University of California
Agriculture and Natural Resources

Cooperative Extension-Sacramento County
4145 Branch Center Road, Sacramento, CA 95827-3823
(916) 875-6913 Office • (916) 875-6233 Fax
Email: cesacramento@ucdavis.edu
Website: http://cesacramento.ucdavis.edu

Garden Notes

GN 127

GROWING CITRUS IN SACRAMENTO

Growing citrus trees can be very rewarding for home gardeners in Sacramento. Citrus trees are generally easy to grow and can add interest to a landscape with their fragrant flowers, colorful fruit, and evergreen leaves, as well as add an "edible" element with their tasty fruit. Varieties recommended for Sacramento include navel and Valencia oranges, Satsuma mandarin, Meyer lemon, and Bearss lime.

CHOOSING A CITRUS TREE

Consider the space you have for a tree: standard size citrus trees grow to 20 feet or more, dwarf trees to 6-10 feet. Four Winds Growers provides a good source for information on varieties (www.fourwindsgrowers.com). Consider the cold hardiness of varieties when making your selection since light frosts are frequent during Sacramento winters and hard freezes hit the area every few years. Lime trees, for instance, tend to be less cold tolerant than most other citrus, whereas mandarins and kumquats are among the most cold tolerant. By comparing the ripening times in the Central Valley for the various varieties and carefully selecting your citrus trees, you can potentially have ripe fruit almost all year.

PLANTING

Plant citrus trees in full sun and well-drained soil. Do not plant citrus in a lawn or with plants that require frequent irrigation. Space standard trees at least 12 feet apart, and dwarf trees 8-10 feet apart. The best time to plant citrus is early spring after the danger of frost has passed and when nurseries stock the best selection. Early planting also allows the tree to establish itself before the hot weather hits.

If you have heavy clay soil or very sandy soil, spread about 1 to 2 inches of good quality soil planting mix or compost to a 5 ft. x 5 ft. area of soil, and rototill it thoroughly. The tree will be planted in the center of this area, and roots will explore this amended soil. On clay soils, provide for drainage by creating a mound or raised bed before adding the compost.

Dig a hole at least twice as wide as the rootball, but no deeper. Set aside the soil from the hole for backfill. Gently loosen any matted or circling roots at the edges of the rootball. Position the rootball in the hole so the top sits about 1" above the surrounding ground. Do not add soil amendments in with the native soil unless you incorporated compost as described above. Next, fill the hole with the native soil. Tamp gently to eliminate air pockets around the rootball and to ensure good roots-to-soil contact. Keep soil off the top of the rootball. Water thoroughly, and keep the rootball moist until roots grow out into the native soil.

WATERING

Citrus trees need regular and adequate soil moisture for healthy growth and good fruit production. Fluctuating soil moisture can cause the fruit to split. Adequate soil moisture means the soil should be kept moist but not wet. Once the trees are well established, allow the soil to partially dry out between water applications. How much, how often, and how long you need to water depends upon your growing conditions such as your soil type, drainage, weather, age and size of the trees, as well as the type of watering system you use. Keep in mind that more citrus trees die from excess water than from drought!

A drip system with either 2 or 4 emitters per tree, or micro-sprinklers preferably directed away from the tree trunk, provide two water-efficient ways to irrigate your trees. The root zone of citrus is shallow and emitters or sprinklers need to apply water near the trunk of newly planted trees to keep the rootball moist until roots grow into the native soil. With either a drip system or micro sprinklers you may need to water twice a week during the first two years, especially during hot periods. Apply water further from the tree trunk as trees become established (watering mainly near the tree's drip line), increase the amount of water per session, and reduce the frequency (every 7-10 days for mature trees).

Another way to irrigate citrus is to build a water trough around the tree and fill it with water. For a newly planted tree, take a hoe and scrape a shallow ditch about 4-6" wide encircling the tree about a foot from the tree trunk. Use the soil pushed to the side by the hoe to build up the edges of the trough to 6" high. Fill this donut shaped basin with enough water to wet the root area to a depth of 1 foot the first year. The water will travel downward but also outward to moisten the roots. As the tree grows, re-form the ditch each year, make it wider, center it under the outer edge of the tree's canopy, and water deeper (to a depth of 2 to 3 feet for a mature tree). Avoid wetting the soil at the base of the trunk.

FERTILIZING

Citrus trees are heavy feeders, and they may need regular applications of nitrogen, iron, and/or zinc. The easiest way to feed citrus trees is with an organic or synthetic fertilizer formulated specifically for citrus. Read and follow the label directions for how much and when to feed your trees. A good plan is to divide the annual amount of fertilizer into two or three portions and apply the first portion in March before bloom, the second in May, the third in June. Avoid fertilizing after August because it can stimulate new growth that will be frost tender. An annual application of compost is also beneficial to citrus and may provide sufficient fertilization.

PRUNING

Citrus trees usually need little pruning, especially for the first 2 or 3 years. When pruning is needed, it is best done in spring after danger of frost, and in summer. Avoid pruning after August because it can stimulate new growth that is likely to be injured by frost.

Remove dead and rubbing branches, and suckers (shoots) that originate below the graft union. Remove watersprouts (unusually vigorous upright shoots) as they are usually less productive. You may want to prune vigorously-growing older trees to control size, or to fit your growing space. Prune out foliage that touches the ground as this provides easy access for ants and snails to reach upper branches. Remove dead branches that accumulate in the center of older trees to allow better light penetration and reduce pest habitat.

