



Redwood Barn Nursery

1607 Fifth Street Davis, California

Hot weather in the garden

August 14, 2020

The National Weather Service issued an 'excessive heat warning' for the period from August 14 through at least August 19.

"A strong and broad [upper level ridge](#) residing over the Desert Southwest and Great [Basin](#) is responsible for this extended period of [excessive heat](#). ... It's quite conceivable that Sacramento could match/exceed 105 for six consecutive afternoons, and perhaps 10 days at/above 100. These highs equate to about 10 to 20 deg F above middle August [climatology](#). Overnight lows will be oppressive as temperatures hold in the 70s to low 80s well into next week. Although the advisory extends through Wednesday, it appears likely that triple-digit temperatures will continue at least through Friday."

This kind of heat can be hard on the garden! We are likely to see the effects during the heat wave, as well as for a couple of weeks thereafter.

The evapotranspiration rate (ET) rate of plants is related to temperature and wind speed. On a normal summer day here, the ET rate is about .26 inch. During comparable heat waves, ET rates of plants have ranged from .30 to .37 inches. This is a direct measure of the plants' water needs during a heat wave: a 15% to 40% increase in water usage, higher if it's windy.

Direct physiological effects of high temperatures

- Tomato, pepper, cucumber, bean, and squash plants are unlikely to pollinate during high temperatures. Blossoms that open over the next several days will just fall off. Don't fret, we still have time for pollination and fruit development once the heat subsides.
- Fruit of tomatoes and peppers that is exposed to direct afternoon sun, as on the west side of the plant, may sunburn ('sun scald'). The damaged portion can be cut away and the rest of the fruit is usable. If you have tomato fruit in direct sun that are beginning to blush with color, they can be picked and allowed to ripen indoors on your kitchen counter.
- Plants can be shaded from the west side to reduce the likelihood of sun scald. You can pound some stakes into the ground and staple shade cloth or landscape fabric on it to block the hottest sun of the day.
- Drought stress can increase the likelihood of sun scald on both fruit and leaves, as it causes thinning of the epidermal layer that ordinarily protects the plant. Make sure your vegetable plants are well watered right now.
- Many of our popular lawn grasses are better-adapted to cool regions, and show a lot of stress in high temperatures. Mowing them when it is hot is not good for them (it exposes the growing points, which may wither) nor is it good for you. Wait to mow until the heat passes.
- Some species of trees need extra attention to watering and will get scorched leaves if they don't have adequate soil moisture. Good examples are maples, especially Japanese maples, as well as coast redwoods and magnolias.



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Speaking of watering, please water your trees.

During protracted periods of heat, plants can be harmed or die from lack of water. When the available water in the soil is depleted, the roots, leaves and new shoots start to wither. If the lack of water continues, so progresses the dieback. Some plants respond by dropping leaves, others get scorched but the leaves hang on. In any case, the appearance and vigor are damaged.

A common situation is watering systems that don't reach to the full extent of the root system. Tree roots extend well past the canopy (often called the drip line). If you're just watering below the tree, you're not watering the whole root area.

Drip irrigation systems installed for flowers and vegetable plants rarely get run long enough to benefit the larger shrubs and trees. Conventional sprinkler heads put out water too quickly, leading to runoff before you've achieved sufficient depth of soil moisture.

A simple work-around is to manually run the system for a much longer period, about once a month for larger shrubs and trees and perhaps more often for higher-water species such as maples.

A series of concentric rings of drip-watering tubing can be installed temporarily: under the tree, on the edge of the tree's drip line, and out past the drip line a few feet. This is then run at a low volume for several hours or overnight. Higher-water species can be watered this way every couple of weeks, while more drought-tolerant types may be watered once a month, into mid-October. For a more detailed explanation and calculator for your situation, check out the Tree Ring Irrigation Contraption article published by the California Center for Urban Horticulture.¹

If you don't feel like putting a system together, a simple soaker hose might suffice although the output is variable. A sprinkler set and run until the soil saturates locally, then moved and run again until you've set it all around the tree can do the job.

Micro-sprayers on regular drip tubing work, although they have to run a long time to provide enough water. Measure the output and try to get at least a couple of inches of water over the whole root zone.

The point is to water deeply at wide intervals, much the way you see orchards managed locally.

Newly planted trees need a thorough soaking about once a week. TREE Davis recommends "giving your young tree 15 gallons per week during the summer. Continue to water weekly for two months, then every two weeks for the remainder of the dry season. Remember to increase the amount of water, depending on how hot and dry it is outside." They also provide excellent videos and articles at their Tree Resources page.² Young trees especially also benefit from having the soil surface mulched to shade the soil and conserve moisture.

¹ <https://ccuh.ucdavis.edu/tric>

² <https://www.treedavis.org/resources-v2-0/>



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The other end of the watering spectrum

I manage plants in pots for a living. I can tell you that on a normal summer day here, most potted plants outside need daily watering (perhaps less often if your yard is very shady). Be sure to hold the hose there until you see water coming out the bottom drain holes. Good rule of thumb: for a five gallon pot, count slowly to five. For a fifteen gallon pot, count slowly to fifteen. For a half-barrel or larger planter, count slowly to at least thirty.

Your raised vegetable planter bed is basically a large pot because you filled it with fast-draining soil. It is likely that you will need to water raised beds every day, perhaps for 30 – 40 minutes at a time, during the hottest period of the summer.

