

# Growing Avocados in Orange County

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Avocado is one of the most valuable produce sold and fortunately can be grown nearly anywhere in Orange County. Avocados are native to the highlands of southern Mexico and Guatemala where the temperature stays warmer all year, however, success is possible nearly anywhere in Orange County. Avocado is the most difficult orchard crop grown locally because of its soil requirements.

Commercially the best locations are between 700 and 1500 feet altitude on a hill with south or west exposure with excellent cold air drainage and soil drainage. Locations that match these criteria will suffer from the fewest crop failures.

## Description

Avocados trees are bushy evergreen trees with large leaves that can potentially grow 30+ feet tall and nearly as wide, but are usually maintained lower. Modern orchards are kept below 20 feet tall. The trees create ample shade and the ground beneath them is usually covered (and should be covered) with their dead leaves. Most produce small creamy green flowers in spring and the resulting fruit ripens 6-18 months later. Although not essential, most local orchards plant 2 varieties for cross-pollination, which can increase crop volume slightly.

There are 2 main races of Avocados, Mexican and Guatemalan. Mexican avocados are a bit hardier to cold and the fruit is typically smaller with thin black skin and a stronger flavor. Guatemalan avocados are larger with thicker skin and more sensitive to frost. Many of the most recently introduced varieties are hybrids.

## Start with a Good Plant

Avocado trees grown for retail sales generally die or perform poorly. Trees grown in retail friendly 5-gallon, 15-gallon, and 24-inch box are always grown in a soil that contains significant amounts of sawdust or finely ground bark. Although they may be healthy initially, the decomposing sawdust or bark eventually causes root problems. As the organic matter decomposes the permeability of this soil and the available oxygen for the roots decreases. If the soil where the tree is planted is extremely permeable (sandy), performance may be satisfactory. If great care is taken, the soil of a retail tree can be removed by washing with water and the "bare root" tree can then be planted into the garden soil with improved performance.

A far better result occurs if trees are acquired from a commercial orchard supplier. These trees are grown in bottomless plastic tubes filled with decomposed granite. Orchard trees are also available

grafted to *clonal* rootstock with genetic resistant to root rot diseases. (Interestingly, clonal rootstock is usually grown in a soil mixed with wood chips.)

Avocados are easy to grow from seeds (pits). Avocados seeds are zygotic so seedling trees are normally similar to the fruit it came from, but not genetically identical. (As similar as children are to their parents.) Seedling trees normally grow about 10 feet tall before flowering and fruiting, which may take 3-5 years. There seems to be better than a 50% chance that the fruit will be good to eat. The World famous *Hass* variety was a seedling that refused to accept a graft that grew at the Hass orchard in Yorba Linda, California.

## Prepare a Site

Avocados will grow in sun or shade, however sun is required for maximum production. The most important factor is having soil with excellent drainage.

*Excellent drainage* can be determined by digging a hole about a 18 inches wide and deep and filling it with water twice. If the water from the second filling disappears within 24 hours the drainage is adequate. Faster is better. Some advisors recommend 15 minutes to drain on the first fill! Clay soils can drain adequately if located at or near the top of a slope.

On poorly draining soil you can create a raised bed (minimum 18"), a French Drain, a dry well, or plant Citrus instead.

One of the most recent recommendations is to dig a hole 1 foot deep and 8 feet across. Mix enough sand and/or pumice with the dirt so that you end up with a caldera-like mound that is 18-24 inches higher than the original soil surface. This mound is of adequate size and drainage to grow 1 or 2 trees.

## Installing the Plant

Dig a hole about 18 inches deep and wide. Place the cylindrical sleeve containing the roots and soil vertically at the center of the hole so that the surface of the root ball matches the surface of the surrounding soil. Slit the plastic sleeve that covers the root ball and peel it off. Do not lift the root ball after removing the plastic sleeve. Mix the soil that you removed from the hole with an equal part of *Laguna Hills Nursery Planter Mix* (pumice and peat moss). Place this soil around the root ball and fill to the surface. Create a dirt wall basin around the tree to channel water into the soil and root ball. Fill with water several times to moisten and settle the soil. Growers also recommend applying 40 pounds of gypsum to each newly planted tree!

