts land treatment, education, and volunteer programs to steward natural resources. RCRCD fosters the sustainable use of natural resources for each land-use, including native habitats, urban/suburban areas, and agriculture.

Help Build Our Local Riverside Food System

by E. Seth Wilson

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Riverside Food Systems Alliance (RFSA) is a newly formed organization that is working to create a Farm to Fork food system that makes healthy, local foods available for all. As a result of the 2014 Grow Riverside Conference and support from Councilman Chris MacArthur, the City of Riverside convened nearly 90 community stakeholders to draft a Food and Agriculture Action Plan, which was approved by Riverside City Council in May, 2015.

RFSA seeks to build public-private partnerships with members from the community, government, and businesses. The RFSA collaborative includes farmers, community gardeners, restauranteurs, food co-ops, health and hunger organizations, Riverside's Economic Development Department, county health and agricultural agencies, Farmers' Markets, individuals, and more. If you have a passion for helping local food communities prosper, join one of our working groups:

- Growing Food: Sustain a Vibrant Community of Farmers and Growers
- Processing and Distribution Infrastructure: Farm to Fork
- Food System Economic Strategy: Eat Riverside Grown
- Educate, Inspire, and Sustain Demand
- Access for All: Healthy Foods
- Ensuring Results: Facilitate Collaboration, Break Barriers, Metrics
- Build Community Capacity: Develop Organizational Structure

To get involved as a collaborator, volunteer, or sponsor, please visit our website: www.growriverside.org and fill out the online survey, or contact RFSA executive director, Seth Wilson at RFSAinfo@gmail.com or Gurumantra Khalsa at gkhalsa@nutritionnews.com or (951) 640-3868.

RFSA is fiscally sponsored as a project of Community Partners, a non-profit organization. Donations are tax-deductible and can be made through www.growriverside.org.

RFSA: Enhancing food security by building and growing a resilient, productive and sustainable local food and agriculture system in and around Riverside.

Conservation Assistance

by Bob Hewitt

The Natural Resources Conservation Service (NRCS) can help local farmers with determining the best way to conserve irrigation water, control erosion, improve wildlife habitat, and more. This technical assistance is provided at no cost to the farmer.

NRCS also provides some financial assistance through the Farm Bill EQIP program. The Environmental Quality Incentives Program (EQIP) provides financial and technical assistance to agricultural producers to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, reduced soil erosion and sedimentation, and improved or created wildlife habitat. This program helps pay for a portion of the cost of materials and installation for improvements such as the irrigation system retrofits.

This program is available to all farmers regardless of acres owned or ag income. Contracts are developed between the farmer and NRCS. Payments are made to participants after practices and activities identified in an EQIP conservation plan are implemented. Contracts may last up to ten years.

Agricultural producers and owners of non-industrial private forestland and Tribes are eligible to apply for EQIP. Eligible land includes cropland, rangeland, pasture-land, non-industrial private forestland and other farm or ranch lands.

NRCS will help eligible producers develop an EQIP plan of operations, which will become the basis of the EQIP contract. Visit www.nrcs.usda.gov/getstarted or contact District Conservationist Bob Hewitt at Robert.Hewitt@ca.usda.gov or 951-654-7139, ex 101.

Waterwise Tree Care

Help trees survive drought: Tips for inland Southern California

Water, or the lack of it, should never be far from the minds of southern Californians. Whether it is due to drought or climate change, water is rapidly becoming a more limited and expensive resource.

Like water, trees are also a precious resource. Trees can suffer and decline if they are in landscapes where watering is decreased due to shortage or drought. During those periods, you may be asked to cut back on watering your yard. Trees should be given a higher priority over lawns and shrubs, because trees take many years to mature. Grass and small shrubs are relatively quick to replace. Make sure you keep your trees alive and healthy by providing adequate water.

Urban trees provide many benefits worth preserving, including shade, energy savings, improved air quality, higher property values, wildlife nesting sites and food sources, improved quality of life, plus control of storm water, erosion and climate extremes. According to research by the USDA Forest Service* an average tree in the Inland Empire provides $3880 of benefits.

**Trees Pay Us Back* by the USDA Forest Service Pacific Southwest Research Station: http://www.fs.fed.us/psw/programs/uesd/uep/products/18/804uesd_uep_tpub_InlandEmpire.pdf

Photo by Diana Ruiz

Photo by Nancy Sappington

How can you tell if a tree is under stress?

- Wilting, curling, graying or yellowing of leaves and browning of leaf edges
- Dieback of twigs and branches
- Lack of new growth and shoot lengthening in spring
- Disease and/or insect infestation.

Did you know? Trees that are stressed may curl their leaves up or down to reduce the amount of solar radiation they absorb.