It's important that your water system distribute water evenly, which requires an emitter every square foot. Exact run times and frequency will depend on the output of your emitters and your soil type, but most people don't seem to run them often enough or long enough. If your vegetables aren't thriving in your raised beds, they probably need more water as well as some nitrogen.

Poking a trowel into the soil in various places will help you assess the distribution of water, but plant performance is your ultimate guide to how to schedule your watering. Plants not growing, fruit not developing? Leaves looking kind of scorched? You probably need to water more thoroughly, more often, or both. If the system isn't covering well, consider setting a sprinkler now and then to get better coverage.

Containers, raised beds and planter boxes are the only garden situations likely to require daily watering. That frequency of irrigation can cause plants to die out in the garden in regular soil.

Why would plants die from being watered too often during a heat wave?

The proximate cause is phytophthora³. It is encouraged by high moisture around the crown of the plant during unusually high temperatures. Free moisture allows the motile spores of the organism (formerly classified as a fungus) to move to the bark of the plant and inoculate, then infect the vascular system. The infection inhibits the uptake of water and the movement of sugars downward. The plant wilts and dies.

This process takes a few days, so we see plants die of "crown rot" or "root rot" (common names for the phytophthora infection) after heat waves. Certain plants are especially vulnerable, including many California natives and plants from Mediterranean climates, Australia, and South Africa.

Best is, if possible, to water thoroughly just before a hot spell, and then not again until for a week or more. Low-water landscapes may be able to go a month or more between waterings. If you are watering these types of woody plants during the heat wave, give a very long soaking once to thoroughly hydrate the root zone, and then allow the surface to dry off before you water again.

Do any plants like it this hot?

³ <https://www.davisenterprise.com/features/gardening/the-perils-of-phytophthora/>



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Sure.

- Flowering perennials and low shrubs for full sun in the Valley heat include black-eyed susan (*Rudbeckia*), catmint (*Nepeta*), lantana, lavender, red hot poker (*Kniphofia*), Russian sage (*Perovskia*), many types of salvias, and verbenas. Heat-loving annuals include moss rose (*Portulaca*) and Madagascar periwinkle (*Vinca rosea*).
- Bigger shrubs for hot sun zones in your yard include California lilac (*Ceanothus*), dwarf varieties of olive, golden breath of heaven (*Coleonema*), grevillea, rockrose (*Cistus*), rosemary, Texas ranger (*Leucophyllum*), toyon, and many more.
- The Ruth Storer Garden at the UC Davis Arboretum is a great resource for landscape ideas for sunny locations.
- Most of our culinary herbs such as chives, marjoram and oregano, rosemary, and sage prefer full sun and have good drought tolerance once established.

Water your garden thoroughly and deeply, as infrequently as your soil and your plant palette will allow. It doesn't matter what time of day you water. Water containers daily in hot weather. And please water your trees.



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http://redwoodbarn.com/images/DE_Hot%20weather/pepper%20sunscald.jpg

Sunburn on peppers and tomatoes occurs on the west side of the fruit during heat waves. The rest of the fruit is fine. When you see we're about to have a very hot spell, consider picking bell peppers that are exposed to the afternoon sun. Tomatoes with a blush of color can be picked and ripened indoors. Adequate watering can help prevent sunscald, as can lightly shading the plants from the hottest afternoon sun.



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http://redwoodbarn.com/images/DE_Hot%20weather/citrus%20leaves%20sunburn.jpg

Evergreens such as citrus get scorched leaves when they are drought stressed during a heat wave. Be sure your citrus trees are getting deep waterings. In the ground, they can go a week or more between waterings so long as they get a good long soaking when you do irrigate them.



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http://redwoodbarn.com/images/DE_Hot%20weather/tomato%20leaves%20sunburned.jpg

Leaves of tomato plants may sunburn if they aren't watered adequately during a period of hot weather. Tomato roots go deep if they can, so giving them several gallons of water about once



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a week may be sufficient in normal garden soil. In a raised planter they are likely to need more frequent watering.



http://redwoodbarn.com/images/DE_Hot%20weather/flower%20border%20at%20sunset%20.jpg



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A flower border for summer sun. Celosia, cosmos, petunias, marigolds and more, thrive in our summer heat. These are in containers, so they get watered nearly every day. In the ground they would need water about twice a week.



http://redwoodbarn.com/images/DE_Hot%20weather/Leucophyllum%20with%20bee.jpg



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We have plenty of shrubs to choose from for full sun areas here. Texas ranger (*Leucophyllum* species) can take full sun and considerable drought, blooms heavily every few weeks throughout the growing season, and is very attractive to bees.



http://redwoodbarn.com/images/DE_Hot%20weather/Lantana%20sellowiana.jpg



http://redwoodbarn.com/images/DE_Hot%20weather/Orange%20lantana%20with%20skipper%20butterfly.jpg



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Lantana is a popular woody plant, really a shrub or ground cover, that we grow for the flowers in sunny borders. The purple and white forms trail and have good winter hardiness. The more upright forms come in orange, red, pink and blended colors; while they die back in winter, they always resprout in spring. The flowers attract butterflies and hummingbirds.



http://redwoodbarn.com/images/DE_Hot%20weather/Rudbeckia%20fulgida%20Goldsturm.jpg

We have plenty of perennial flowers suitable for our hot summer borders. Shown here is the Rudbeckia fulgida variety called Goldsturm, a long-lived perennial that blooms in the doldrums of August when other flowers look peaked.