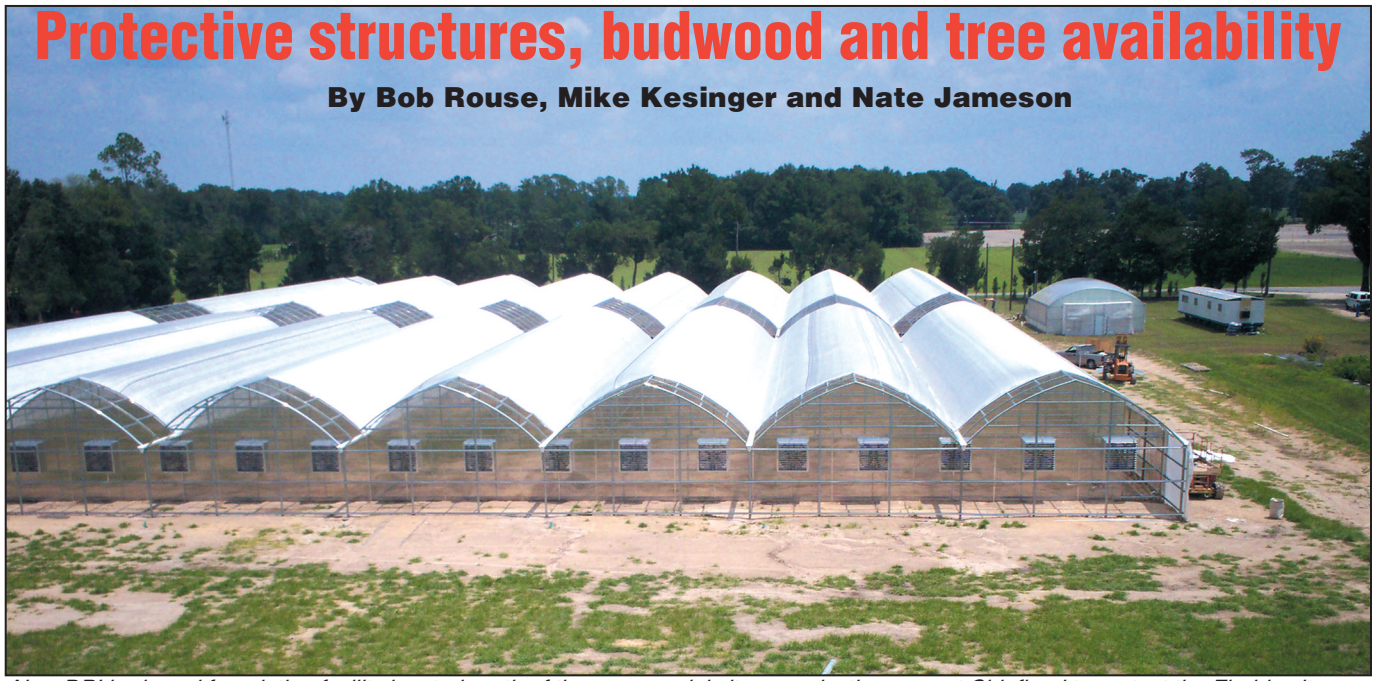
Citrus nursery issues:

Protective structures, budwood and tree availability

By Bob Rouse, Mike Kesinger and Nate Jameson



New DPI budwood foundation facility located north of the commercial citrus production area at Chiefland to protect the Florida citrus industry budwood supply.

Responding to citrus canker and prior to the discovery of citrus greening in Florida, the Florida Citrus Nurserymen's Association was proactive by forming a Nursery Improvement Committee in July 2005. After the discovery of citrus greening in August 2005, the University of Florida and commercial citrus growers were invited to join the discussion on how to make nursery production safer. The Florida Citrus Plant Protection Committee (FCPPC) became the vehicle to engage nurserymen, growers, regulators and researchers in developing protocols to achieve disease-free nursery trees.

After eight meetings of the FCPPC, three public workshops and four rule drafts, the Citrus Budwood Protection Program, Rule 5B-60, was rewritten and became Rule 5B-62, Citrus Nursery Stock Certification Program, and became law Jan. 1.

This rule requires all citrus nursery stock be propagated in DPI-approved protective structures starting Jan. 1, 2007, with the provision that trees propagated before January 2007, both field and greenhouse grown, could be sold until Jan. 1, 2008.

New citrus nurseries must be located at least one mile from commercial citrus groves to provide a safety buffer from disease inoculums. Existing nurseries were allowed to remain at their present locations, but had to comply with all the other rule requirements. All citrus nurseries are required to have enclosed structures for preventing psyllid entrance and have double entryways with positive pressure air displacement at the entrance doors.

Some additional requirements are annual testing of budwood source trees for citrus greening and other citrus pathogens, record keeping and document submission to the Bureau of Citrus Budwood Registration for every citrus tree propagated, and DPI monthly inspection of all plant material for diseases and structural integrity.

