



Redwood Barn Nursery

1607 Fifth Street Davis, California

Weather Weirdness

March 2021

A very hot summer, dry and hot fall, mild but very dry winter, one abrupt cold snap, and an unusually cold spell in late winter (what we call spring here) has left gardeners and their plants confused and perplexed.

This was probably not an auspicious start for a whole crop of new gardeners who planted for their first time during the pandemic spring and summer of 2020. Unusual weather was a major factor in garden successes and failures last year. Continued drought this winter will be a problem for trees this summer.

Gardeners can hedge their bets by choosing a mix of varieties, can achieve greater success by watering more carefully and thoroughly.

In the landscape, stress from drought is not yet apparent and can be prevented by intermittent deep watering of larger trees and shrubs. Your best watering practices depend on the density of your soil. Water slowly and deeply every few weeks by whatever method works best for you.

Let's review some key weather data from the 2020 to 2021 growing seasons.

Heat waves

Starting in late May there were seven periods of 3 to 4 days or more that were well above average temperature during the summer. Yields of tomatoes and other summer vegetables were well below average. We had another period of high temperatures in mid-October, which provided for a late harvest of peppers – a bright note in an otherwise pretty paltry garden yield.

Tomato flowers don't pollinate well at temperatures above 90 degrees F. When we plant those suited to this area we generally get good fruit set occurring about half of our summer days. Some varieties are especially intolerant of heat, including many of the popular heirloom varieties – most of which, such as Beefsteak and Brandywine, originated in the eastern U.S.

Our first heat wave was in late May, so high temperatures during early bloom affected pollination and early fruit set was poor. That's not unusual, but we have a very long growing season here. We usually can count on an August cool-down with lower daytime high temperatures when monsoon air pushes up from the Gulf of Mexico. Well, that barely happened this year as August temperatures were above average temperature nearly the whole month.

Watering issues

High temperatures meant more water use by plants. If gardeners weren't providing long, thorough waterings, the summer garden suffered. Many of the problems we saw with summer vegetables came from people simply not running their irrigation long enough on their vegetable gardens, or often enough in the case of raised planters as those drain quicker and dry out faster.



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Fires and smoke

2020 was the largest wildfire season in California's modern history, according to Cal Fire. Between August 12 and September 7, lightning-sparked fires burned 3.6 million acres in California, with two of the biggest (August Complex and LNU Complex fires) extending into or next to Yolo County.

We normally average 3.4 cloudy days total in August and September. This was like having almost six weeks of cloudy weather. The constant pall of smoke, bad enough for our lungs, reduced solar input by about 20% for the last half of August. By the second week of September, with fires burning on both sides of the Valley filling our air with smoke, our sunlight was down by one-third.

We don't know the exact impact of weeks of ash settling on leaves, but the hot spells and ash, combined with reduced sunshine, were likely factors in the reduced yield from tomato plants in October, usually one of our most productive months from the summer garden.

With poor pollination, reduced sunshine, ash, and insufficient watering, gardeners at all levels of experience reported poorer production from their summer vegetables than average last season.

What to do?

Don't panic. One year isn't a trend or pattern. We had a hot summer in 2017, and mild and productive summers in 2018 and 2019.

Lots of people want to plant early this year to "beat the heat," but that can have drawbacks. The summer vegetables we all love to grow are mostly subtropical or tropical plants. They grow very slowly, if at all, when the air and soil temperatures are low.

Weather weirdness has continued into spring, mostly in the other direction temperature-wise. Most of March was very cool. We had frost on March 14. Night temperatures were too cold for seedlings in garden centers, much less out in the open in your garden.

For best results, we plant tomatoes in April, peppers and eggplants in May. A couple of easy ways to decide if tomato planting season is here:

- Daytime temperatures around 80 degrees, at least once or twice.
- Nighttime temperatures around 55 degrees.
- Soil temperatures (check online or use a soil thermometer) at about 60 degrees for tomatoes, 65 degrees for peppers and eggplants.

Or you can use the butt test: sit on the ground. If your butt is uncomfortably cold, your plants will be, too.

Yes, we all know someone who plants early. If you wish to do this, consider covering the plants with translucent or opaque materials such as frost blanket to increase the air temperature around the plants and get the soil warm more quickly. Or just take your chances. My experience is that plants that go into warm soil later grow better and yield better overall than those planted early.



