

Citrus plants have lustrous dark green foliage, sweetly scented flowers, and brightly colored fruit. The white flowers are most profuse in spring and summer but can occur year-round. Frequently a plant will have flowers and fruit at the same time. Citrus plants are usually grown in the Northwest in containers as small (generally 3-5 foot) trees or bushes.

Most citrus species originated in temperate and tropical regions in Asia. In warm climates, or in greenhouses and solariums, their native conditions are easily duplicated. If we are having a mild winter, citrus plants can stay outside against a protected, sunny, south or west-facing wall. When frost threatens, bring the plant inside until the threat has passed. If you wish to grow your plant indoors year round (and many citrus are suitable for year round indoor living), or just for the winter, the home environment can be made suitable by following the parameters described below.

LIGHT

Citrus need maximum light. The optimum is 8 to 12 hours and the minimum is 6 hours. Plants that cannot be given at least the minimum 6 hours of direct sunlight should be supplemented with full spectrum grow lights. Plants that receive insufficient light will flower and fruit less profusely, and their fruit will be less sweet. In general, the larger and sweeter the fruit, the more light is needed to ripen it properly.

TEMPERATURE AND HUMIDITY

Citrus grows best at temperatures between 55 and 85 degrees. Even though most species will tolerate cooler temperatures, they won't tolerate freezing temperatures for very long. They will go into dormancy when kept at temperatures below 55°F. If you want to grow your plant indoors, keep it in a bright room with an average temperature of about 65°F. Do not put the plant near a heat register. Higher temperatures may lower the humidity, causing potential problems such as spider mites. Using a humidifier can help, as can setting the plant pot on a humidity tray (basically a large saucer or tray with water and pebbles or pot feet so that the plant sits above, not in, the evaporating water.) Humidity trays can also be helpful for outdoor citrus when we have a hot, dry summer.

WATER

Water well until the liquid just runs out the bottom. Do not water again until the top one-third to one-half of the pot feels dry. Citrus should be moist to dry, never soggy, and should never be left standing in water. In the winter, water only enough to keep the soil from drying out completely.

FERTILIZER

Citrus are heavy nitrogen feeders, so make sure the fertilizer you use for the **spring and summer growing season** is higher in nitrogen (N—the first number on the fertilizer package) than in phosphorus (P) or potassium (K). **Other times of year: if your plant is dormant, do NOT fertilize.** If it is **not** dormant (it is growing at 55°F or more under good light conditions),

feed with a balanced fertilizer (N-P-K equal numbers, such as 5-5-5) once a month until late February/early March, when you can switch back to the higher nitrogen product. If you do not use a fertilizer specific to citrus, check to make sure it has the following trace elements magnesium, boron, copper, manganese, molybdenum, and zinc. Fertilize according to package directions. **Do not over fertilize.**

POTTING AND REPOTTING

Citrus likes coarse, well-draining potting soil. An ideal mix is about 2/3 regular potting soil mixed with 1/3 cactus/succulent soil. Make sure the pot has good drainage. Do not put gravel in the bottom of the pot—it will impede drainage. **Do not over-pot your citrus.** When it is time to repot a citrus plant (i.e. the roots have filled the pot it is in), use the next pot size up rather than planting in a pot that is too large for the root ball in the hopes that the plant will grow faster and bigger—it won't. Be patient. Move plants into a container one size larger each spring until the maximum convenient size is reached; after that top-dress annually with fresh potting mixture. If you have a decorative container that you want to use for your citrus plant, but it's too large for the plant's current rootball, it's better to use increasingly large liner pots within your decorative container until the plant grows large enough to fill its final home.

DEFOLIATION

Citrus plants tend to lose their leaves under the following conditions: going from higher light to lower (i.e. from outdoors to in); going from higher temperatures from lower (i.e. from indoors to out), and sometimes going from cooler to warmer. They can also defoliate if getting too much or too little water, or if humidity is too low. **If there is life in the branch,** leaves will probably come back; do some pruning and improve the growing conditions (light, temperature, humidity and/or water.) We have seen citrus with flowers and fruit but no leaves; we have seen them go from absolutely bare to splendid. **Note** plants can be helped with the transition from outdoors to indoors in the fall by moving them from full sun into partial shade for a few weeks before bringing them indoors. In the spring, do the reverse to acclimate them to higher light levels.