Newly planted trees are normally staked and white washed. The surface of the soil should be mulched deeply at all times, preferably with old Avocado leaves that drop off the tree.

## In Containers

Choose a big pot. Deeper pots provide better drainage. Sand is an ideal potting soil for containers taller than 18 inches. Sand mixed with either peat moss, perlite, or pumice will help lighten the soil. It is important to keep potted trees moist at all times. This may require daily irrigation or even twice daily irrigation during the warmest weather.

## **Whitewashing**

Seedling Avocado trees grow with perfect symmetry and the leaves adequately shade the tender green branches below. Grafted trees, compared to seed grown trees, have asymmetrical growth habit that allows full sunlight to strike the stems. While leaves tolerate extreme heat, green stems can burn with exposure to sun at temperatures are much above 90°F. Burnt stems turn yellow, brown or black. Severe burns can kill the branch beyond the burn area. Mild burns cause poor sap flow.

The best way to prevent sunburn is to paint any exposed stem with a whitewash. Mix a light colored latex paint with an equal part of water. This may need to be applied for several years until the trees canopy is quite full. Whitewashing may be required at any time a mature tree is pruned or when weather (frost) conditions cause excessive leaf drop.

## **Irrigation**

Avocado trees require average to ample water. Most orchards are irrigated daily during warm weather with micro sprinklers. The soil moisture should be maintained at 12-18 inches of depth and at least half of the soil under the canopy should be irrigated.

In coastal valleys of San Diego County it has been found that a young tree 4 feet tall and wide uses about 1 gallon of water per day in summer. A mature tree 20 feet tall and wide uses about 40 gallons of water per day.

## **Pruning**

Avocados do not require pruning to produce a good crop. The trees are generally skirted (cutting off branches that are too close to the ground). They are also topped when they get too tall to harvest. When old trees are cut down to 4 feet production resumes in 2-3 years. Some growers maintain trees at 12 feet tall with constant pruning.

It has been determined that the ideal shape for production and harvest is a dome less than 15 feet tall. Ideally all the foliage is exposed to sunlight.

## **Pollination and Fruit Set**

Avocado trees are essentially self-fertile (do not require the presence of a genetically different tree), however the crop can be enhanced.

According to the University of California, the 2 factors most critical for successful fruit set are warm weather (80°F daytime high) and the presence of bees during the bloom period. If the pollen of a different Avocado variety was available the crop increased by perhaps 10%. This may be critical to orchard success, but probably not noticed by home gardeners. Research is continuing.

Avocado trees bloom in 2 patterns (Type A & Type B). Type A varieties are female in the morning and male in the afternoon. Type B varieties are reversed. Usually there is some overlap during mid day. A type A tree can acquire more pollen if it is blooming close to a type B tree, and vice-versa. The trees should be within 25 feet of each other. Closer is better.

Different varieties also bloom at different periods of the year. Varieties that bloom early typically flower from December to February. Mid season is from March to May and late season is from April to June. A few varieties bloom at other times and many old specimens bloom several times per year.

## Harvesting

Avocados do not ripen on the tree. In Nature they drop and ripen on the ground. The fruit is picked hard and green during that variety's harvest season. Generally any decent size fruit will ripen, but if picked too early will have no flavor and sometimes a lot of strings in the flesh. Most varieties have a 4-month harvest period.

It is recommended that fruit be cut from the tree with a tiny bit of stem attached to the fruit.

## Varieties

Here is a list of the popular cultivars.

**Bacon** (Mexican) 10-18 oz., oval fruit with smooth, green, thin skin and pale yellow-green flesh. Good to very good quality with medium to large seed. Harvest November-March. Heavy producer. Bloom type B mid-season. Upright tree.

