

Citrus for Orange County

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Citrus originated in the mostly tropical climates of Southeast Asia. We are fortunate that most varieties of Citrus grow and produce good quality fruit in Orange County. We don't have the extreme heat required to ripen all of the varieties of mandarins, oranges and grapefruits. On the flip side, we seldom experience damaging cold. Interestingly, the quality and visual appeal of Citrus fruit is higher in marginal climates like California than in tropical climates like Brazil. Fruit ripening in areas with year round warmth won't develop the skin colors or sharp flavors that we are used to.

Typically Citrus bloom in the spring and the resulting fruit ripens the following winter or spring. It is important to note that skin color is often a poor indicator of sweetness. The yellow and orange skin colors are a result of the sunny days and cool nights of Southern California winters, but the flesh of many varieties remains tart well into spring. Heat hastens ripening. The same variety of Citrus grown across the southern United States will be harvested first in south Florida, then south Texas, then inland California followed finally by coastal California.

Citrus trees should be sited where they will receive sun for at least half the day. More sun results in higher production and stronger flavor. Citrus trees are adaptable to nearly any soil except constantly wet, poorly drained locations.

Most of the popular types of Citrus are seedless, perhaps one seed every 20-30 fruit. Many others are always seedy, often 1 or more seeds per section of fruit. Some varieties of Mandarins (a. k. a. tangerines) and Tangelos develop seeds only if pollinated by another

seedy mandarin or orange. If not pollinated the fruit is seedless. Unfortunately the potential pollinator has to be at least ½ mile away to guarantee seedlessness.

Citrus are grown on (grafted to) many types of **rootstocks**. Among these are *C-35*, *Carrizo*, *Cleopatra*, *Flying Dragon*, *Rich 16-6*, *Rubidoux*, *Sour Orange*, *Troyer* and *Volkamer lemon*. The different rootstocks can improve the trees root vigor, tolerance to specific types of soil and resistance to certain diseases. The rootstocks will also influence the trees shape and size and the fruit quality and production.

One of the most serious problems in California orchards is a viral disease called *Tristeza*. Fortunately certain rootstocks render the disease harmless. The following rootstock varieties are all resistant to *Tristeza*. *Carrizo* and *Troyer* are the most popular commercial orchard rootstocks producing good fruit quality and tree vigor. Some lemons only grow well on *Volkamer*.

Some rootstocks resistant to *Tristeza* also affect vigor and the ultimate tree size. *C-35* is a good semidwarfing rootstock but may cause low production in navels. *Rubidoux trifoliolate* dwarfs trees 30-60% and *Flying Dragon* dwarfs more than 50% of normal size. *Rich 16-6* dwarfs somewhat more than *C-35*, but less than *Rubidoux*. Dwarfing rootstocks often promote smaller, stronger flavored fruit with thinner membranes and skin but have poor drought tolerance. Citrus on vigorous rootstocks can be maintained as low as 6' tall with pruning. All pruning results in some loss of production.

The most serious problem faced by homeowners is finding good trees. Citrus trees grown for retail sales are unfortunately put in a compost-based growing medium. The growers do this because they don't know any better technique or because it is the cheapest way to make the soil lighter and more retail friendly. Most container growers, unfortunately, were taught that compost is or becomes good soil.

Commercial orchard trees are either grown in the ground (field-grown) in a loam soil or in plastic

sleeves of decomposed granite. Decomposed granite (DG) is a coarse soil, often encountered on mountain trails, and is generally coarser than sand. Orchard trees are awkward to handle (very heavy) but excel once planted and are expected to be in production within 4 years.

Retail trees can perform well if the homeowners' soil is very well-drained and very porous (high content of sand or decomposed granite). If not, the compost robs the roots of sufficient oxygen for several years until the compost finishes breaking down. The tree performs poorly and often dies during that time. The homeowner is usually accused of overwatering.

We prefer selling orchard quality trees. Field-grown trees are dug up and sold as B&B (balled & burlapped). B&B plants are beheaded as they are dug up and look like a stick in a sack of dirt.

