



Planting and Care of Citrus in the Home Environment

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Choosing a tree. When choosing a citrus tree put some time and thought into deciding what you want. There are many different types of citrus available. They can vary significantly in shape, size, fruit quality, and cold hardiness. You should either learn enough to make an informed choice yourself, or be guided by someone who is familiar with growing citrus in your locality.

Picking a spot to plant your tree. Choose a location that receives at least 6 hours of direct sun daily, or equivalent. More sun is better, and will result in a healthy, more fruitful, tree. Protection from cold wind, offered by houses, fences or other windbreaks can help. Avoid areas where there is competition from other plants, especially trees that have lots of roots near the surface, such as maples or oaks. Deep rooted trees, like tall pines, where there is filtered sun/bright light, and surface roots do not offer a lot of competition for nutrients and moisture, are not as great a problem as shallow rooted types. The high canopy of such trees may even help prevent freeze damage during cold spells.

Spacing. Give your tree adequate room to grow. For citrus on standard rootstock, this means 10 to 20 feet from a house, or other trees. If on the dwarfing rootstock Trifoliate Orange, or the very dwarfing trifoliate cultivar “Flying Dragon”, trees will grow to about 50 to 30% of normal size, and can be spaced accordingly. It should be noted that “normal size” can vary considerably, depending on the kind and/or variety you choose. Grapefruit, on standard rootstock, will grow into a large tree 20’, or larger and must have plenty of room to spread. In contrast, the normal height for a kumquat is around 10’ to 12’.

Planting your tree: In planting your tree, dig the hole wider than the container (the wider the better), but not too deep, so it will be less inclined to settle in the soft soil once planted. Set the tree in the hole so that it is an inch higher than it was in the container. Laying a board or other straight edge across the hole can help in finding the proper depth. Back fill the hole using the same soil you removed when digging it. Add no soil amendments or fertilizer when planting. As you begin filling the hole with soil, wash it in with water several times so as to eliminate any air pockets. To aid watering as the tree becomes established, you can create a small berm so as to form a shallow basin a foot or so beyond the drip line. Keep leaves, weeds, mulch and grass away from the trunk. Grass may cause the trunk to be injured during lawn maintenance and damp, wet conditions created by such material may cause the tree to develop foot rot. After your tree has been planted, monitor soil moisture carefully, and water as needed. When watering, allow the soil surface to dry to an inch or more in depth, and then apply enough water to wet the soil deeply. If planted in the heat of summer, a newly planted tree may need water daily, but, after the tree becomes established, watering will become less of an issue.

Containers: Citrus can be grown in containers, but require well-drained media, and careful attention to watering and fertilization. Kumquats, Meyer lemons and Satsuma are three that do well in large pots.

Soil. Choose a soil that drains well. Well drained sandy loams are best, but other soils are fine, as long as they drain well; citrus do not like poorly drained soils. Soil ph should range from 5.5 to 6.5

One way to deal with less than perfect drainage is to elevate your tree on a “turtle back”, or mound of soil, so that water does not collect near the trunk, and so that drainage of the root system is enhanced. In commercial citrus groves, citrus trees are virtually always planted on elevated rows. Using a raised bed serves the same purpose. Raised beds can be made out of decay resistant wood, concrete blocks, bricks, etc.

Fertilization. A standard, balanced fertilizer such as 8-8-8, or 10-10-10, is adequate for most situations, but it is difficult to offer advice in this area without being familiar with your soil conditions. For that, a soil test is necessary, which you can obtain from your local cooperative extension office. In South Carolina, that would be Clemson Extension Service, which is listed in your phone book. Fertilizers containing minor nutrients needed by citrus are available, but, in most cases, are not required. Generally, minor elements are available in the soil in adequate amounts. If you believe micronutrients are needed, special citrus fertilizers are available that contain them.