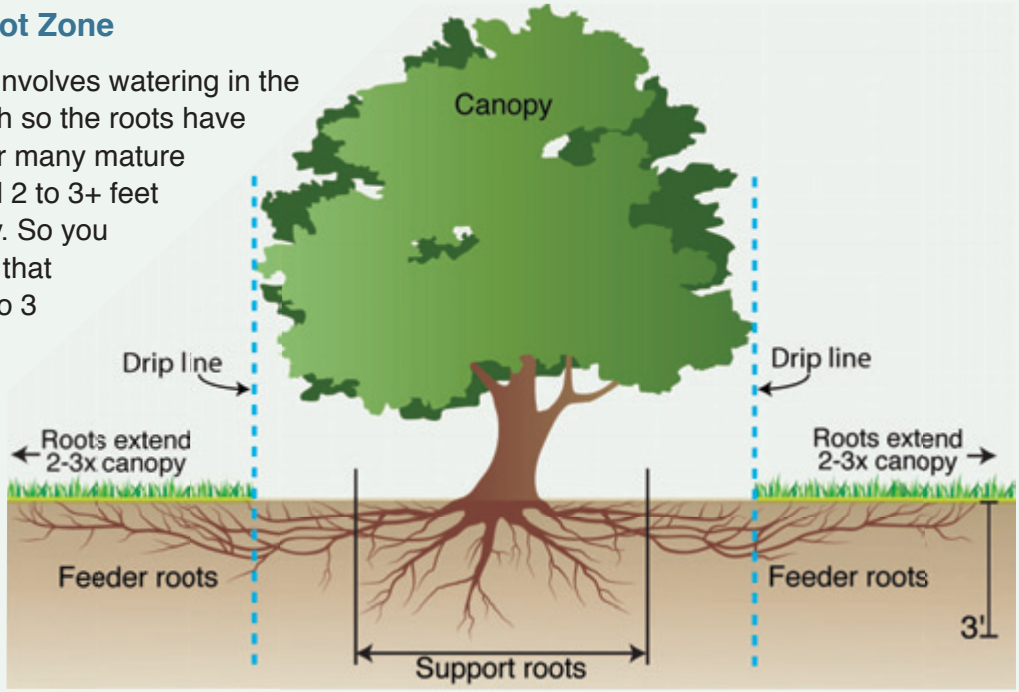
Several Riverside area park trees were uprooted during strong winds, August, 2013. This example shows that the roots never developed adequately to provide a strong support, perhaps due to shallow and deficit-irrigation. Irrigation systems designed to water turf do not sufficiently water deeper rooted trees. In addition, the grass was allowed to grow close to the trunk, utilizing water and nutrients that were needed for tree growth.

Watering Tips

How often you will need to water depends on many variables, including weather, soil type, site conditions, irrigation system, tree age/size, and kind of tree. The following few pages provide some simple approaches to help you evaluate conditions and apply water to keep trees healthy.

Water the Entire Root Zone

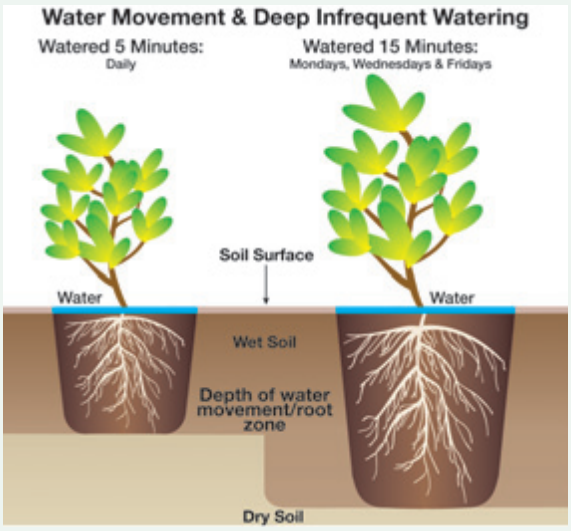
Keeping trees healthy involves watering in the root zone, deep enough so the roots have adequate moisture. For many mature trees, roots are located 2 to 3+ feet deep under the canopy. So you will need to make sure that water is percolating 2 to 3 feet deep.



Wet the surface of the soil beneath the area shaded by the tree's canopy and beyond. In some situations, feeder roots extend 2-3 times beyond the distance of the canopy.

Soak Deeply

Shallow watering encourages shallow root development and limits the volume of soil a tree uses for water and nutrient uptake, making a tree more susceptible to drought, disease, and uprooting during strong winds.



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Use a soil probe, auger, or small shovel to determine if water is reaching the entire root zone.

Simple Methods

If you don't have a separate irrigation line for your trees, try other simple ways to water the root zone:

- let a hose drip and move it around to soak under the canopy and beyond the drip line
- coil soaker hose under the tree and run for a few hours
- build a circular berm and fill with water.

For newly planted trees, water the root-ball area deeply one or more times per week to encourage the growth of deep roots. It's important that the root ball be moistened frequently to encourage rapid root growth. Check for moisture 6 inches into the soil on the sides of the root ball.