FRUIT DROP

Some fruit drop is normal for citrus, especially in hot summer months. If fruit or bloom drop is excessive, proper watering and humidity is often the solution. Very hot, dry, windy weather can trigger fruit drop. Be sure to water well during those times. Fruit drop accompanied by fruit splitting is usually the result of excessive water uptake following erratic watering.

PRUNING

Pruning can be done any time except winter. Pinch back the growing tips to encourage bushier growth without affecting fruit production. In the spring you can prune back any too-long shoots. Very leggy branches are an indication that the plant needs more light.

POLLINATION

Citrus is self-pollinating, even indoors. Bearing age is 1 to 2 years, but plants will become more productive as they grow larger.

PESTS

Watch for aphids, scale, mealy bugs and spider mites. Plants that are stressed (by low light, low humidity, wrong temperatures, and/or incorrect watering) are more susceptible to pests and diseases.

HARDY VARIETIES

Yuzu ichandrin, Yuzu Sudachi, Marumi Kumquat, and Poncirus trifoliata (Flying Dragon) will grow outside year-round in the Pacific Northwest. Flying Dragon is even used as a hedge plant in its native China. If it becomes extremely cold, hardy citrus plants may experience some branch dieback, but you can just prune that away in early spring.

CITRUS VARIETIES

Citrus availability depends on growers' supplies each year and may change mid-season.

GRAPEFRUIT

Cocktail Grapefruit (*Citrus x paradisi 'Cocktail'*), also called Mandelo, is a cross between a Mandarin and a Pommelo. The fruit is sweeter than a true grapefruit, a little smaller, and with thinner membranes and skin. Flesh is orange-yellow, very juicy, and sweet-tart.

Rio Red Grapefruit (*Citrus paradisi Macfadyen*) has an amazing sweet taste. Eat it fresh for breakfast or as a dessert. Bake it in a tart. Toss it in a salad. Stir it in a sangria. Squeeze it for juice – you won't even need to add sugar. Rio Red is the gold standard in pink grapefruit. The fruit turns from green to yellow and gets a sweet pink blush when the fruit ripens.

KUMQUATS & KUMQUAT HYBRIDS

Kumquats and their hybrids, unlike most other citrus, are eaten fresh and whole, peel and all. Typically the peel is sweet and the flesh tart, giving a unique flavor. Kumquats are small citrus fruits – no bigger than a golf ball, often as small as a half dollar – that pack a BIG citrus taste. Just pop the whole thing in your mouth.

Centennial Variegated Kumquat (*Fortunella margarita*) is unique in looks as well as taste. It tastes like a cross between a kumquat and a mandarin orange - sweet and tangy, not sour like most kumquats. Another way this beautiful tree stands out is the coloration. The leaves are variegated yellow and green, and the fruit are striped – yellow with green stripes while they are growing turning to orange with red stripes when they mature. This kumquat can hold its fruit for months and have fruits and flowers nearly year-round under good conditions.

Marumi Kumquat (*Fortunella japonica*) is a breeding breakthrough and a boon for gardeners in colder northern climates. Marumi Kumquat will survive with no damage when the temperatures get down to 10 degrees. At 0 degrees they will lose their leaves, but by spring, the leaves will grow back! Marumi Kumquat has round fruit with thin, sweet edible skin. If kept indoors they start producing in late fall and by Christmas you can have boughs of greenery with natural orange 'ornaments'.

Meiwa Kumquat (*Fortunella crassifolia* 'Meiwa') is known as the "Sweet" kumquat-- the fruits are larger, sweeter, and have a more tender rind than Nagami. It is the preferred fresh-eating kumquat. Bite size fruit are meant to be eaten whole for a spicy sweet-tart taste sensation. Kids love them.