SANITATION

Keep the area under the canopy of the tree free of weeds and debris, which can harbor pests and diseases and compete with trees for water and nutrients. Remove diseased or pest-infested branches as soon as they are discovered.

FRUIT THINNING

The home citrus grower does not usually need to thin fruit. However, an excessively heavy crop may stunt weaker trees so sometimes fruit thinning is justified. Mandarin trees produce especially heavy crops and trees may benefit by fruit thinning. There is a natural drop of pea-sized fruit about a month after bloom. Golf ball-size fruit may drop later if it is hot, the tree is water stressed, or nitrogen levels are too low or too high. On new trees, it is recommended that all fruit be removed during the first two years to encourage root and vegetative growth.

HARVEST

Most citrus varieties ripen from late fall through winter, although Valencia oranges and grapefruit ripen in early summer in Sacramento. Citrus ripen only on the tree and are sour if picked too early. Just because the fruit has turned color doesn't mean it is ripe. Pick one fruit and test the flavor. Generally, citrus fruit store best on the tree without losing quality, except Satsuma mandarins which should be picked as soon as they are ripe. If a hard freeze is forecast, remove ripe fruit from the tree for immediate use, or freeze the juice for later use. Damage to green fruit may not be apparent until harvest when the "ripe" fruit is dry and pithy.

MULCH

Citrus tree roots are generally shallow, concentrated in the upper 2 feet of soil, and extend well past the drip line. Use 4-6" of organic matter such as compost, leaves, straw, or wood chips under the tree to conserve water and discourage weeds, but keep it 4-6" away from the trunk. Mulch also moderates soil temperatures and improves the soil as it decomposes.

PEST CONTROL

Vigorously growing citrus have few pest problems, but even well-grown trees can have aphid, scale, whitefly, or mite problems. Management information for the control of these pests is online at www.ipm.ucdavis.edu. In poorly drained soil, fungal diseases often infect the trunk and roots, so well drained soil is a must!

CONTAINERS

Many citrus varieties can be grown in containers. These trees have different requirements than those planted in the ground. Small, compact types of citrus such as Satsuma mandarin, kumquat, lime, and Meyer lemon do well for years in pots. The pot should be at least a 15 gallon size (about 17" diameter by 16" deep). Half-barrels are a good choice. Holes in the bottom of the container are essential for good water drainage. Use bricks or wood blocks to raise the container off the ground for good drainage and air circulation beneath the container. Use a good commercial potting soil in the container.

Container citrus require watering more frequently than in-ground trees. In hot weather, they may need water every day. Check soil moisture by using a moisture meter, or use the "feel" test. To conduct a "feel" test, carefully dig down 6-8" into the soil with a trowel, place a handful of soil in the palm of your hand, and squeeze the soil. If water drips out, it is too wet; if the soil forms a weak ball, there is sufficient water; if the soil is crumbly and will not form a ball, it is dry and needs water. A drip-irrigation system on a timer is useful. The frequent watering needed to maintain container moisture leaches nutrients out of the soil, so the plants will need regular fertilization. Use a slow-release fertilizer and follow package instructions for amounts to use for container trees.

COLD HARDINESS

Young citrus trees need to have some frost protection in Sacramento for the first 4 or 5 years. Older trees vary in their tenderness depending on the type of citrus. Citrus tree leaves and branches can be damaged below the temperatures shown below (these are not hard and fast figures):

Limes	29 degrees
Lemons and grapefruit	26 degrees
Meyer lemon	22 degrees
Oranges and mandarins	21 degrees
Kumquat	19 degrees

Depending on the state of ripening, citrus fruit can be damaged below 27 degrees. Citrus sensitivity to cold also depends on how long it stays cold, whether the trees are exposed or in a protected area, whether the trees are in a low area where cold air collects, and how old the trees are.

If a hard freeze is expected, make sure citrus trees are well watered, and rake back mulch to encourage the absorption of daytime heat in the soil and its release at night. Covering trees with frost cloths, sheets, or blankets at night helps hold the radiated heat in. Add outdoor Christmas lights (the old type of bulbs that get warm, not modern LED lights) in the tree canopy to add heat. For additional information on frost protection see Frost Protection for Citrus and Other Subtropicals (ANR Publication 8100 available at http://anrcatalog.ucdavis.edu).

FOR ADDITIONAL INFORMATION:

- *Citrus, Complete Guide to Selecting and Growing more than 100 Varieties* by Lance Walheim
- *The California Master Gardener Handbook*, 2002, ANR Publication 3382
- *Frost Protection for Citrus and Other Subtropicals,* 2003, ANR Publication 8100

WEBSITES:

- www.ipm.ucdavis.edu (pest information, citrus information)
- www.fourwindsgrowers.com
- http://cekern.ucdavis.edu KC9382 *Growing Backyard Citrus in Kern County,* by Craig Kallsen, Farm Advisor, revised July 2007

To simplify information, trade names of products and company names have been used. No endorsement of named products or companies is intended, nor is criticism implied of similar products or companies that are not mentioned.

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Reviewed and edited by Chuck Ingels, Farm Advisor; Judy McClure, Master Gardener Program Coordinator; and UC Master Gardener Caroline Hathaway.