Orchards typically have good soil to begin with. Generally the planting crew digs the hole deep enough for the soil ball. The plant is dropped in and the surrounding dirt is pushed up against the ball. It is important that the top of the root ball is even or slightly higher than the surface of the surrounding soil. The string that ties the burlap is cut. The string is unwound from the trunk but the burlap is left in place (it will rot away quickly). The tree is irrigated immediately and thoroughly.

If your own soil is heavy (significant clay content) it is wise to create a small hill and put the citrus in a "caldera" at the top (the hill looks like a miniature volcano). The soil surrounding the soil ball can be mixed up to 50/50 with our **Planting Mix** containing pumice. This will allow the roots to breath better initially. Again water immediately and thoroughly (several times) and cut the string as described above.

With decent care, and the homeowner avoiding the use of compost-based amendments, the tree grows 2-3 feet within a year.

Citrus also do well in containers provided they are placed into a good permanent, highly aerated, soil. Sand is excellent. Best results are obtained if the sand

is covered by an inch or two of compost at all times. Large specimens must be irrigated frequently during warm weather to avoid small or split fruit, sometimes more than once per day.

Citrus require ample moisture to grow and produce good quality fruit. A typical orchard tree will use 50 gallons of water on a typical summer day. Citrus can perform well using sprinklers, soaker tubes, microsprinklers or drippers. Make certain that at least 40% of the are under the dripline is irrigated. One dripper is not enough. The soil touching the trunk should not stay wet constantly. If the leaves roll up, or if green leaves are shed, the tree is too dry. If the leaves turn yellow from the base, the tree is too wet. Old citrus trees have long roots that can get water from several homes away.

Citrus require ample nutrients. It is simpler to use organic fertilizers than chemical fertilizers. Chicken manure is excellent. Lemons and limes require feeding year round as do any Citrus grown in containers. It is important to feed grapefruit, tangerines and oranges (in the ground) from January through July.

Ultimate fruit size is due to several factors. Smaller than normal sizes can be due to either less than ample water and too many fruit on the tree.

Natural predators control most pests of Citrus. Argentine ants can cause trouble by farming the pests. They eat the honeydew excreted by sucking insects (aphids, scale, mealybug, whitefly) and will move them around the garden and protect them from natural predators (ladybugs, etc.). Keep ants off the tree by applying a contact insecticide on the trunk.

A fairly new pest is the Citrus Leafminer. The larvae of this tiny moth will create silvery trails in new leaves from June to December. The damage can stop young trees from growing. Mature trees can tolerate the damage. The organic pesticide **Spinosad** can stop the damage if applied every 2-3 weeks. This can also stop grasshoppers that occasionally do great damage.

TREE HEIGHT Citrus, like most trees, don't stop growing, specimens eventually growing quite tall within a generation. For purposes of comparison we will list heights as short, medium or tall. *Short* meaning less than 12' tall, *medium* about 16' and *tall* 20'+. Each tree's ultimate height is affected by rootstock, climate, soil and care.

Peeling Oranges

Washington (Parent) Navel

THE COMMERCIAL PEELING ORANGE Large seedless fruit with orange skin and juicy, firm orange flesh. Excellent rich, sweet flavor. Ripens mid-winter and will hold on tree until early summer. Trees are medium height. Note that the skin of the fruit is thinner and harder to peel on trees grown on dwarfing rootstock and on trees growing closer to the coast. There are at least 20 named strains (sport mutations) of the original navel which are genetically identical but have slightly different harvest times or other characteristics.

Cara Cara Navel Essentially identical to *Washington* except that the flesh is pinkish-red. This sport was discovered in Venezuela. There is no change in flavor, although the antioxidant content is higher.

Late Navels Although a great commercial success (off season fruit demands higher prices) the late ripening navels, like *Lane Late* and *Summer Navel* are much lower in fruit quality because of granulated flesh. A new variety called *Chislett* may be worth growing.

