



Redwood Barn Nursery

1607 Fifth Street Davis, California

Tangerines or Mandarins?

Our holiday treat can grow in your back yard

Dec 18, 2022

Christmas and citrus are inextricably connected in my memories.

As a child growing up in Southern California, the gourmet fruit that was in the toe of my Christmas stocking each year was a tangerine. To be specific, it was a Dancy tangerine, one of the first mandarin-type oranges that became commercially popular in the United States. Dancy fruit are very juicy, easy to peel, very sweet but also more acidic than oranges, and quite seedy. We were required to eat them out on the patio so we could spit the seeds at each other. Eating tangerines outside on Christmas morning is one of those special Southern California treats.

Mandarins, on the other hand, were something my mother bought in cans to mix with jello.

Dancy tangerines are tangy, though that isn't the origin of word 'tangerine'. In fact, it's more likely the other way around: the origin of the word 'tangy', which dates from the late 1800's, is probably from the fruit, as in "tang: A distinctively sharp taste, flavor, or odor, as that of orange juice."

The parent of the seedling found and grown by Colonel Dancy in 1867 was from Tangiers, Morocco. There were other varieties that preceded Dancy from those Moroccan parentages, also called tangerines. These were some of the first citrus grown commercially in Florida and for about a century Dancy was the predominant variety of mandarin. They were marketed as tangerines.

What is a mandarin?

Is a tangerine a specific type of mandarin orange, or is it just a generic name for the whole group of small, sweet-tart, easy-to-peel oranges? Are all "tangerines" mandarins? Are all "mandarins" tangerines?

Plant taxonomists (the folks who study the relationships of plants and give them their botanical names) have done a lot of work on the genus *Citrus* over the years. It's been one of the more challenging groups of plants because of the strong tendency to hybridize when different types are grown close together. Molecular analysis in recent years has made it possible to discern relationships within the genus that were complicated to evaluate in the past.

The original mandarin orange is one of the progenitors of modern citrus varieties. We can divide mandarins conveniently into four categories: tangerines, satsumas, clementines and mandarin hybrids. So tangerines are a subset of mandarin oranges with their own distinct pedigree.

The present naming of the mandarin oranges is *Citrus x mandarina*. The 'x' indicates they are hybrids. Older references list them as *Citrus reticulata*. Clementines, which have become the most popular category in recent years thanks to shrewd marketing, are crosses between true



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mandarins and an orange (hence their milder flavor). Tangerines are now named *Citrus x tangerina*.

Many of the citrus varieties that we grow occurred by happenstance, primarily as natural hybrids that grew as chance seedlings, and sports (localized mutations) on existing trees. There are numerous natural and intentional hybrids between different types of mandarins and other species of citrus. US Department of Agriculture and UC Riverside have introduced some of the most important varieties, including some that are excellent choices for home gardeners.

Most of this has been through intentional, old-fashioned hybridization. Mutations have sometimes been induced through irradiation. Genetic modification (gene insertion) may be a source of future varieties as plant breeders race to beat HLB disease, but no commercial or home garden citrus are presently produced that way.

Two successful citrus varieties that were created by irradiation of budwood include Tango, a naturally seedless clementine mandarin used in the 'Cuties' and 'Halos' marketing programs, and the Rio Red and Star Ruby grapefruits which have unusually dark pink flesh.

High value crop

California now produces most of the crop in the United States. There are about 67,000 acres of mandarins in California, especially in the counties of Tulare, Kern, and Fresno. There are nearly twice as many acres of oranges, mostly navels but some valencias, in California, but acreage of mandarins has been increasing while orange acreage has been decreasing.

Interesting note: the three highest-value counties in the United States for agricultural production in the United States are those three counties I just listed, largely because of their orange, mandarin, and almond crops.

Fresno had been #1 for many years, but Kern and Tulare bumped ahead of Fresno County in 2021 – largely, apparently, because of the value of their tree crops (citrus and almonds primarily). Fresno has proportionally more row crops and those plantings were curtailed due to drought. It's also possible that drought affected almond yields; citrus orchards can yield very well with less water than other tree crops. Almond nut set in 2022 was down 12%, perhaps due to drought or late frost.

How about Florida citrus?

Disease has really taken a toll on citrus production in the Sunshine State. Total acreage of all citrus in Florida has been dropping 2 – 3% per year for several years due to the widespread infection of orchards by HLB disease. The pace of acreage loss has been accelerating: citrus acreage in Florida decreased by 8% in 2022. There are about 10,000 acres of mandarins and tangelos, in Florida. Which, by the way, they call tangerines.

Why we grow them



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The characteristics of all these related types of citrus that we call mandarins are:

- Easy to peel
- Sweet but with a rich, tangy flavor
- Very little bitterness
- Juicy
- Seedless strongly preferred
- Soft peel is typical
- Ripen in winter and/or spring

Lack of bitterness is a key characteristic.

Naringin, limonin, and citrus oil all taste bitter and are present in most citrus fruit, but in very different levels in different types. The bitterness is concentrated in the white, spongy part between and around the segments, or in the peel. If those separate off readily, and the fruit is handled carefully to avoid bruising, more than 90% of those bitter compounds are removed before we eat the fruit.

