Citrus Tree Care for the Home Gardener in the HLB Era[1]

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When someone thinks about Florida agriculture, citrus is likely one of the first things that comes to mind. Citrus is an important economic crop to the state, providing food, creating thousands of jobs, forming beautiful scenery for visitors, and producing multiple byproducts (e.g., cattle feed and citrus oils). It is not just important economically; citrus is also commonly grown in residential landscapes for pleasure.

Since the early 2000s, growing citrus has become much more challenging due to plant disease pressure. In 2005, the incurable bacterial disease Huanglongbing (HLB), also known as citrus greening, was first confirmed in a residential tree in south Florida. Today, HLB has spread throughout all of the commercial citrus growing regions of south Florida and is in parts of north Florida as well.

HLB is the most devastating disease affecting Florida citrus, and it threatens the survival of the citrus industry. Once a tree becomes infected, there is no cure. The risk of a citrus tree becoming infected with HLB is high and ultimately unavoidable. Disease spread is endemic in Florida; therefore, the tree will become infected. Growing a citrus tree during the HLB era is an investment of time, money, and resources with no guarantee of success.

What to Do if You Still Wish to Plant a Citrus Tree Despite HLB

Purchasing a Citrus Tree

To begin, one must purchase a tree from a certified nursery that has been inspected by state and/or federal inspectors to confirm the nursery is producing clean (disease-free) plant material. Citrus trees grown in a certified nursery will have a tag stating the name of the nursery, registration number, the tree variety, and rootstock.

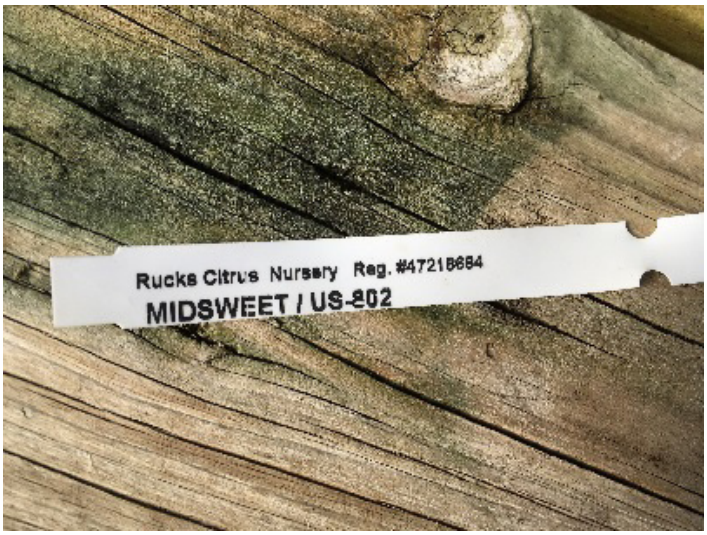

Figure 1. Nursery tag found on a citrus tree from a certified citrus nursery.
Credits: Jamie D. Burrow, UF/IFAS

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When buying a tree from a secondary retailer, examine the tree for any symptoms of pest damage, HLB, or other diseases. Trees should have dark-green colored leaves (no white, waxy, pellet-like residue), a smooth trunk (no bark scaling or oozing), and be well-maintained (no wilt, etc.).

Planting a Citrus Tree

Once a tree has been purchased, you will need to prepare the planting location. To prepare the site, choose an area on the south side of the home, which is the warmest. Next, remove any weeds or old plant material from the area. After the site is cleared, you will need to dig a hole. The hole should only be as deep as the tree's root ball, or the root ball should be slightly above the soil line. When inserting the tree into the ground, the soil line of the tree should be level with the tree's root flare, the topmost root of the tree. Do *not* plant the tree any deeper than it was in the pot. Fill the remaining area with native soil. The best time to plant citrus is spring or early fall.

Tree Care

IRRIGATION

Watering a citrus tree will be important to its establishment and growth. Between March and June, the tree should be watered twice a week with a small volume (1–2 gallons). During the rainy season, water the tree as needed. The tree should never become wilted, as this inhibits establishment and growth. Wilting in the tree is expressed by cupping of the leaves and a dry appearance.

