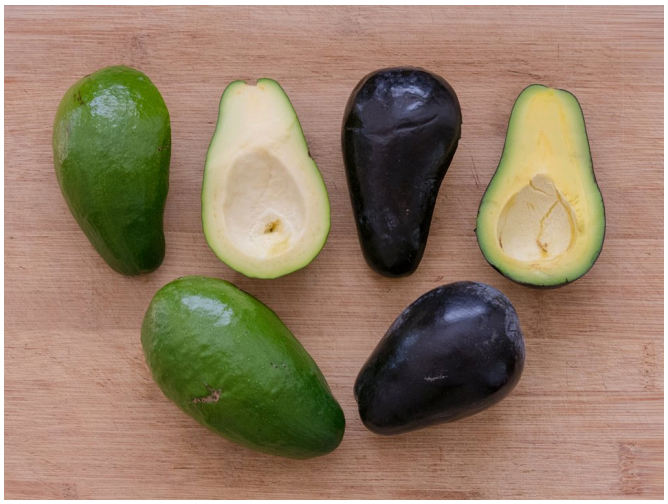
Avocadoes

There are a couple of things I miss about gardening in Southern California, and one is certainly the Hass avocado tree that dominated our back yard.

Dad planted it about 1950 on the wind-protected side of the house, and it grew and yielded dozens to hundreds of fruit every year until Mom finally took it out 60 years later. Skunks enjoyed the fruit on the ground, possums enjoyed the fruit in the tree, and we still had enough to eat and give away for several months each year. To this day, I have trouble paying money for avocadoes because they were just surplus fruit in my childhood.

My grandfather was a gold mining engineer, and dad was a scientist, so I recall one long and meandering conversation in which they determined that the tree was, in fact, worth its weight in gold. For skeptics, keep in mind that gold hadn't broken $100 an ounce then. Grandfather had a Mexicola avocado in his garden in Pasadena, where it is too cold for Hass. The fruit is smaller, creamier, and has a nutty flavor. Once when his doctor told him he needed to gain weight, he solved that problem by eating six of the fruit a day. Avocadoes are good for you, but very rich in oil.



Two types of Mexican avocadoes: Duke (left) and Mexicola. Duke has quite a history in California, but is not commercially available. There are venerable trees in Oroville that have survived very cold winters, and it has sometimes been used as a rootstock. The fruit is usually described as fair to good. Picture courtesy of Marta Matvienko

History and origin

They were first planted in California in 1871 and became an important crop very quickly. Numerous varieties were introduced by the early 1900's. Fuerte (1911) and Hass (1926) were the two most important, with Hass still accounting for the majority of our crop.

Modern avocadoes originated in Guatemala, Mexico, and the West Indies. The ancestors came from Mexico from varying elevations. Those origins affect the hardiness of the modern types.

- Those from the West Indies are very frost tender tropicals (damaged at 32 F), have very large fruit but low oil content. Only fair quality: big and boring.

- Trees of Guatemalan types can go below freezing temperature, but not much below and not for long. They are the high in oil and considered best quality, and are the most widely grown. The main production areas are slightly inland parts of coastal Southern California.
- Mexican types can tolerate temperatures to the low 20s. Some can even survive the upper teens. Distinctive flavor, most very good with high oil content.

So, can we grow them here?
Growing avocadoes as a commercial crop in the Central Valley has long been a pipedream of California farmers. I find research reviews from the 1960s and the 1980s, and another article circulating in the last couple of years. The main obstacles are:

- Soil salinity
- Frost tenderness of the leaves and flowers
- Intolerance of the blooms to heat.

And for just as long, it has been a dream of Northern California gardeners to grow the fruit in our back yards. We *can* grow some types of avocadoes if we site them close to the house for frost protection, and pay some attention to their special needs for drainage, watering, and protection of the bark.

Fact sheets and reference books give specific temperature tolerances of varieties, but remember that cold damage is a function of temperature and duration: *how cold, for how long.* We plant the Mexican avocadoes because they can take our cold winters and will recover from the occasional hard freezes we get.

Which variety is best to grow?
Best for our area here in USDA Zone 9 (Sunset zones 8, 9, 14) are:

- Mexicola
- Stewart
- Mexicola Grande
- Zutano
- Bacon

How much yield can you expect?
The California Avocado Commission informs us that "a single California Avocado tree can produce up to 200 pounds of fresh fruit each year, approximately 500 pieces, although most average around 60 pounds or 150 pieces of fruit."

Marta Matvienko, whose Mexicola fruit is pictured in this article, said in a recent low production year, "I had maybe just 200 fruits." And she notes that "half is usually damaged by rats and squirrels."

Bumper harvest of Mexicola avocadoes from a backyard tree in Davis. This tree, planted on the northwest corner of the house, began producing about 3 to 4 years after planting. The tree is somewhat alternate bearing, producing about 200 fruit in a light year.