But the bitter compounds also provide some complexity to the flavor and most people expect and accept slight bitterness in citrus. Grapefruit are notably bitter and not to everyone's taste, but crossing Dancy tangerine with a grapefruit led to the very rich-flavored Minneola tangelo. Minneola is easy to grow in your back yard. Your Minneola fruit will likely have seeds if it cross-pollinates with any nearby citrus trees. The rind color changes before the fruit is at peak sweetness. Though they look great in January, they're at their sweetest March to April.

For the home gardener

Mandarin oranges are some of the easiest citrus to grow.

The plants are typically compact, more like large shrubs than trees. They can easily be maintained low enough by simple pruning that you can pick all the fruit from the ground. Mandarins are cold hardy here. Cold weather actually improves the sweetness of the fruit. Production is heavy in alternate years. This is a drawback for farmers but of little consequence to home gardeners.

Where and how to grow mandarins

Full sun is best.

Water deeply and infrequently once established. Expand the watering zone as the tree grows.

Note: always cut, don't pull, mandarins when you pick them to keep the peel intact.

Which varieties to grow

You can have mandarins ripe from November through May

- Owari Satsuma: the gold standard for flavor in mandarins, and really one of the very best fruit trees you can grow in this area. Ripens December to January.

Farmers in Placer County planted mandarins many decades ago, notably near Newcastle and Penryn. Autumn nights are colder there, and that early chilling makes the fruit sweet earlier, so they can pick and market for Thanksgiving. My experience with the same variety here is that



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they ripen in December most years. Very cold temperatures this fall ripened my fruit a few weeks ahead of schedule.

This is the classic puffy-skinned mandarin that peels in one quick piece, nearly seedless, and very juicy. They're vulnerable to weather damaging the fruit, so the season can be short and they're usually done by January.

- Clementines

There are several varieties in this category. These are the mainstays of the branded mandarin marketing programs you see in the grocery store. Sweet, milder flavor than satsumas, easy to peel but tighter skin. The texture is crisper.

Farmers exclude bees to prevent seeds in the fruit. In your yard they will have some seeds if there are other citrus nearby. The tight skin makes them more prone to fruit splitting in summer than other types.

My clementines begin to ripen in late December and are at their best through January, holding well into February.

- UC Riverside hybrids

Tango

In my opinion, this is the best-flavored of the mandarins in the commercial 'Cuties' program. Naturally seedless, very sweet and somewhat tangier than the clementines, it begins ripening in February and is great into April. Very productive, not as prone to fruit splitting as the others. This is a vigorous tree that will need some pruning to prevent overproduction and limb breakage.

Shasta Gold, Tahoe Gold, Yosemite Gold

Breeders at UCR created hybrids that are complex crosses between 4 – 5 varieties of mandarins, including our old friend Dancy. All have great flavor, are seedless and easy to peel, and hold on the tree well.

Gold Nugget was hybridized at UCR "sometime in the 1950s." The Givaudan Citrus Variety Collection at UCR maintains a phenomenal citrus database, and there we find high praise: "The taste is extremely sweet when mature (brix 15.0% in March, 17.5% in May) with a very rich flavor, considered by professional taste panels to be one of the very best flavored citrus in the world."

That's *very* late-ripening and the fruit is said to hold well on the tree into summer. Easy to peel, naturally seedless.

How about Sumo mandarin?

Sumo is a trademark name of the Dekopon mandarin from Japan, also called shiranui there. For many years all of the shiranui trees in California were controlled by one company by the simple fact that importing budwood from Japan is a long, costly quarantine process. The company that



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introduced it brought it into our state in 1998, and it was 2011 before Sumo mandarins appeared in stores.

Well, finally some growers of trees for the public have gained access to disease-free stock (from UCR, again) and begun propagating it, so home gardeners will be able to grow these huge mandarins themselves.

Bear in mind that there are some special practices required to get the extra-large, very sweet, seedless fruit from this variety.

Shiranui fruit can be very large, but it takes careful pruning and fruit thinning to achieve good fruit size. The peel is bumpy and soft and the fruit is notable for the large 'bump' on top (much like the Minneola tangelo). That softer peel makes the fruit more vulnerable to weather damage. After harvest the fruit are left to sit for a few weeks in order to let the acidity decrease and the sugar content increase. Eaten right off the tree, they are much like a satsuma mandarin.

Shiranui is very sweet, easy to peel, and juicy. Seedless? Well, in Japan they are grown in greenhouses which prevents cross-pollination with other citrus, so they are seedless. In California growers isolate them by covering the trees in bloom to prevent bees from reaching the flowers, and then they spray with gibberellic acid to induce fruit set (as is done with the clementine varieties in the branded programs). Fruit on trees in the UCR Citrus Variety Station are seedy, and fruit from a tree in your back yard will likely have seeds as well.

Peak flavor is January to February, with good quality fruit into April.

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What makes mandarins so popular? Easy to peel, usually seedless, sweet and juicy with that special tang. Shown here are Owari satsuma mandarin (foreground) and a clementine mandarin. For best storage, cut (don't pull) the fruit to keep the peel intact.



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A mature Owari Satsuma mandarin, pruned lightly for size and shape, can get to 12 to 15 feet tall and wide over many years. But they are easily kept lower by pruning every couple of years.