When to Water

Sun and wind increase evaporation. To reduce evaporation, apply water in the early morning, not during the heat of the day, especially if using a sprinkler system. With sprinklers, avoid watering during wind.

Frequency

Water mature trees every 1 to 4 weeks during the dry season, which is generally from May to November. If there is a lack of rainfall, you will need to extend watering into the winter months. Well-timed fall and winter watering may allow a tree to survive on less water than a regime of plentiful water during the growing season. Waterwise (drought tolerant) trees require less frequent irrigation.

Soak infrequently until the soil is moist, not mushy, allowing it to dry in between irrigations to prevent diseases that thrive in warm, wet conditions. Prevent mulch from touching the trunk of the tree, also, direct sprinkler spray onto the soil surface and not at the trunk.

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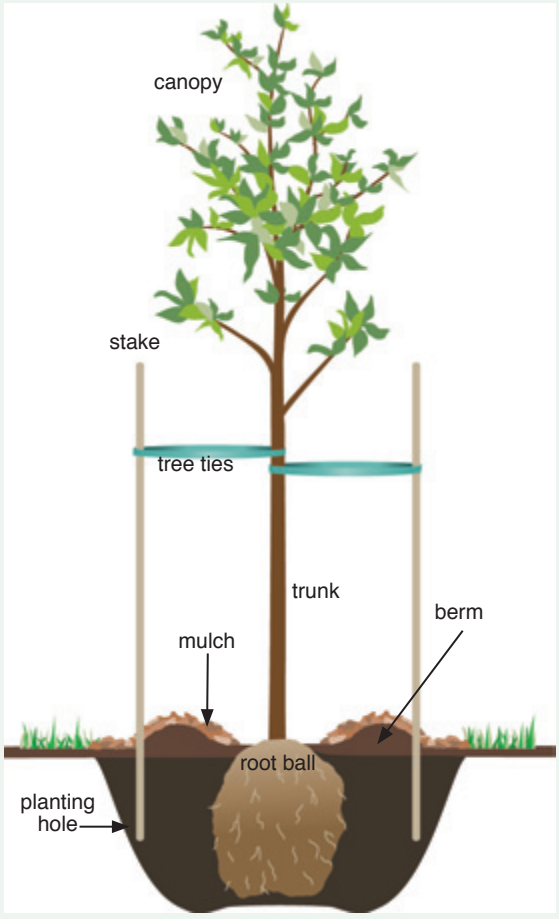

Newly planted and young trees require more frequent irrigation. Initially upon planting, build the berm so its inside edge is just above the edge of the root ball to direct water above and into the soil of the root ball. As the tree becomes established, move the berm out to under the drip line, and continue to widen as the tree matures.

Mulch!

Apply mulch 2-6 inches deep under the canopy and, if possible, throughout the feeder root zone area. Place mulch 6 inches away from the trunk. Also, avoid using weed cloth, plastic sheeting, or inorganic mulch, such as gravel or stones under trees.

Mulches of organic matter (dead plant parts: chipped bark, leaves, grass clippings, etc.) conserve water by holding moisture, preventing weed growth, and reducing evaporation from the soil surface.

Organic matter creates a favorable environment for soil life, including helpful bacteria, earthworms, and beneficial fungi, which help break up the soil to allow water to penetrate. Prevent compaction by keeping off wet soil, and avoid parking cars on the soil surface above the roots.

Mulch away! Place mulch onto the wetted area, but to prevent disease, don't let mulch touch the tree trunk.

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Mulch prevents the growth of highly competitive annual weeds, but not perennial weeds such as Bermuda grass or Kikuyu grass.

Fresh organic material is better for mulching the soil surface than compost. (Compost is used as an organic fertilizer that can be mixed into the soil at planting time.) Don't be concerned that mulch will absorb nutrients from the soil surface as it decomposes. This has been studied and found not to occur unless mulching material is incorporated into the soil rather than placed on the surface. Also, some trees are known to be able to prevent the growth of neighboring plants, but this is not true of their chips.

Bulk, fresh mulch can sometimes be obtained from tree services. Some cities, such as Riverside, provide free chipped mulch for pick up.

Soil Type

Soil is composed of tiny fragments of rock or minerals, plus the spaces between those particles (pores) which drain and hold water and air. There are many variations of soil, as every soil has a different composition of minerals and organics, and every soil has been subjected to different environmental conditions. However, the basic concept to understand is soil texture, because particle size determines the pore size which holds water and air and affects how much water is needed to replenish the root zone and how frequently water should be applied.

What is the texture of your soil?

Soil texture can be determined by using the "feel" method: rub moist soil between fingers. Soil texture varies by proportion of sand, silt, and clay. When soil is moist, make a ball of soil and press it into a ribbon shape. In general, the longer the ribbon, the more clay you have in the soil. If you can't make a ribbon, you probably have a lot of sand.

