Citrus Greening—HLB is one of the most serious bacterial diseases of Citrus Spp. HLB appears to be restricted to rutaceous plants and severely affects sweet orange, mandarin and tangelo trees.

Recent molecular studies have established that the causal organisms are actually true bacteria vectored by psyllids.

**Candidatus Liberibacter sp.**
- *Candidatus* Liberibacter asiaticus
- *Candidatus* Liberibacter africanus
- *Candidatus* Liberibacter americanus

**Psyllid sp.**
- *Diapharina citri*
- *Trioza erytreae*

Plants contained on the host list are all potential hosts for the psyllid vector as well as HLB, however a number of citrus relatives are also hosts for the psyllid, but have not been shown to be hosts for the disease. They are important as reservoirs or potential pathways for infected insect vectors to non-infested citrus growing states and should be regulated as such.

**Economic Impact:**
- HLB greatly reduces production
- Destroys the economic value of the fruit
- Can kill trees - there is “no cure”

**Foliar Symptoms:** Early foliar symptoms include yellowing of leaves along the midrib and larger veins, which produce a blotchy, mottled appearance. This may not be noticed until a yellow shoot, initially confined to one limb or sector, appears on the tree. Over time, yellowing may spread to the entire tree. Leaves with HLB have a mottled appearance that differs from nutrition-related mottling. HLB-induced mottling usually crosses leaf veins. Nutrition related mottling usually occurs between or along leaf veins. However, in both cases, leaves may be small and upright.

**Fruit Symptoms:** Fruit is smaller than normal and usually lopsided (caused by a curved columnella). The shaded side remains green, while normal coloring develops on the other side. The fruit has a somewhat salty, bitter taste. In contrast, fruit with similar symptoms caused by other citrus diseases is generally sweeter than normal. Seeds are generally aborted. Heavy fruit drop may also observed.
**Citrus Greening—HLB Sample Collection**

**How to collect citrus greening samples**

- Only fresh leaves can be analyzed. They must be fresh at the time of testing, if they are allowed to dry out during shipping, there will be no testing.

- Collect 12—20 symptomatic leaves, attached to the stem if possible. If you collect fruit, please do not cut it prior to sending, and send it in a separate bag. Send fruit attached to the stem, because the fruit stems can have high amounts of citrus greening bacteria.

- Put the leaf material and fruit in a plastic zip-lock bag. Double bag the sample with the PPQ 391 Form in-between the two ziplock bags.

- Secure the samples in a sturdy box with an ice pack to keep the samples cool during shipping. Write “Citrus greening samples” clearly on the outside.

- Ship samples overnight express to the appropriate lab E-mail the lab that samples are being sent, and include the Fedex tracking number.

**South Carolina residents should contact their County Extension Agent if this disease is suspected. Extension Agents should package as described and ship suspect citrus samples overnight to the Clinic at the address below.**

Clemson University Plant Problem Clinic
511 Westinghouse Rd.
Pendleton, SC 29670