Figure 2. Wilted citrus tree.
Credits: Megan Dewdney, UF/IFAS

FERTILIZATION

Plant nutrition is essential for optimum growth and yield of high-quality fruit. A fertilizer program should include all major and minor mineral nutrients because each nutrient is indispensable. The goal of the fertilizer program for young, bearing trees is to continuously stimulate vigorous growth, whereas with mature tree fertilization, the goal is to promote fruit set, growth, and development while at the same time maintaining tree health and fruit-bearing surfaces to optimize yields for subsequent seasons. Many different fertilizer formulations are available for use on citrus trees. Fertilizer formulations such as 6-6-6 or 8-8-8 (for young trees) and 10-10-10 (for mature trees) are suggested, but other complete fertilizers can also be used. Fertilizer applications should be split between three to five applications a year. If the tree is displaying nutrient deficiencies, a soil and leaf nutrient analysis should be completed to identify which of the specific nutrients are needed. It should be noted that nutrient deficiencies are often associated with the onset of HLB. If persistent nutrient deficiencies continue after adequate fertilizer is applied, it may be prudent to have the tree tested for HLB (see EDIS document PP319, Plant Diagnostic Clinic and HLB Lab).

PRUNING

Proper control of vegetative growth is essential for the maintenance of healthy, productive citrus. The pruning process 1) adjusts tree shape and the ratio of framework to fruit-bearing shell of the canopy, 2) alters the shoot/root ratio, and 3) changes the carbohydrate (food storage) status of the tree. Annual light pruning after freezing temperatures have passed and just before the spring growth flush will aid trees in staying vigorous, healthy, and productive. As a general rule, do not remove more than a third of the canopy during the light spring pruning.

PEST MANAGEMENT

Prevention of pests is vital to maintaining a healthy tree. The most common pests on residential trees include Asian citrus psyllid (the vector of HLB), leafminer, orange dog caterpillars, mites, and scales. There is a limited number of chemicals available to homeowners, but available options include horticultural oil, neem oil, malathion, and carbaryl. Monitoring of pest populations within the tree canopy is necessary given the ability of the different citrus pests to migrate from one area to another. Anyone who uses pesticides must follow and comply with all of the instructions and regulatory requirements published on the pesticide label.

Figure 3. Adult Asian citrus psyllid.
Credits: Michael E. Rogers, UF/IFAS

DISEASE MANAGEMENT

Due to Florida's humid climate, fungal diseases are commonly observed on residential trees. Greasy spot, Alternaria brown spot, melanose, and citrus scab are fungal diseases that can be managed by removing dead wood from trees, keeping the area underneath the tree clean (remove dead leaves, etc.), and applying copper fungicides. Other diseases common in Florida citrus are *Phytophthora* root rot, citrus canker, and HLB.

HLB

HLB symptoms can be found on leaves and fruit. Leaves have a blotchy mottle pattern and yellow and/or corky veins. Yellow veins are also caused by other citrus diseases and disorders; therefore, the presence of yellow veins alone should not be used to diagnose HLB. Fruit from an HLB-affected tree will be small, misshapen, or lopsided, and can have a color inversion. Overall, an HLB-affected tree will have dieback (branches without leaves), be stunted, produce poor fruit quality, and will not appear healthy.

Figure 4. Blotchy mottle symptom of HLB.
Credits: Jamie D. Burrow, UF/IFAS

HLB is spread from tree to tree by the Asian citrus psyllid. When a psyllid feeds on a citrus tree, it is able to acquire the HLB-causing bacteria and then transmit the bacteria when it feeds within the same tree or on another citrus tree. To prevent a tree from becoming infected with HLB, psyllid control is essential. Managing psyllids can be complex; they are easy to kill, but they reproduce quickly. They are also capable of long distance spread by flight or by wind. For foliar applications, horticultural oil, neem oil, malathion, or carbaryl are available for homeowner use. Regular applications will be needed for psyllid management, but the number should stay within the legal limits on the label. Once a tree becomes infected with HLB, there is no cure.

Before HLB, citrus trees would remain productive for 50 years or more. Now that we are surrounded with such widespread infection of citrus trees within the state, trees do not live as long, become unattractive, and do not produce the same quality of fruit as in the pre-HLB era. To prevent trees from becoming infected with HLB, psyllid control and proper tree care are important, but they do not guarantee complete protection against HLB. Studies in commercial growing environments have shown trees with conventional management have reduced psyllid populations compared to trees with little or no care. Most trees still become infected with HLB, even with the best care possible.

Once a citrus tree becomes infected with HLB, removal is recommended in order to reduce the source of inoculum for psyllid feeding and transmission to other trees in the area. If homeowners choose to continue to grow their infected citrus, the tree will eventually succumb to HLB and much of the fruit will be poor quality. Unfortunately, in high disease-pressure areas of the state, it is inevitable that a citrus tree will become infected with HLB. Proper psyllid management and tree care will not prevent infection but *may* aid in prolonging the tree's life.

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