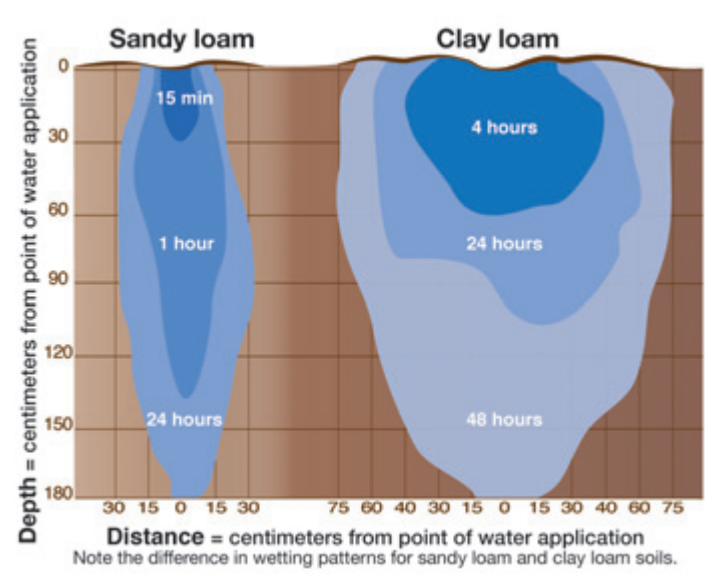
- Sand particles, the largest size, feel gritty and are generally visible to the eye. Sandy soils drain relatively quickly, but very coarse sand (sandbox size) drains too quickly to support root growth.
- Silt particles feel slippery or silky when moist.
- Clay particles,the smallest size are microscopic. Clay holds significant amounts of water. Clay feels sticky when wet and hardens into clods that are like rocks. If you've ever sculpted with clay you know how sticky and hard pure clay can be.

For an online guide to texturing soil by the feel method, see: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/edu/kthru6/?cid=nrcs142p2_054311

Soil Texture and Water

Sandy soils drain quickly, retain less water, and require more frequent irrigations. For soils high in clay, one foot of soil depth holds more than 2 inches of water. A soil that is a mixture of sand, silt and clay (a loam) is ideal because it both holds water (available for roots) and drains excess water, providing for air. Soggy or waterlogged soil can "suffocate" roots.

Most of our local soils are loam, a mixture of sand, silt and clay. For loamy soils, one foot of soil depth holds 1 to 2 inches of water. So for a small tree, a simple way to get water deep into the root zone is to build a circular earth berm below or beyond the canopy drip line and fill the basin with water a few times with 2 inches per foot of estimated rooting depth.



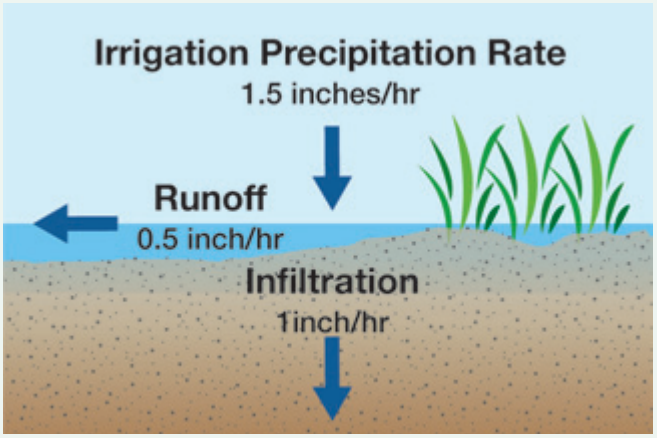
Water spreads out in soil that is high in clay. Water moves downward and drains more quickly through sandy soil, because the spaces between sand particles are larger.

Example: If you think your tree has deep roots to 3+ feet:

2 inches of water X 3 feet of depth = 6 inches of water needed.

Each time you irrigate, fill water inside the berm a total of 6 inches, such as 6 times at 1-inch depth.

Irrigation Systems and Different Soils



Just as different textured soils move water through them at different rates, they absorb water at different rates. When using an irrigation system, apply water at a rate according to the infiltration rate of the soil to prevent runoff.

A soil that is predominately clay absorbs water slowly as compared to sandy soil that has the most rapid infiltration rate. Apply water using components that don't exceed the soil's infiltration rate. Check your emitters, sprinklers, and/or sprayers for their application rates (irrigation precipitation rates). The speed at which an irrigation system applies water over a given area is referred to as the precipitation rate, measured in inches per hour.

You may have to adjust your watering run/s for site conditions including slope and amount of vegetative cover. For example, bare soils on a steep slope will shed water (and erode soil) quicker than those with a cover of mulch or vegetation.