Juicing Oranges

Valencia THE ORANGE OF ORANGE COUNTY. The reason *Valencia* was a commercial success locally was that this is about the only location that this variety will stay a beautiful "orange" color when ripe. Our growers were getting top dollar exporting the fruit to Japan. (*Valencias* grown in Brazil or Florida are green when harvested.) The medium to large fruit is slightly soft and extremely juicy. There are usually a few seeds. Harvest time is mid-spring to late summer. Even though the fruit turns orange in early

winter it will remain too tart to eat until mid-spring. Tall tree.

Smith's Red Valencia is a red-fleshed sport of *Valencia*, otherwise identical with no difference in flavor.

Moro Blood Medium size fruit with a red-blushed orange skin and orange-red to nearly burgundy purple flesh. The fruit is edible and orange in December. The flesh turns bloody in mid-winter and has a distinct tart "berry" flavor. By the end of the harvest period the flavor is nearly like wine. Medium height tree.

Other Blood Oranges *Tarocco* is a larger fruit with an excellent sweet flavor, but shows little internal "blood" color and has 4-inch long hypodermic needle-like spines. *Sanguinelli* won't sweeten up unless grown far inland. The small, egg-shaped fruit has the best external red peel color and decent internal color.

Mandarins (Tangerines)

Clementine Algerian Small to medium size fruit with orange skin and flesh. Easy to peel. The flesh is seedless if not pollinated by a nearby seedy mandarin or orange. Harvest mid-winter through spring. Small tree. Commercially there are many nearly identical strains including *Corsica* and *Nules*.

Golden Nugget Small to medium size, lumpy fruit with dull gold skin and flesh. The skin is fairly easy to peel. The seedless flesh is incredibly dense with an outstanding spicy, sweet taste that is considered one of the finest flavored of all Citrus. Harvest mid-spring to early summer. Medium height tree.

Kishu The fruit of this variety is a "miniature" *Satsuma*. The very easy to peel fruit is small enough to be eaten in one mouthful. It is seedless with a sweet mellow flavor. Harvest mid-fall to mid-winter. Small tree.

Ponkan Large, light orange fruit with thick, puffy rind that is easy to peel. The mild flavored flesh is tender and melting. The fruit has a characteristic hollow core. Few seeds. Originated in India. Harvest fall-winter. Medium height tree.

Satsuma Medium to large fruit with orange skin and flesh. The seedless flesh is sweet and mellow. The skin is the

easiest to peel of all Citrus. Harvest late November to February. The fruit gets puffy and dry when left on the tree past maturity. Small tree. THIS IS THE EASIEST CITRUS TO GROW. There are a number of named strains.

Shasta Gold Medium to large fruit with bright orange skin and flesh. The seedless flesh is rich and sweet. Ripens early spring through summer. Medium height tree. *Tahoe Gold* is similar but requires inland heat to ripen.

Tango Large fruit with deep orange skin and flesh. Easy to peel. This is a seedless version of W. Murcott (aka Honey) mandarin. The flesh is juicy, sweet and rich. Harvest winter-spring. This variety does not alternate bear. Medium height tree.

Other Mandarins *Dancy, Honey, Kinnow, Kara* and *Michal will* perform well, however, all are seedy.

Tangelo

Minneola Medium to large, round to oval fruit, often with a nipple at the stem end with bright orange skin and flesh. Rich, juicy, spicy sweet flavor. The fruit is firmer, seedless, easier to peel and somewhat smaller when the tree is not pollinated by a seedy mandarin or orange. Tall tree.

Grapefruits

Cocktail Large to very large fruit with greenish orange skin. The light orange seedy flesh is very sweet and mild with a hint of tangerine.

Melogold Very large to huge fruit with yellow skin and pale yellow seedless flesh. Extremely sweet, low acid, mellow flesh. Harvest winter-spring. Young trees produce fruit with a very thick peel. Mature trees produce superior fruit. Tall tree.