Nagami Kumquat (*Fortunella margarita*) Prolific fruit is olive size and bright orange, great for marmalade and beverages. Nagami flowers best in areas with warm summers. Fruit ripens in late winter or early spring. Nordmann is a seedless cultivar.

Indio Mandarinquat (*X Citrofortunella*) is – as the name suggests – a cross between a mandarin orange and a kumquat. It got the best of both parents. It has a "grown-up" citrus taste– mostly sweet, a little sour, like a sour tangerine. It can also be eaten whole, peel and all, like a kumquat. The fruits are bigger than kumquats, but smaller than tangerines. They are football shaped and have a knobby little end where they attached to the limb.

Eustis Limequat (*Citrus x floridana*) A cross between Mexican lime and kumquat. Prolific bearer of small yellow oblong fruit which can be eaten whole or used like limes.

LEMONS

Lemon (*Citrus limon*) is an excellent small (usually 4') tree or bush that can flower and fruit almost year-round. Lemons require less heat and light to ripen than sweeter and/or larger fruit, making the lemon tree a good producer for Northwest growers. The lemon tree will survive temperatures down to 25°F for short periods. **Lisbon Lemon** is a particularly productive variety grown commercially in California. **Eureka Lemon** is an early-bearing, productive variety with nearly-seedless fruit. **Eureka Pink Variegated Lemon** has beautiful creamy-white variegated leaves and pinkish new growth. Flowers also have a pink tinge, and fruit can be striped. **Sungold Lemon** has variegated gold and green foliage.

Improved Meyer Lemon (*Citrus x meyeri*) Hybrid between a lemon and a mandarin or an orange. "Improved" refers to the fact that the plant is free of the citrus tristeza virus (CTV). It is one of the easiest citrus to grow; very juicy; not as tart as other lemons. Heavy bearer nearly year-round; heaviest in winter. Mature fruit is golden.

LIMES (Various species are called lime; most are very cold sensitive)

Bearss Seedless Lime (*Citrus latifolia*) Also known as **Tahiti** or **Persian Lime**. This is a true lime with abundant fruit. Larger than Mexican lime, greenish yellow, seedless and very juicy. Flowers in spring and ripens fall into winter (although it can produce some fruit year round.)

Mexican Lime (*Citrus aurantifolia*) Also known as **West Indian**, **Bartender's**, or **Key Lime**. Keep it above 60 degrees year round and it will produce fruit all year. This is the lime of Key Lime Pie. Fruit is small, very juicy, aromatic and flavorful. **Thornless Mexican Lime** is a thornless version of Key Lime.

Palestine Sweet Lime (*Citrus limettiodes*) The fruit is acidless, mild, fragrant and sweet. It needs summer heat for best quality fruit, which ripen in the fall or winter. It is used in Mideastern, Indian and Latin American cooking.

Thai Lime (*Citrus hystrix*) Also known as **Wild Lime**. Prized for its unique, very spicy leaves that are used to flavor Thai curries and other dishes. Bears good crops of small, intensely fragrant bumpy fruit also used in Southeast Asian Cooking.

MANDARINS

California Honey Mandarin (*Citrus reticulata* 'Blanco') Of all of the mandarins, the California Honey Mandarin consistently ranks as the best tasting and smelling. You won't find the California Honey in your local grocery store. The fruits are small and have more seeds than the commercial industry likes—but one taste of this and you'll be spoiled from any store-bought fruit again. This citrus is very juicy and tastes for all the world like spiced honey. The fragrant white flowers emerge in late spring and produce the delicious fruit which ripens November through April. The shrubby trees have dark willowy leaves and are beautiful on their own, with or without fruit.

Clementine Mandarin (*Citrus reticulata* 'Clementine') An early season mandarin producing sweet and juicy fruit that will hold on the tree for months. Easily peeled, highly ornamental fruits are held to the outside of the tree.