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Water was ponding, in spite of a low-flow emitter. By watering slowly, you will prevent runoff and allow time for moisture to move downward through the soil. In areas with ponding, runoff, or compaction, schedule 2-3 short run times rather than one longer run.

Maximize Efficiency = Minimize Water Use

An efficient irrigation system is one that applies the right amount of water for the plants and uniformly over the yard or grove. If you are only watering a tree or two, uniform distribution of water may not be an issue. However, if there are dry spots in your landscape that you have to water more frequently or for longer periods of time, then you have an inefficient irrigation system. It may mean that each head on the system does not have the same precipitation rate (doesn't put out the same amount of water). Look for mismatched irrigation heads.

To get the right amount of water to each plant, efficient systems have specific zones or stations for plants with like water requirements (*hydrozones*). That is to say, low water-usage plants would not be on the same station as higher water-loving plants. For example, if you have shade plants in a shaded area, they would be on their own station and would be watered less than sun-loving plants in a sunny area.

For Smart Irrigation, Use Smart Controllers

"Smart" irrigation controllers tailor watering schedules and run times automatically to replenish only the amount of moisture that the landscape needs. Generally, there are two types of smart controllers, those that are based on soil moisture (SMS), which utilize soil sensors or tensiometers, and those that are based on weather information. Weather-based smart controllers draw upon a variety of climatic conditions, including temperature, incoming solar radiation, wind, and precipitation to calculate evapotranspiration (ET). ET is moisture lost from the plant to the atmosphere (through transpiration), as well as evaporation from the soil surface. In addition to onsite weather stations, some controllers use historic weather data, while others use a subscription service to download daily ET values.

Smart controllers, soil moisture sensors, and rain sensors are available at hardware stores and irrigation supply stores. Technologies change quickly, so compare controllers by Toro, Rainbird, Hunter and more. Many inland cities offer rebates for the professional installation of approved smart controllers.

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Even if you are using a smart controller, to be smart, you will need to monitor its use.

If you're not using a climate based controller, manually manage run times and days to water according to soil conditions and seasonal weather conditions. Most controllers have built in functions called "seasonal adjust" or "water budget" to easily adjust for seasons. Adjust at least four times per year.

The California Irrigation Management Information System (CIMIS) collects data from over 140 automated weather stations throughout the state. CIMIS provides reference evapotranspiration (ETo) and weather data to the public for irrigation scheduling and other purposes such as pest management, energy generation, fire-fighting, weather forecasting, and scientific research.

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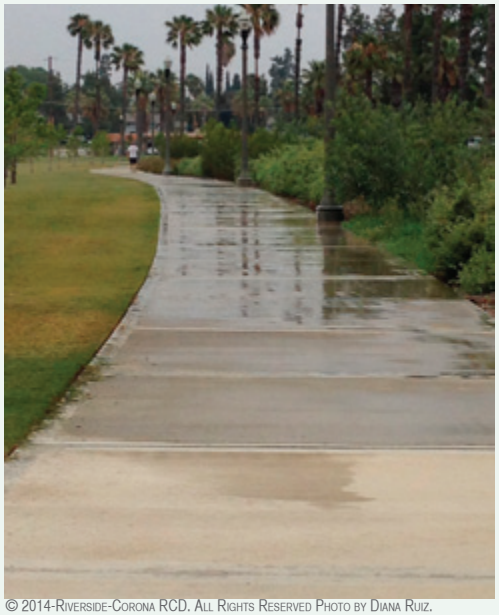
Maintain!

Irrigation Maintenance

For efficient operation and uniform distribution of water, watering systems need continual maintenance. At a minimum, conduct monthly inspections and correct deficiencies, or hire a licensed maintenance contractor with water conservation expertise. Look for broken and worn components, clogged and missing emitters, leaks, overspray, and sprinkler misting, which may indicate that water pressure is too high. A doughnut shaped water pattern may mean the pressure is too low. Every few years, have an irrigation professional conduct a water audit. Some Resource Conservation Districts (RCDs), cities, and water districts provide irrigation evaluations free of charge. Irrigation system plans should be saved to verify that system components match the original design criteria.



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Water is not getting to plant roots. Sprinklers can be adjusted to prevent overspray onto the sidewalk.

Herbicides and Fertilizers

Trees already stressed by drought can be harmed by heavy applications of herbicide. Some tree species are harmed by herbicides used in the lawn.

If your trees have an insect or disease problems, treat them to reduce their overall stress. Additionally it's not helpful to fertilize a tree that is stressed by drought.

Pruning

The International Society of Arboriculture (ISA) recommends pruning trees only when necessary, such as to remove dead, diseased or damaged branches. Never top or over-thin a tree. Well-meaning tree owners often do irreparable damage, so check with a professional arborist before pruning, especially during times of drought. It's normally OK to properly prune trees during times of drought to improve structure and to remove dead and weakened branches. Leaving broken, insect-infested, or diseased branches can further weaken a tree.