With general purpose fertilizers, make applications on a schedule of every 6 weeks, beginning around March 1st. A schedule for applying fertilizer can be determined by taking the total amount to be applied in a given season, and dividing that amount into 4 evenly spaced applications. Make the first application around February 15 or March 1 (or just before the first expected flush of growth), and ending in July. Follow manufacturer’s instructions to determine amounts. Slow release fertilizers may require different schedules, so it is best to follow the manufacturer’s instructions when applying them. For newly planted trees, the first application should be smaller, and applications gradually increased as your tree grows.

Apply fertilizer by starting about 6-12 inches inside the drip line (where rain water drips from the outside edge of the tree canopy), and extending outside the drip line in a 20 to 30 inch wide band. This is where most of the feeder roots are concentrated.

Remember, fertilizing is like putting air in your tires, more is not better. Try to get it as close to right as you can, but if you err, make it on the “too little” side, roots can be burned from excess fertilization.

Pruning. Normally citrus require little pruning, but this is not a hard and fast rule, and depends on how old the tree is, and if it has, or has not, been pruned by the grower. Unless you plan to grow your tree as a bush, it is a good idea to remove any limbs or suckers below 20-24 inches, keeping a clear trunk to this height, paying particular attention to the rootstock (more about this below). If the tree is well branched above this point, no additional pruning is needed. Long shoots may arise from time to time and some homeowners like to remove this growth, but it does no harm to leave it. Where branches cross and touch one another, one should be removed by cutting back to the point of origin. Low hanging limbs should be shortened, or removed, so that they do not touch the ground.

Rootstock: Most citrus are grafted to a rootstock, which is entirely different from the scion, or fruiting part of the tree. Often the rootstock will put on a sprout of its own. If such growth is allowed to remain, the rootstock will eventually take over your tree. The rootstock will produce no fruit for a long period, and when it does, the fruit will be inedible. If you have a grafted tree, know where the graft union is located. It will normally appear as an abrupt change in the size, or appearance, of the trunk. Sometimes the bark will be a somewhat different color. It is best to remove any unwanted growth, including rootstock and other suckers, when you can easily pull or rub them off, but remove rootstock suckers any time you notice a problem, regardless of size. If you don’t, the rootstock will soon dominate your tree. Suckers are mainly a problem on young trees, and will be seen less frequently as the tree grows older.

Fruit. Grafted citrus often bear while very young, sometimes the year planted. Fruit requires a lot of energy to mature, and the process saps energy that would be best utilized to maintain the health and vigor of your new tree. Your tree is likely to be healthier, and generally do much better if you remove all fruit for at least the first three to four years. It is difficult to resist leaving fruit on the tree, but it might help to know that, especially with satsumas, the best fruit is obtained from mature trees, and that the quickest way to maturity is to keep the tree fruit free until it attains some size.

It should be noted that citrus often have far more flowers, and fruit, than they can carry to maturity. It is natural for a tree to shed most of this extra fruit on its own. Wait until the after natural drop of flowers and fruit, and until the remaining fruit becomes about marble size, before removing it.

Determining when fruit is ready to use, depends on what type it is, and what you and how you plan to use it. Lemons, and other sour fruit, can be used as soon as they become juicy, even while green. Oranges, mandarins and tangerines are ready when they attain color. Satsuma's can be eaten a few weeks before they change color. Grapefruit is ready when it attains color, but the longer it stays on the tree, the sweeter they become.

Failure to Fruit. A newly planted tree, free from the confines of its container, will often enter a state of rapid growth, throwing off all, or most, fruit. This is simply nature's way of allowing the tree to attain adequate size, before taking on the burden of carrying fruit.

Delayed fruiting also occurs with seed grown trees that go through a juvenile stage of growth that can last from 3 to 15 years, or more, depending on the type of tree it is. Grapefruit may take 12 to 20 years to fruit from seed.

