

# HLB:



**Figure 1.** Farms with frequent removal of HLB-affected trees and rigorous psyllid control in São Paulo State, Brazil

## It's not too late — yet

**By L.W. Timmer, J.M. Bove, A.J. Ayres, R.B. Bassanezi, J. Belasque Jr., H.L. Chamberlain, W.O. Dawson, M.M. Dewdney, J.H. Graham and M. Irey**

**T**he situation in Florida and Brazil with huanglongbing (HLB or greening) is critical, and losses to the disease could be very serious. However, many groves in Florida and Brazil have incidences of HLB low enough to apply the three-pronged approach to HLB management — pathogen-free trees, aggressive psyllid control and rigorous tree removal.

Many growers, especially in Florida, are abandoning the removal of infected trees in favor of using nutritional sprays even when the HLB incidence in their groves is still low. This will mean that eventually all the trees will become infected. We do not believe that citrus industries in Florida or Brazil can survive and be economically viable with 100 percent of the trees affected by HLB. Earlier estimates based on surveys and on samples submitted for diagnosis suggested infection rates of 2 percent to 4 percent, but the current estimate is that the cumulative percentage statewide is 8 percent to 9 percent of all trees, with much higher rates on the east coast and in South Florida.

In São Paulo State, Brazil, surveys conducted from 2008 to 2010 showed an increase in HLB incidence from 0.6 percent to 1.9 percent with at least 8 million trees affected. Although most citrus farms have a very low level of HLB, the two main producing areas in central and southern São Paulo have more than 2 percent affected trees, and some farms have been or are being completely lost to the disease. The three-pronged approach is being used in Brazil with considerable success in many groves (Fig. 1).

### BEFORE IT'S TOO LATE

Recommended practices with aggressive psyllid control, thorough and frequent inspections and prompt tree

removal should be followed. Experience in Brazil and Florida shows that such an approach is highly effective, especially if blocks are large, trees are mature, and there's a limited amount of inoculum in the area. Declining trees can be replaced in that situation and groves maintained.

Small groves cannot be adequately protected if they are surrounded by severely affected groves without HLB management. Thus, area-wide management is essential for the survival of small groves (see <http://www.crec.ifas.ufl.edu/extension/chmas/index.htm>). Psyllid control and inoculum reduction are complementary, but neither is likely to be completely effective alone. Nevertheless, rigorous psyllid control will slow the spread of HLB and may allow survival even with some HLB in the area. Removal of affected trees further slows the spread of HLB, and the combination can be very effective. Where recommended practices are not followed, infection rates are high, and losses are great (Fig. 2, next page).

### AFTER IT'S TOO LATE

**Surviving** — Many groves have far too high a percentage of infection to reduce inoculum effectively. In such situations, growers should do everything possible to maintain economic

production. Mature trees infected by *Liberibacter* can survive a long time, especially if they have been infected in a single shoot or a few shoots. In contrast, trees that have all their branches affected will decline rapidly. Thus, continued rigorous psyllid control is still essential to minimize multiple infections on the same tree. Micronutrient applications may prolong tree life by correcting the symptoms of the disease, but will not cure the disease and are unlikely to be a permanent solution. Micronutrient

application is not a substitute for the management program above, but rather a last resort in a bad situation when a high percentage of trees are infected.

**Restructuring** — In groves with a high incidence of HLB, replanting of missing trees should not be attempted. Replants are unlikely to survive to produce sufficient quantities of fruit to be economically viable. Young trees succumb to HLB more rapidly than trees older than 10 years. Groves in severe decline and no longer productive should be removed in their entirety. Areas as large as possible should be removed and replanted to minimize the effects of neighboring plantings. That may require removal of blocks that still produce acceptable returns, but are significant reservoirs of inoculum. Area-wide management is pertinent not only in situations where the recommended program is being practiced, but also where restructuring is involved.

**The silver bullet** — Ain't gonna happen. We are all hopeful that a resistant cultivar can be created that will not allow multiplication of the bacterium, will repel psyllids or greatly limit reproduction of the insect vector. That is likely to become reality, but the type of resistance that will be effective is currently unknown. The fact is that pathogen-free trees, aggressive psyllid management, and removal of infected



**Figure 2.** Farms without HLB management showing high infection rates and great losses of citrus trees in São Paulo State, Brazil.

trees will have to continue indefinitely. Any HLB or psyllid resistance that is developed will likely be overcome rapidly if trees are planted in an ocean of HLB with rampant psyllid multiplication. The huge investment required to develop a resistant cultivar might be wasted if it is planted under those circumstances.

### ECONOMIC VIABILITY

Citrus, as a commodity, must be protected and production maintained

at viable levels. If production of oranges for juice declines sufficiently, prices will rise, and more processing plants may close. High prices are good for growers, but if the production declines too much and price increases are excessive, consumers will not purchase the product and substitute other juices or beverages and market share will be lost.

The key to maintaining production for the next five to 10 years is to keep existing bearing trees producing

by the above-mentioned methods and, wherever possible, replanting now with currently available nursery stock in large blocks not surrounded by HLB. Hopefully, resistant cultivars will be developed in the near future and can be used subsequently to replant acreage.

### THE GOOD NEWS

Control of psyllids has been better than expected, and good methods and materials are available for more effective and less expensive control of the vector. The three-pronged approach has been effective where inoculum levels are low and will probably be sustainable.

*L.W. Timmer is professor emeritus, W.O. Dawson is eminent scholar, M.M. Dewdney is assistant professor and J.H. Graham is professor — all with the University of Florida's Citrus Research and Education Center, Lake Alfred. J.M. Bove is professor emeritus of microbiology with INRA and University Victor Ségalen, Bordeaux, France. A.J. Ayres is scientific manager; R.B. Bassanezi is scientific researcher and J. Belasque, Jr. is scientific researcher — all with Fundecitrus, Araraquara, São Paulo, Brazil. H.L. Chamberlain is manager of Disease & Pest Management LLC, Avon Park. M. Irey is director of research for U.S. Sugar Corp., Clewiston.*





**CHANDLER DUAL CHAIN SPREADER**

- INCREDIBLE PRODUCTIVITY
- LOW MAINTENANCE



- PRECISE & EASY TO USE
- EFFICIENT & EFFECTIVE



**TOL HEDGERS**

- INDUSTRY LEADER
- 20 YEARS OF INNOVATIONS

**Barry Keller**  
Cell: 772-473-4142  
kelleragsales@aol.com

**Luis Martinez**  
Cell: 772-473-1447  
curtec@bellsouth.net

**Chandler Spreaders · Mid-Tec Controllers · Raven Systems · TOL Hedgers**

P.O. Box 690365 • Vero Beach, FL 32969