Citrus nurseries can be quarantined if one live psyllid is found inside the structure. Trees, seedlings and budwood trees are more rigorously inspected than ever before, and supplies should be safer with the enclosures, increased inspection and appropriate pesticide applications.

Traditionally, the majority of Florida's citrus nursery production has been field nurseries growing bare-root trees. During the 1980s and early 1990s, 200-plus citrus nurseries were propagating between 4 and 6 million trees annually. Since then, the number of citrus nurseries has steadily decreased and only 41 commercial citrus nurseries are propagating at present.

In 2005, 65 percent of nursery trees were field grown. Citrus greening disease (HLB, *Huanglongbing*) made growing citrus nursery trees in open field nurseries unacceptable and changed citrus nursery production as discussed above. Although the 41 commercial and own-use nurseries that made propagations last year are predominantly located in Polk and Highlands counties, not all will make the transition. Some nurseries relocated and a few new nurseries have built facilities north of the citrus belt to escape disease and insect pressure. Existing nurseries either built new

Recently budded liners in an approved structure.

Budwood source trees maintained in a protected structure and used to produce budwood to propagate new trees for commercial groves.

Nursery production of new budded citrus trees in an insect excluding greenhouse.

structures or modified existing greenhouses to meet the rule requirement.

Not only do commercial trees have to be protected, but a major component of nursery production had to be preserved as well: budwood. Budwood trees, like field trees, have traditionally been grown outside. This is also no longer possible, and budwood trees have been screened-in or started new from clean plant material inside approved structures. By the end of the 2006-07 fiscal year, 4,386 budwood scion trees were protected in enclosed greenhouses. Increase blocks likewise were required to be totally enclosed.

The majority of the newly protected scion trees are smaller than the previously field grown trees and will initially have less budwood production. Although budwood is in short supply for the 2007 and 2008 production years, these newly registered budwood trees will begin to produce larger quantities in 2008, and budwood should become more available as we move into 2009.

Registered budwood trees can only be started from plant material supplied by FDACS-DPI Bureau of Citrus Budwood, which maintains disease-free trees of many different commercial and dooryard varieties and varietal clones including some citrus relatives. During the 2005 hurricane season, DPI structures were significantly impacted, which further limited budwood supplies.

Rule 5B-62 also requires that Foundation budwood sources relocate and be at least 10 miles away from commercial citrus groves. New budwood greenhouses are being constructed in Levy County at Chiefland. These new greenhouse ranges will be approximately 70,000 square feet and aim to preserve germplasm, as well as provide a start for nurseries to establish their own scion source trees. The goal is for nurseries to have enough scion trees so they can be self sufficient in supplying their own increase blocks without bringing outside sources into their nurseries.

Another major component is seed for rootstock production. Seed source tree numbers have remained fairly constant for the last several years, fluctuating around 4,000 trees. In 2006, there were 4,386 registered seed trees. The newest releases are in short supply due to the young age of the trees, and some of the older varieties are in short supply since many of them have been removed. How greening will affect seed source trees is still unknown.

Seedling liners started from seed in an approved insect protective structure.

Historically, during times of high tree demand, field nurseries have been able to increase production by expanding or planting existing blocks not currently in use. Due to greening disease, expanding production space (building new insect-proof greenhouses) is much more costly and time consuming, and recouping that investment requires several cropping cycles. This limits a nurseryman's ability to expand based on a one-year contract.

Currently, there are 38 nurseries (including own-use and dooryard producers) meeting the rule requirement and receiving inspection every 30 days by DPI. Approximately 30-plus of the 38 nurseries have combined capacity to produce approximately 4.5 million trees. Production space does not equate to annual tree production. Nurserymen have to have space to finish one crop of trees while simultaneously starting the next year's crop. Annual tree production is estimated at 60 percent to 75 percent of total tree capacity, or 2.7 to 3.4 million trees per year available for sale. This variation is affected by scion rootstock combinations, growers' timely planting of reset trees, seed and budwood supply, as well as winter weather.

Nursery tree demand is exceeding current supply, mostly due to replanting canker control areas. What about future demand? Answering this requires growers to develop a greening management strategy. How aggressively will greening trees be removed? Will growers continue to reset tree for tree, or will growers evaluate planting based on a percentage of infection and replant solid blocks instead?

Predicting future demand is a challenge. As the Florida citrus industry develops greening management protocols, tree demand can be determined. Regardless, nurserymen have invested millions of dollars in protective structures and sanitation to prevent nursery trees from becoming infected with citrus greening and other diseases and will continue to evolve to meet the demand for clean trees in the future.

Bob Rouse is a citrus horticulturist at UF/IFAS Southwest Florida Research & Education Center in Immokalee; Mike Kesinger is chief of the FDACS/DPI Bureau of Citrus Budwood Registration; Nate Jameson is owner of BriteLeaf Citrus Nursery, LLC.