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Early planting can lead to reduced seedling vigor and susceptibility to blossom end rot (a physiological condition which causes the bottom, or blossom end, of the fruit to soften and spoil). Tomatoes set out too early will recover, albeit slowly. Peppers and eggplants may be stunted all season. Later plantings nearly always out-yield the first ones you planted.

Choose tomato varieties known to succeed locally. As noted, most heirloom varieties originated in the eastern U.S., where summer temperatures aren't as high, and humidity is not as low. Hybrid tomatoes and locally developed varieties are generally better producers than those regional favorites from climates that are different than ours. Early Girl, an old favorite hybrid, produced well last season as usual. Champion, Costoluto Genovese, Chef's Choice Orange, Sungold and Juliet are just a few of many tried and true types. For peppers, consider other sweet pepper varieties than the standard bell types, as the bells are more prone to sun scald during heat waves.

Weather issues elsewhere in the garden and landscape

We are in our second year of very low rainfall. After very heavy rainfall in the 2018-19 rainfall year (33 inches), we have now been well below our seasonal average of 20 inches for two rainfall seasons.

Total rainfall to date in Davis is 6.65 inches. That's about 35% of our yearly average. Last year's total was only ten inches. I am concerned at this point about the larger trees and other woody plants in our landscapes going into summer with so little soil moisture.

I recently had a trench dug on my property. The bulldozer operator told me that he started hitting resistance as he dug into the second pass through the soil. Inspection in the trench found the soil was dry a foot and a half down. That soil should be saturated from rainfall in March. A significant percentage of your trees' roots are not finding adequate moisture as they begin this season's growth.

Should we water the larger trees now in our landscapes?

We can take a clue from the farmers around us. Irrigation of walnut orchards in our area began in January. Almond growers began irrigating in February. They have simple economic reasons: drought stressed trees don't yield as well, affecting the bottom line. But home gardeners should consider giving deep soakings to the shrubs and trees in the landscape to help them grow well this spring and develop healthy, dense canopies for the summer. It's good for them and for us.

There are several methods by which you can augment the soil moisture for your trees.

1. Using your existing sprinkler system, run multiple cycles on one day. Allow time for each watering to soak in before you water again. Measure to see when you've provided a couple of inches of water total.
2. Using your existing drip irrigation system, turn it on manually and let it run for at least a couple, perhaps several, hours (unless water is running into the street).
3. Make a simple watering system for larger trees. Put in three rings of drip irrigation: one out a little from the trunk, one out at the "drip line" (edge of the leaf canopy) of the tree, and a ring further out by a couple of feet around the tree. Run that long enough to



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soak in 18 to 24 inches deep, which may take several hours. For a detailed description of the most efficient way to water trees deeply, read about the Tree Ring Irrigation Contraption here: <https://ccuh.ucdavis.edu/tric>

4. Set a little sprinkler out there and move it around, running it until it puddles in one area before you move to the next. Set it in each spot twice over the course of a day. This is primitive and less readily quantified in terms of output, but it is simple.

You can do any of these deep watering methods about once a month in addition to your regular watering schedule. Ordinarily we wouldn't bother with this until nearly summer, but the dry soil conditions this year suggest we should begin now. The major drought of 2010 to about 2016 caused significant stress to our trees, with some species (redwoods, maples, magnolias, ornamental pears) weakened or killed. Let's prevent those outcomes with some prudent watering now.

Note for weather wonks: data for automated stations all over California can be found at <https://www.cimis.water.ca.gov/>.



Take a cue from the farmers this year. This walnut orchard is being irrigated until the soil reaches full saturation because the rainfall this season has been so limited. Some growers began watering in January this year.



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Peppers don't like the cold soil of spring, but develop steadily and respond well to our late-season warmth in October. This harvest of a mix of sweet and hot types is from early November. Keep them well watered through the summer.



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Our long growing season often means we're making maximum harvests in October from fruit that set in August. To get an October bounty, plant a mix of varieties. These are hybrids, some heirlooms, and some of the open-pollinated Wild Boar Farms tomatoes developed by a local farmer.



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Try tomato varieties that have been proven or developed in our area. The Chef's Choice series of tomatoes was developed by a breeder in Maxwell CA and have been proving very successful in the Valley. Large fruit up to a pound each. Shown here is pink; the Chef's Choice Orange is also especially productive.