



Redwood Barn Nursery

1607 Fifth Street Davis, California

A fruitless season?

From the mailbag:

“Hi, I have a 5-in-one pear tree and have had a lot of pears every year, but last year I didn't get one pear at all, what could cause this?

Thanks,

Henry in Michigan.”

You can substitute other fruit trees or vegetables in this question: apples, cherries, apricots, tomatoes. This year it's oranges and mandarins. One of my nectarines had four fruit total, while the peach next to it was loaded. Questions about insufficient yield or a puzzling lack of fruit are common every year, but the reasons vary.

I. Flowers but no fruit.

1. Inclement weather.

Rain, wind, hail, low temperatures, high temperatures can all prevent fruit set.

Almond growers know all about this, as almonds bloom mid-February through early March here, a period when rain is likely. European honeybees are wusses. When it's rainy, they stay in their hives. Earliest blooms are on almonds, plums, and apricots, so those have the highest likelihood of adverse weather diminishing pollination.

Sometimes blossoms and young fruit are damaged by hail, and gusty winds can knock off the young fruit or nuts.

At the other end of the spectrum, temperatures above 90 degrees cause blossoms of tomatoes to fall off. Very high temperatures in June 2018, and above average in July, delayed fruit set on tomatoes until cooler weather returned.

Going into the winter of 2018 we have many reports of very light crops on navel oranges. It is likely that rain during the bloom period simply prevented bees from pollinating them.

2. Needs a pollinator.

No bees? This isn't common here thanks to the prevalence of commercial hives and backyard beekeepers. But what if the flowers are not attractive to them?

This can be a problem with pears! Pear blossoms are less attractive to bees than almost anything else that's blooming at the same time (they smell funky, for one thing). In orchards, they mow the mustard as the pears come into bloom to get the bees up where they belong.

3. Needs a pollenizer.

See January 2017 column. Some trees need another variety nearby due to infertility to their own pollen or lack of pollen.

4. Insufficient chilling hours or units.

Deciduous fruit trees need a certain number of hours between 32 and 45 degrees F to go through dormancy properly and have flowers develop and pollinate correctly. You



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need to plant fruit varieties that are appropriate to the chilling hours of your region. We average over 800 chilling hours here. Lowest since 1996 was 524 in 2015, highest was 1206 in 2001. This winter we had 843.

This is more of an issue for gardeners in the Bay Area or Southern California. But in 2015 some species (cherries, some apples) gave very poor yields in the Valley.

The newer concept of chilling units takes into account periods of higher than average temperatures which reverse the previous chilling accumulations. Ten days in the 70's in January 2014, when our average high is usually in the 50s, led to the situation of sufficient measured chilling hours but insufficient chilling units in cherries. The state crop was off by half.

5. Blossoms killed by disease.

Brown rot fungus can kill blossoms of stone fruits, especially apricots. Fireblight is a bacterial disease that attacks apple and pear blossoms and also invades further into the tissue. Both types of infection invade the blossom and kill the whole flower and even the flowering spur.

Neither disease usually kills all of the blooms, but can damage many flowers as well as young growth in a wet spring. We had lots of reports of brown rot problems on apricots and fireblight on pears due to our rainy weather this year.

6. Late frost.

Not an issue in the lower Sacramento Valley, but worth noting for gardeners in other regions. People gardening at high elevations need to select varieties that bloom later in order to avoid frost damage to the flowers.

II. Few flowers or fruit.

7. Alternate bearing.

Some types of fruit trees bear heavy crops alternately with light crops. Called alternate bearing, this has been observed for centuries. Apples, apricots, avocados, satsuma mandarins, pecans, persimmons, and pistachio nuts are particularly prone to alternate bearing.

The old theory was that this was due to a depletion of energy: the development of the crop draws energy from the late summer production of next year's flower buds, and with a limit of resources (carbohydrates in the tree) the heavy crop year reduces flower bud formation. Or, as old-timers say, the tree is 'resting' between crops. Other research suggests this may be regulated by hormones: the seeds that are forming in the fruit produce gibberellins which suppress the development of flower buds.

Whatever the internal mechanism, environmental factors can set it off. A hard freeze one year will cause a lack of fruit, then the tree rebounds, and the cycle is established. Thinning out more of the fruit in a heavy year can restore the fruit load more toward the average. Early orchardists in Yolo County made their fortunes by thinning their apricots in years when everyone else had heavy crops, enabling them to capture higher profits in the alternate light-crop years.

This is the most likely issue with satsuma mandarins this year.

8. Drought.



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Fruit trees prefer deep, infrequent watering. If they're watered very shallowly, or allowed to go very dry, it can affect future yields, especially if they're severely stressed in late summer when flower buds are forming.

Severe water stress in late spring as the fruit is developing can increase the normal "June drop" of citrus, a process of self-thinning. With citrus grown in containers, such as Meyer lemons, drought during bloom can cause more of the young fruit to fall off than normal. Persimmons also shed lots of fruit due to drought, though most homeowners find the yield sufficient anyway.