When do they ripen?

Mexican types usually are fall to winter-ripening, Guatemalan types more in the summer. But with numerous varieties, a range of growing regions, and controlled storage, you will find avocadoes in the stores nearly year around.

Avocadoes are what are called 'climacteric' fruit: they mature on the tree, but ripen off the tree. They are picked green, hold reasonably well, and ripening can be controlled.

Fruit can be stored in cool conditions (40 – 50 F) for a couple of weeks. They'll hold for several days on the kitchen counter. Don't put thin-skinned Mexican varieties in the refrigerator. The best place to store the fruit is on the tree as most can hang for a few months. Except for those squirrel and rat problems….

Special requirements

They need:

- a sunny location,
- protection from frost, especially when young,
- even moisture, and
- some ongoing feeding with nitrogen.

Most critical:

- the trees need soil that drains.
- The bark needs protection from sunburn. Paint the trunk white.

In Northern California, they need a site with maximum frost protection, which means up against the house usually is best. And bear in mind that they mostly get to about 20 feet.

Things that go wrong.

Avocado leaves burn very readily, the bark is thin and sunburns, and the roots are shallow and vulnerable to drying.

- One publication asserts that "the avocado is the most salt sensitive crop in the world." Seems a little absolute, but it's worth noting that conventional fertilizers are salts and can readily cause leaf burn. Organic fertilizers are safer.
- The roots are fragile. Handle the root ball with care, don't break them up as you would with other shrubs or trees.
- Avocado trees are shallow rooted and the roots extend well past the 'drip line' of the tree, so they can't go long intervals between irrigation unless the soil is shaded or mulched.
- They are not drought tolerant when young and can stress easily. Leaves of drought-stressed trees will scorch.
  Young trees need 5 to 10 gallons of water per week. The watering zone should extend out at least a couple of feet past the diameter of the foliage. A thick layer of coarse bark material can help conserve moisture and gradually enrich the soil.
- Drought stress during bloom can reduce fruit set.
- The trees need protection from wind. Leaves desiccate rapidly in the north wind.

Prune carefully if at all.
From the California Rare Fruit Growers: "Branches exposed to sun by defoliation are extraordinarily susceptible to sunburn and will surely die. Such branches should always be whitewashed. It is better to avoid any pruning. Most cultivars are ill-adapted to espalier. They are too vigorous. Avocado fruit is self-thinning."

Are they drought tolerant?
Watering practices vary. Commercially they are given lots of water but can be managed with less. Sometimes growers prune them very severely if water restrictions are extreme, sacrificing the crop for a couple of years but keeping the trees alive.
Growth is best and yields are highest if they get about 2/3 to ¾ the amount of water a lawn would require. Home gardeners will find they get adequate yields with reduced irrigation, especially if they mulch the trees or let the leaves pile up on the ground.

How long does it take for an avocado tree to start producing?
About three to five years is typical.

Do you need two types?

Pollenization is complicated, but the easy answer is: no, home growers don't need two types. Commercially they do usually plant two types.
Avocadoes have perfect flowers (both male and female parts are present) but the pollen is mostly available at different times than when the female part is receptive. So commercial growers plant types that are the reverse from each other (called A and B types) in that regard. But the blooms do overlap (they meet for lunch, goes the joke).
Temperatures above 70 during the bloom period, which might happen in some of the subtropical or tropical growing regions, increase the disparity. Milder temperatures lead to greater bloom overlap. They bloom in winter, so this isn't an issue here.
Bottom line: under our growing conditions there is enough overlap of the flowers that you will get adequate yields. If you are really concerned about cross-pollination, Zutano and Bacon are 'B' types that can be planted with the 'A' types Mexicola or Stewart.

Can they grow in shade?
They won't yield well, if at all.

Will an avocado grown from seed give good fruit?
Probably not, but they're fun to grow. It really depends on the source of your seed. It will take several years, and if you bought the fruit at the store it is likely that you grew it from a Guatemalan type so it won't be frost hardy here. Seems like a long time to wait, carefully protecting the tree each winter, for a gamble about fruit quality. But they do make cool short-term houseplants.

Can I grow one in a container?
There are some very dwarf varieties suitable for container growing, but they are tender to frost. Gwen and Little Cado are two that are pretty common. The container would make it easy to move them around for protection, even indoors if necessary. You will find you have to water them often, perhaps daily as they get older. Fertilize them regularly. Bigger varieties grown in containers would require excessive pruning, delaying and reducing fruit production.

Plant the right variety in the right place, give it some special care and frost protection when young, and you can harvest avocadoes from your back yard.

Further reading:
History: http://www.californiaavocado.com/the-california-difference/avocado-history
Pollination: California Rare Fruit Growers -- https://www.crfg.org/pubs/ff/avocado.html