Oroblanco Very large to huge fruit with greenish yellow skin and seedless pale flesh. Extremely sweet, low acid, mellow flesh. Harvest late fall to early spring. Young trees produce fruit with a very thick peel. Mature trees produce superior fruit. Tall tree.

Rio Red Large to very large fruit with red blushed, yellow skin and light red flesh. Few or no seeds. Good sweet tart flavor when harvested in mid to late spring. Flavor is mellower by summer. Tall Tree.

Star Ruby Medium to large fruit with smooth yellow skin and deep red flesh. Few or no seeds. Harvest mid spring through summer. Short tree. This is the best red-fleshed variety for Orange County, but the tree's foliage often becomes unattractive during cool weather.

Other Grapefruit *Marsh* with white flesh, and *Ruby* with light red flesh will remain quite tart if grown locally. They require more heat to sweeten properly.

Pummelo

Chandler Huge to monster-size (up to 10-inch diameter) fruit with pale yellow skin and light red flesh. The flesh is very firm and juicy with a very mellow, sweet grapefruit flavor. Harvest mid-winter through spring. Tall tree.

Other Pummelos *Mato Buntan* is very popular in Asia with its seedy white flesh, but difficult to find locally. *Tahitian* has seedy greenish flesh with a distinct lime flavor.

Lemons

Eureka Large yellow fruit with few seeds and a good acid lemon flavor. Heaviest production in winter, less in summer with a few fruit ready any time of the year. Very productive and precocious but usually short-lived (less than 20 years). Trees are medium height.

Lisbon THE COMMERCIAL LEMON Similar to *Eureka*. The tree is less gawky (fuller foliated) than *Eureka*, thornier, lives much longer, but may take a few years to begin heavy production. Tall tree.

Meyer Medium to large dark yellow fruit with few seeds. Mildly acidic lemon flavor. Very mature fruit will turn nearly orange and acquire some mandarin flavor. Harvest nearly all year with heaviest crop in winter. Short tree.

Pink Lemonade Similar to *Eureka* but with beautiful variegated (green, cream, and white) foliage with striped fruit. Flesh has a good acid lemon flavor and a light pink blush. Short tree.

Ponderosa Giant, nearly round lemon relative with yellow skin and flesh. Good acidic lemon flavor. Harvest nearly all year. Short tree.

Limes

The skin of all limes becomes pale yellow when fully mature. Commercial limes are picked slightly immature.

Bears (Persian, Tahitian) COMMERCIAL LIME. Medium size fruit with few seeds. Good acidic lime flavor. Harvest all year, heaviest in winter. Medium height tree.

Mexican (Key) BARTENDERS LIME. Small fruit with a few seeds. Excellent aromatic acid lime flavor. Harvest all year, heaviest in winter. Short tree. This is perhaps the most frost tender Citrus we offer.

Sweet (Palestine) Lime Medium size, nearly round fruit with pale yellow skin and seedy straw-colored flesh. Extra juicy with sweet, mild, lime flavor. Harvest winter-spring. Medium height tree. Well known in the Tropics.

Kumquats

Meiwa Small rounded fruit with orange skin and flesh. The edible skin is tender and sweet. The flesh is tart and seedy, but sweeter than *Nagami*. Harvest in winter. Small tree.

Nagami Small oval fruit with orange skin and flesh. The edible skin is tender and sweet. The flesh is quite tart. Harvest in spring. Small tree.

Miscellaneous Varieties

Calamondin Actually a sour mandarin used to flavor Asian dishes. Small, round fruit with orange skin and tart flesh. Small tree.

Citrus hystrix (Kaffir Lime) The unusual double leaves of this plant are used to flavor certain Asian dishes. The seedy fruit is incredibly bitter.

Fingered Citron Buddha's Hand This large grotesque fruit looks like an octopus with yellow skin or a fat hand with long pointed fingers. The shape varies wildly. The fruit is all rind with a wonderful fragrance. Small tree.

Yuzu The small, bumpy round fruit has greenish skin and highly acidic seedy flesh. This is used to flavor dishes and drinks in Japan. Medium height tree. It is quite hardy to cold.