Seedless Kishu Mandarin (*Citrus kinokuni mukakukishu*) Adorable, irresistible and perfect for home gardening, Seedless Kishu is juicy with sweet flavor. Said to be an ancient species of Chinese origin, prized for fragrance and taste. Diminutive, golf-ball-sized fruit is easy to peel and divide into sections. Arching branches are lined with highly-fragrant, white flowers in late winter to spring. Fruit ripens mid-season, December to January.

Okitsu Wase Satsuma (*Citrus unshiu*) The favorite mandarin from Japan. Very early ripening, with a delicious blend of sweetness and acidity. Small aromatic fruits are easy to peel.

Owari Satsuma (*Citrus reticulata* 'Owari') Abundant deep orange sweet and delicious seedless fruit with easy to peel skin. Fruit ripens in November and December.

Sue Linda Temple Tangor (*Citrus reticulata x sinensis*) A cross between a tangerine and an orange. Looks like a flattened orange with thick, easily-peeled skin and orange flesh with a rich sweet-tart flavor.

ORANGES

Fukumoto Navel Orange (*Citrus sinensis* 'Campbell') Fukumoto is an early-ripening navel orange with reddish-orange skin. Fruit is sweet and juicy.

Moro Blood Orange (*Citrus sinensis* 'Moro') May be deep orange or flushed with varying amounts of red pigment. Blooms in spring and fruits in winter.

Washington Navel Orange (*Citrus sinensis*) This orange first appeared in Spain. It is large, sweet, seedless and very juicy. Usually blooms in spring and ripens in ten months.

OTHER CITRUS

Australian Finger Lime (*Microcitrus australasica*) An understory tree native to the rainforest of Northern and New South Wales and Queensland, Australia, so protect from intense afternoon sun in the summer. Overexposure to full sun will cause tree stress and produce poor fruit yields. Digit shaped limes are practically in a category of their own. It is known as the caviar of citrus because the aromatic flesh holds caviar-shaped vesicles that "pop crisply and tartly" in your mouth. The flavor is lemon-lime with "herbaceous undertones." Fruit pulp color intensifies during the last phase of fruit maturity – when the fruit is at its strongest color. Tree grows 8' to 10' in the landscape (not recommended in our climate) but is much smaller in a container. It is a good plant for bonsai. Usually flowers in May and fruits in November – December. This tree is becoming a favorite of chefs.

Calamondin (*x Citrofortunella microcarpa*) (Also known as **Kalamansi** or **Philippine Lime**) Great container plant that rarely grows more than three feet. Prolific fruit production with zesty acid juice. Probably a hybrid between mandarin and kumquat; it probably originated in the Philippines where it is greatly valued. Also called Calamansi.

Variegated Calamondin (*x Citrofortunella microcarpa* 'Variegata') Fragrant bloom is followed by tart, petite, orange fruit like its Calamondin cousin. Immature fruit is green and yellow striped. Variegated foliage and a compact habit.

Flying Dragon Bitter Orange (*Citrus trifoliata* AKA *Poncirus trifoliata*) Flying Dragon is a deciduous, very dwarf tree with contorted branches and hook shaped thorns. Flying Dragon bears yellow, 2" diameter downy fruits that can be used in marmalade or as a lemon-like seasoning. In China the plant is used as a compact, impenetrable hedge. Flying Dragon is reportedly hardy to at least 0 F and can be grown outside in the Pacific Northwest.

Yuzu ichandrin (*Citrus junos*) (Also known as **Japanese Citron**.) This plant is reportedly hardy to 0 degrees F. It bears abundant 3" diameter pebbly yellow fruit with tasty lemon lime flavor. The sour juice and aromatic peel are used in Asian cuisine and for marmalade.

Yuzu sudachi (*Citrus sudachi*) (Also known as **Sudachi Mandarin**.) This plant is reportedly hardy to 10 degrees F. It's believed to be a cross between yuzu ichandrin and mandarin. It bears abundant green golf-ball sized fruit with a spicy lemon lime flavor. Juice and sliced fruit are used in Japanese cuisine and to flavor beverages.