Another reason for a failure to fruit is where the rootstock has taken over the tree. This is a common problem, and should be suspected where a tree fails to bloom after a several years in the ground. Look for growth coming from below the graft union, leaves with trifoliate (three leaflets on a petiole), or, sour or bitter tasting fruit. Another sign that you may have rootstock is if the crushed leaves smell like lemon, when the tree is an orange, grapefruit, kumquat, or mandarin. Some types of lemon are used as rootstock, and the lemon odor is a telltale sign that you are may be looking at rootstock.

Last, though most citrus are self fruitful, a few, such as Orlando tangelo, require a pollinator.

Insects and Disease. Citrus can be affected by insects and disease. Keeping your trees in good health will help ward off problems. This paper is too short to offer much help on how to deal with them, but some of the links on our website provide excellent advice.

Links. Citrus links, that include downloadable booklets, are posted on the "links" section of our website plantfolks.com, or I can email them to you. I am also happy to answer any questions I can. Feel free to call, email, or stop by to see us.

Cold Weather. The list below will give you a general idea of how much cold various citrus can handle when acclimated. Hardiness depends on many factors, and trees may take more or less cold than indicated, depending on how those factors play in a particular situation. Such details are covered better at our website, and by information provided by the other resources listed.

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| ➤ Limes | 30°f |
| ➤ Lemons | 20-25°f |
| ➤ Lemon/lime Hybrids | 20°f or less |
| ➤ Grapefruit | 20°f or less |
| ➤ Oranges | 20°f or less |
| ➤ Mandarins | 18-20°f |
| ➤ Satsuma Mandarin | 15-18°f |
| ➤ Kumquats/Changsha mandarin | 12-15°f |
| ➤ Some very hardy types | 0-15°f |

Here are a few ideas you can use to help protect your tree from cold, in the event of a severe freeze. Check some of the recommended books, and links, at our website, plantfolks.com for others.

1. Choose a location on the South side of a solid fence, house, or other barrier, that will help break the cold wind. Such buildings and brick or stone fences will also absorb heat during the day, and release it at night.
2. During winter, keep the ground underneath the tree bare, and make sure it is wet when a freeze, that could damage your tree, is forecast. Bare, wet earth absorbs and holds heat better than dry ground, releasing it when the freeze comes.
3. Cover the tree with plastic sheeting, an old sheet, or frost cloth (a material made for this purpose and available many garden centers and on-line). It also helps to also put a large container of water close to the tree. (A large drum is often used, and even painted black to enhance heat absorption.) Caution; Do not allow plastic sheeting remain on the tree after the sun rises in the morning, or your tree may be damaged by the heat buildup. Also, try to prevent plastic from touching the leaves by providing a frame to hold it, or by first covering the tree first with frost cloth, old sheet, or a similar material. Cloth and frost protection fabric do not present this problem. When applying a protective cover, it works best to allow the cover to drape so that it rests on the ground, where you should anchor it so it will not blow off in strong winds. This takes advantage of the heat held by the soil.
4. I have friends that string C-9 Christmas tree lights in the tree. The lights produce heat and help prevent freezing. Sometimes this is done in conjunction with a covering, but you must be sure the cover does not touch the light bulbs or things may get a lot warmer than you planned.
5. If you do nothing else while the tree is young, protect it to a point of at least a foot above the graft union. This will at least prevent you from losing the fruiting part (scion) of your plant. This can be accomplished by mounding soil around the tree so that the soil covers the graft union, or by using heavy insulation, or by placing a large container of water near next to the trunk, and wrapping the trunk and container with a protective wrap.
6. Running sprinklers on the tree is sometimes suggested. The water will offer some freeze protection, but can cause limb breakage from the weight of the ice. Strategically placing micro sprinklers in the canopy to the tree, so that ice build-up on the leave is minimized, can help overcome this problem, but there will virtually always some ice produced. Such systems using micro sprinklers are being used in many new groves, by commercial growers, to protect newly planted trees. Once the trees have matured, they are better able to tolerate freezes.

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