Berm Maintenance

If you have a water basin with an earth berm around the base of your tree, it will be important to move the circular berm out, as the tree grows and canopy expands, at least to below the canopy drip line. As roots mature and increase in girth close to the trunk, they become buttress roots and serve more in a capacity to support the tree than for water absorption. It's not uncommon to see a person watering a mature tree right at the trunk, rather than away from the trunk, where water is needed most.

On slopes, build berms on the downhill side of the trunk to help capture runoff and allow the water to infiltrate.

Drought Sensitive Trees and Shrubs

Some species are so susceptible to drought that one summer in southern California without irrigation can be lethal, even to established plants. At the top of the list are coast redwood, camellia, and azalea. If exposed to more than one dry summer, any of the tropical species associated with wet conditions can be included in the “drought sensitive” list. Water-loving trees usually need more watering, so please only plant waterwise trees in the future.

A number of diseases and insect pests have been shown to be more severe when plants are exposed to summer drought, even if the susceptible plant is considered resistant to drought injury. Types of diseases that are drought related include cankers, Armillaria root rot, and surprisingly, even root rots caused by water molds such as Phytophthora. Several kinds of borers, especially pine bark beetles are commonly associated with drought. Plants that are susceptible should be irrigated deeply at least twice during the summer and into the winter if the drought continues. Common species meeting this description include:

Aleppo pine
Blue gum
Canary Island pine
Coast redwood
Most fruit trees
Giant sequoia
Incense cedar
Madrone
Monterey pine
Sugar gum
Willow

Even native trees, including oaks may need a few deep soakings during the summer of a hot, dry year. Many factors affect tree watering needs including lowering water tables, removal of mulch or leaf litter and site disturbances such as paving and hard surfaces. Normally, native oaks do well with no summer water when they receive adequate winter rainfall.

Armillaria is a fungus that causes root and root crown rot. It has white/cream colored spores and usually has an annulus (ring-like remains) found around the stipe (stalk or stem). A frequent sign of Armillaria is a clump of mushrooms attached to the root crown/root.

Photo courtesy of Sims Tree Health Specialists, Inc.

Gold spotted oak borer adult.

Photo by Mike Lewis; Center for Invasive Species Research; Bugwood.org

Coast live oak, *Quercus agrifolia*

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Planning for the Future

1. **Select the right tree for the right place.** (See suggested websites pg. 11). In southern California, that means selecting a low-water using, drought-tolerant species (*waterwise*).

2. **Xeriscaping** is the practice of landscaping in ways that minimize the use of irrigation water and utilize waterwise (less thirsty) plants. Group plantings and design irrigation systems by *hydrozones*, or sections that have plants with the same watering needs, and the same slope, sun exposure and soil conditions.

3. Use **Smart Irrigation.** Design irrigation systems that apply water with uniform precipitation rates. Plan separate irrigation lines for watering trees and large shrubs, preferably with drippers or low-volume sprinklers/sprayers to provide deep water for tree roots. Select water-conserving irrigation components, such as pressure regulated spray heads, rain switches, high efficiency nozzles, flow sensors to detect leaks, and smart controllers (timers).

4. Incorporate **Low Impact Development** (LID) methods, such as rain gardens (infiltration basins), rain barrels, and swales to capture water or allow it to percolate into underground water basins. Use non-potable (not drinking water quality) water for irrigation, when available, such as runoff water collected in rain barrels

5. **Preserve existing native trees** and non-invasive vegetation. Natural habitat that is not disturbed will not require irrigation. Irrigation will be needed to establish newly planted natives. If the ground has been disturbed with disking or weed clearance, the trees may need a good soak in a dry year.

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Often trees in city parks are only watered to 12 inches of soil depth, enough water to support a lawn with shallow roots, but not deep rooted trees.

Find excellent resources online about proper tree care, selection and irrigation.

Gardens to Visit

LandUse Learning Center
4500 Glenwood Dr, Bldg A, Riverside, CA 92501
(951) 683-7691, www.RCRCD.org

Sims Tree Learning Center
6111 Appaloosa Ave., Riverside, CA 92509
(951) 685-6662, www.simstlc.com

Landscapes Southern California Style
450 Alessandro Blvd., Riverside CA 92508
www.wmwd.com

Chino Basin Water Conservation Garden
594 San Bernardino St, Montclair, www.cbwcd.org

University of California, Riverside Botanic Garden
www.gardens.ucr.edu

Rancho Santa Ana Botanic Gardens
1500 North College Avenue, Claremont, CA 91711
www.rsabg.org

Organizations and Agencies

The Irrigation Association
www.irrigation.org

The International Society of Arboriculture
www.isa-arbor.com
www.TreesAreGood.com