9. No fruiting wood yet (not old enough)

Peaches and nectarines fruit on wood that grew last year. Most other fruit trees require at least another year to produce fruiting wood. Some (apples, apricots, cherries, pears) have to produce short fruiting spurs. Figure at least three years to fruit for most fruit trees.

10. Pruned too hard, fruiting wood removed.

This takes some doing, but I do remember a customer who was carefully (by mistake) pruning off all of the fruiting spurs of his cherry tree. Another carefully removed all of the red wood of his peach – which is the year-old fruiting wood. Older wood, which no longer fruits on peaches, is grey. Know where your tree fruits! Sometimes a tree has to be pruned hard for size control or due to limb breakage. The tree will recover, but severe pruning causes vigorous re-growth, at the expense of fruit production for a couple of years.

11. Too much nitrogen.

Promoting vigorous growth can delay fruit production. Excess nitrogen distorts the plant's internal carbohydrate distribution. When applying fertilizer, always follow the label directions. Established fruit trees rarely need much fertilizer here.

12. Too much shade.

As landscapes mature and shade increases, fruit tree yields may decline. For best growth, yield, and fruit quality, fruit trees really should be in full sun. I have *sometimes* seen plums, lemons, and berry vines growing and producing acceptable yields in *some* shade. Please notice how carefully I qualified that sentence.

13. Nutrient deficiency.

This is very uncommon here, as our soils contain adequate levels of nutrients. I include this because people commonly believe that lack of fruit can be solved with fertilizer. Nope.

It is a common myth that adding phosphorus will increase or promote flower and fruit production. Unless your soil tests deficient in phosphorus, it isn't necessary to add any. I have never seen a soil test in this area which showed a phosphorus deficiency. Most that I have seen show either sufficient or excess phosphorus.

III. Fruit sets, disappears.



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14. Squirrels or tree rats.

Good luck. Locally acceptable methods that might reduce damage from furry or feathered pests are screening, repellents, noise, or predators (wild or domestic).

- Pruning to make your yard more open to the night sky can reduce tree rat problems, as they don't like to be exposed as they scamper and feed.
- Don't feed them!
- Note that it is illegal to release a trapped animal elsewhere, so live-trapping is pretty pointless.

Birds can also be an issue. Before the precipitous decline of corvids in our area due to West Nile virus, I would lose a certain percentage of my almond crop in late spring. Flocks of crows or magpies would settle in a single tree, shrieking like drunken parrots, and proceed to knock all the tender young nuts from that tree to the ground. There they would be shared with the ground squirrels. I've had a similar problem with scrub jays on pecans just as the hulls split.

- I recently came across a 3 hour mp3 file of screaming raptors and distress calls of their prey that you can play on a repeat loop at high volume to discourage jays and possibly squirrels. I'm sure your neighbors won't mind.

Other methods? My mother would lose a significant percentage of her Feijoa (pineapple guava) crop to jays eating the blossoms. The flowers of Feijoa are sweet and delicious. Those jays knew what they were doing. Mom, being a true Western gal, would dispatch them with a pellet gun.

Nature can be capricious with all of these variables of weather, bees, pollen, wildlife, and water. The good news, as gardeners and sports fans like to say: there's always next year.



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Squirrels infuriate gardeners by knocking off much of the developing fruit long before it is ripe. Of all the various control methods, netting and other barriers seem most practical and somewhat effective. The idea is to make it easier for the squirrel to go elsewhere (like to your neighbor's tree). Squirrels caught in live traps cannot be released and must be euthanized. Don't feed them! Squirrels readily accustomize to humans, making it harder to manage the damage they do in the garden.



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Shown here in a bumper year, satsuma mandarins are notorious for alternate bearing. My trees produce heavy crops in even years (shown here in 2014), and very light crops in odd years. My crop this year is about 10% of what's shown in this picture. This is a natural phenomenon with some types of fruit trees and is not a sign of any problem.



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Brown rot destroying a peach blossom. In a wet spring a large percentage of the blooms of apricots, peaches, and nectarines can be damaged by brown rot or, on apples and pears, by fireblight. Fungicides, including organic options, applied at the start of the bloom period help prevent brown rot. Photo from [Clemson University - USDA Cooperative Extension Slide Series](#)



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On a related topic, we've had more calls than usual about orange fruit splitting. This is a stress reaction, most commonly due to erratic watering (not deep enough, too often) but also correlates with very high temperatures such as we had a few times this summer. Water deeply, especially before a predicted heat wave, enough to provide sufficient moisture for a couple of weeks. Plants in containers may need daily watering during heat waves.

Brown rot photo credit:

[Clemson University - USDA Cooperative Extension Slide Series](#)

source: <https://www.forestryimages.org/browse/detail.cfm?imgnum=1233230>

Source of squirrel photo:

-absolutely_free_photos-original_photos-eating-grey-squirrel-6614x4961_27511.jpg

now labeled "grey squirrel.jpg"

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