**Carmen** (sport of *Hass*) Similar fruit to *Hass* but slightly smaller. Fruit that ripens along with *Hass* are pear-shaped. Fruit that ripens at other times is oval. This new variety can bloom any time of the year and harvest any time of the year. It is still being evaluated to determine if distinct bloom and harvest periods exist in California. It originated in Mexico where it is a very heavy producer with 3 distinct bloom and harvest periods. Bloom type A.

**Fuerte** (Guatemalan X Mexican) 9-16 oz. pear-shaped fruit with slightly rough, green, slightly rough skin and cream flesh, green near skin. Excellent quality with buttery flavor. Easy to peel. Harvest November-April. Alternate bearing tree may not produce in some areas. Bloom type B early to mid-season. Large tree.

**GEM** (probably mostly Guatemalan) 7-11 oz., pear-shaped fruit with rough, thick, black skin flecked with gold. Excellent quality, better than *Hass*. Easy to peel. Harvest March-September. Good production, less alternate than *Hass*. Small tree. Bloom type A. Developed from *Gwen* by UC researcher Gray E. Martin.

**Hass** (Mostly Guatemalan) 6-14 oz, pear-shaped to oval fruit with leathery, rough, thick black skin and cream colored flesh. Excellent quality with medium seed. Easy to peel. Harvest April-October, some all year. Bloom type A mid-season. THE LEADING COMMERCIAL VARIETY.

**Lamb Hass** (Mostly Guatemalan) Similar to Hass with slightly larger 10-14 oz. fruit, slightly thinner skin. Good to excellent quality. Can develop strings in flesh some years. Harvest May-November. Bloom type A mid-season. Heavy producer. Upright tree.

**Mexicola** (Mexican) 4-6 oz, pear-shaped to round fruit with thin, smooth, black skin. Excellent quality with strong nutty flavor. Large seed. Harvest August-October. Bloom type A. Heavy producer. Small tree.

**Nabal** (Guatemalan) 16-30 oz., nearly round fruit with thick, smooth, but granular, deep green skin and yellow flesh. Excellent quality with large seed. Easy to peel. Harvest June-September. Bloom type B. Heavy producer is strongly alternate bearing.

**Pinkerton** (Mostly Guatemalan) 9-18 oz., rounded to pear-shaped fruit with a long neck with medium-leathery green skin. Very small seed. Good to excellent quality. Harvest December-April. Bloom type A early. Heavy production further south with warmer winter temperatures or on hills with better cold air drainage to prevent damage to flowers. Spreading tree.

**Reed** (Guatemalan) 17-24 oz. round fruit with slightly rough, thick green skin. Excellent to outstanding quality. Easy to peel. Harvest May-September. Heavy producer. Bloom type A late. Upright narrow tree.

**Sir Prize** (Mexican X Guatemalan) 10-20 oz. fruit is similar to *Fuerte* with rough, thin black skin. Small seed. Excellent quality. Harvest November-February. Bloom type B. Production similar to *Hass*. Upright tree. This may be a perfect compliment to *Hass* as a pollinator and with respect to harvest period.

**Stewart** (Mostly Mexican) 6-13 oz, pear-shaped fruit with slightly rough, deep purple skin with light yellow flesh. Small seed. Excellent quality. Peels easily. Harvest October-December. Bloom type A. Good producer and quite cold hardy.

## **Others:**

**Gwen** (A) and **Whitsell** (B) are semi-dwarf descendents of Hass that were developed to replace Hass. Both are excellent producers with excellent quality fruit, but both have had problems with defoliation during winter. See *GEM*.

**Holiday** (A) is a semi-dwarf tree that produces excellent fruit in the fall and winter. The large green fruit is 18-24 oz. Unfortunately our orchard suppliers are not currently offering it.

**Wertz** (Littlecado)(A) is a dwarf tree that produces a light crop of fair to good fruit.

**Zutano** (B) is the most effective pollinator for *Hass* but produces low quality fruit.