California Urban Forest Council
www.caufc.org
www.InvestFromTheGroundUp.org

California ReLeaf
www.CaliforniaReleaf.org

Alliance for Community Trees
http://ACTrees.org

Cal Fire
www.fire.ca.gov/

National Arbor Day Foundation
www.arborday.org

UC Agriculture and Natural Resources
http://ucanr.edu/

USDA Forest Service
http://www.fs.fed.us

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wwww.FreeSprinklerNozzles.com

Tree Database Websites

Be Water Wise
www.BeWaterWise.com

Cal Flora
www.Calflora.org

USDA Plant data base
www.plants.usda.gov

Tree Selection Guide for California
www.selectree.calpoly.edu

Water Use Classification of Landscape Species
(WUCOLS) http://ucanr.edu/sites/wucols/

WESTERN MUNICIPAL WATER DISTRICT

This publication was developed collaboratively by the **Inland Urban Forest Council** Advisory Board: Rebecca Latta, Dr. Fred Roth, Dave Roger, Nancy Sappington, Susan Sims, Mark Porter, Diana Ruiz, and by the **Riverside-Corona Resource Conservation District**.

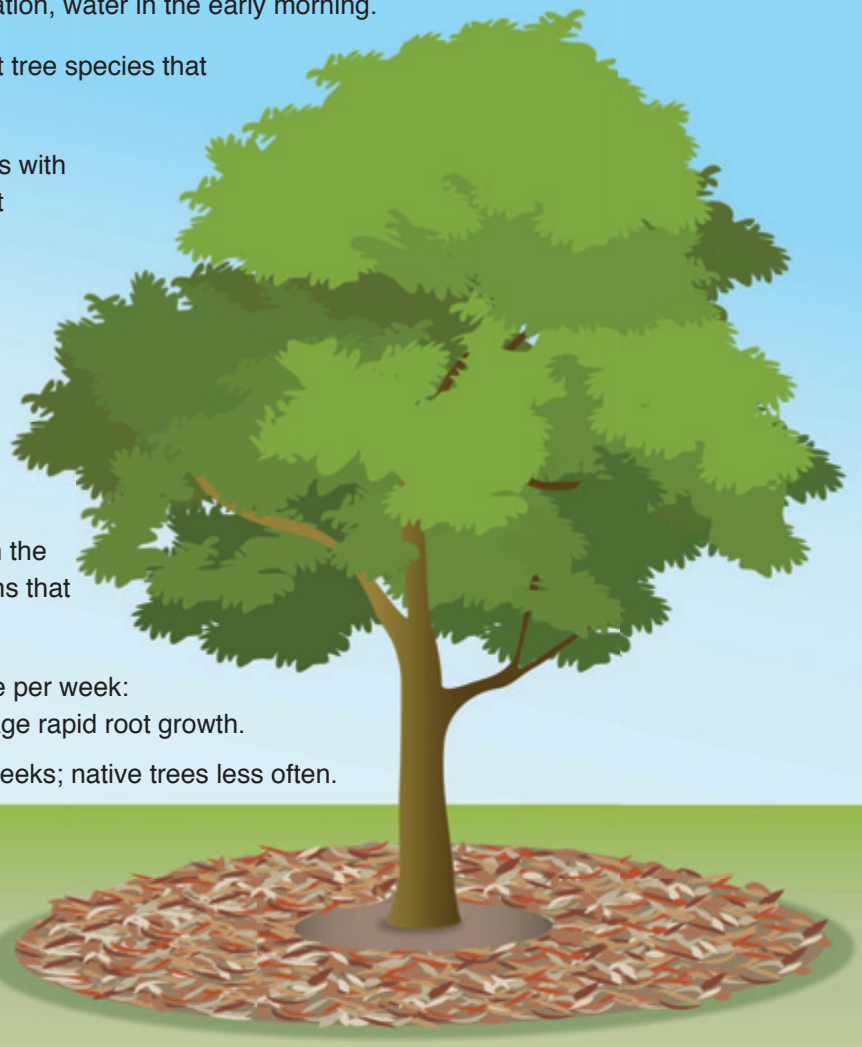
This publication was made possible by funding from the USDA Forest Service and the Riverside-Corona Resource Conservation District.

No endorsement of products, services, or viewpoints is intended, nor is criticism implied of similar products, services, or viewpoints that are not mentioned.

Trees and Water Are Precious Resources.

Prioritize watering trees during a water shortage.

- To reduce water loss to evaporation, water in the early morning.
- Plant native or drought resistant tree species that require less water.
- Install efficient irrigation systems with uniform components and “smart controllers”.
- In areas with ponding, runoff, or compaction, schedule 2-3 short run times, rather than one longer run.
- Wet the surface of the soil beneath the tree’s canopy and beyond. Direct water away from the trunk, to prevent moist conditions that foster disease.
- Water young trees at least twice per week: moisten the root ball to encourage rapid root growth.
- Water mature trees every 1-4 weeks; native trees less often.
- Spread mulch under and beyond the canopy, but not touching the trunk.
- Repair broken and worn components, clogged and missing emitters, and leaks. Look for overspray, sprinkler misting, and ponding.



- Deep, infrequent watering encourages deep root growth for drought resistance.
- Evaluate your soil type and rooting depth.

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Email: IUFC2@aol.com
www.inlandurbanforestcouncil.org
www.facebook.com/InlandUrbanForestCouncil

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THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

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Riverside Citizen Science*

*Citizen Science: activities that involve everyday people in real and meaningful forms of science, including biological inventory, long-term monitoring, and research.

The Riverside Citizen Science program (RCS) has taken off like wildfire. RCS partners will be conducting stakeholder meetings this Fall to assess potential collaborations and projects for studying the natural resources of the greater Riverside area. Join us!

Some current RCS projects include: Riverside Nature Spotter, Operation Tree Canopy, Seeking All Southern California Stinkbugs, and Bluebird Nest Box monitoring.

Riverside Nature Spotter smartphone application was developed by Riverside's Innovation and Technology Department. It is available for free download for both iPhone and Android operating systems. The animals and plants that citizen scientists photograph are mapped and stored at www.inaturalist.org/projects/riverside-citizen-science. *Seeking All Southern California Stinkbugs* was developed in partnership with UC Riverside scientists. Participate through Nature Spotter and find records at: www.inaturalist.org/projects/seeking-all-southern-california-stinkbugs.

Operation Tree Canopy involves citizen scientists who collect research data to help UCR scientists study the benefits of urban trees. During Summer of 2015, volunteers collected data, measured trees and sampled leaves to help verify photos that were collected during high altitude fly-overs by NASA. The project was brought to the Inland Empire by Earthwatch Institute. Thanks to the work of citizen scientists, research data was collected from over 1,300 trees in 45 urban spaces throughout the greater Los Angeles region, including Riverside.

Focal Trees is the newest phase to help with Earthwatch Institute's Urban Forest Resiliency project. After using NASA data and leaf samples collected by citizen scientists, the UCR lab is now ready to focus on collecting data from 10 specific tree species.

The mission of Riverside Citizen Science is to engage our community in observing and documenting Riverside's natural environment. This program fosters appreciation and stewardship by staging and supporting nature centered activities. Science, through community participation and collaboration, becomes a permanent part of our city's culture and identity.

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Harminder Gill helped train new citizen scientists with tree measurement.

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A Memorandum of Understanding formalizing the RCS partnership was signed on January 28, 2015, at the new Ameal Moore Nature Center. Foreground, from left are Mayor Rusty Bailey, Smokey Bear, volunteer, UCR Chancellor Kim Wilcox, US Forest Service's Station Director Alex Friend, and RCRCD's Vice President Roy Takeno.

Riverside-Corona
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All RCRCD programs and services are offered on a nondiscriminatory basis, without regard to race, national origin, religion, age, gender, or orientation.

2015 Fall Events

Friday, October 2 10–12 AM
Riverside Citizen Science Stakeholder Meeting. Riverside-Corona Resource Conservation District, BUILDING F (behind glasshouses), 4500 Glenwood Dr., Riverside, CA 92501 For more information, please contact James Bryant at jbryant@riversideca.gov or Diana Ruiz at ruiz@rcrcd.org or (909) 238-8338. Free

Thursday, October 8 7:00 PM
Creating a Water Wise Garden with a California Native and Mediterranean Plant Palate by garden designer Nan Simonsen. Riverside Public Library, downtown Riverside: 3581 Mission Inn Avenue, Riverside, CA 92501 Local CNPS chapter: http://riverside-sanbernardino.cnps.org. Free

Friday, October 16 All day
The Future of California Landscapes. Bob Perry, and other distinguished speakers. Fee required and ISA CEUs available. Western Municipal Water District: 14205 Meridian Pkwy., Riverside 92518
For information: www.InlandUrbanForestCouncil.org or (310) 562-4904

Saturday, October 17 10:00–12 AM
Visit the LandUse Learning Center demonstration garden for a guided tour. Lorrae Fuentes will talk about growing native bulbs at 12:00 PM. Get help planning your fall plantings. 4500 Glenwood Dr., Riverside, CA 92501. For information, contact Arlee Montalvo at (951) 683-7691, Ext. 218. Free

Saturday, November 14 9 AM–3 PM
Native Plant Sale, 11 AM: California Gardening with Native Plants by Kate Kramer, PhD., practicing botanist at SoCal Biology at Western Municipal Water District's water efficiency garden: 450 Alessandro Blvd., Riverside, CA 92508. Support your local CNPS chapter: http://riverside-sanbernardino.cnps.org

For local news about upcoming RCRCD events, please "Like" the RCRCD's Face Book page at: https://www.facebook.com/RCRCD .