

New planting options feature improved varieties

By Jude Grosser and Fred Gmitter

HLB has seriously impacted the Florida citrus industry. To restore and sustain our industry, it has been estimated that we need to plant two to three million new trees per year for the next 10 years. One of the biggest questions for those staying in business is what varieties to plant. This is a very difficult question until we have a full portfolio of highly tolerant or resistant scion and rootstock combinations for both processing and fresh fruit. In addition, growers need higher returns on their fruit to afford the current increased costs of production.

Progress is being made on both fronts — increased disease tolerance and significantly improved fruit quality. The new varieties will play an increasingly important role in replanting going forward, by improving the quality of our processed products, increasing the competitiveness of Florida fresh fruits in the national and international markets, and creating new marketing opportunities. We can truly build a better and more profitable industry on a foundation of improved varieties. In this article, we will discuss some new planting options along with suggestions for successfully growing and sustaining new trees.

PROCESSING ORANGE OPTIONS

Florida orange juice is one of the most tasty and nutritious fruit juices in the world, but consumption continues to decline. One of the best ways to battle this trend is the development of new and improved sweet orange cultivars that reduce production costs and substantially increase the quality of our juice products. Higher-quality oranges in the early- and mid-season categories would have a direct impact on juice product quality, by reducing the need for blending with late-season Valencia and minimizing the reliance upon expensive cold storage of juice for blending. Hamlin oranges seem more sensitive to HLB and more prone to fruit drop, in addition to producing poorly colored and flavored juice compared with Valencia.

Replacing Hamlin with higher quality selections in the same maturity window has been our longtime goal at the University of Florida/Institute of Food and Agricultural

Sciences (UF/IFAS) Citrus Research and Education Center (CREC) for the past 30 years. It appears that we have finally succeeded in achieving this goal!

RELEASE OF EARLY-MATURING VALENCIAS

Previously, we released Valencia somaclone SF14W-62 (**Valquarius**[™]). This mid-season selection matures four to eight weeks earlier than standard Valencia and can usually be harvested beginning in mid-January. We are now pleased to announce the upcoming release of two of the most anticipated high-quality, early-maturing Valencia somaclones: Florida EV-1 (B7-70) and Florida EV-2 (SF14W-65) (Figure 1), slated for nursery increase in early 2016.



Figure 1. Fruit of early-maturing Valencia somaclone SF14W-65, first week of December 2014, from 6-year-old trees on rough lemon rootstock.

These varieties are earlier than Vernia and Valquarius, and have matured during the Hamlin period the past two seasons with ratios above 15 by December 1. Nurseries will soon have an opportunity to become non-exclusively licensed to produce these trees, so please watch for the announcement.

Anticipating a high demand for these selections, we have been proactive by producing budwood increase trees in a CREC-certified greenhouse, to be distributed to licensed nurseries after release. Although they appear to be no more HLB tolerant than standard Valencia, preliminary observations suggest that they exhibit fewer symptomatic fruit and less drop than Hamlin. These varieties offer the Florida industry an opportunity to replace Hamlin with higher-quality selections, improving the quality of our juice products and hopefully contributing to increased juice sales and grower returns.

OTHER NEW SWEET ORANGE OPTIONS

Several nurseries are now licensed to produce improved sweet orange selections **OLL 4** and **OLL 8**. These high-quality sweet oranges generally mature during the standard Valencia period (some years a few weeks earlier), and produce juice with color and flavor equivalent to or better than Rhode Red Valencia. They also offer good crossover potential for utilization in fresh channels, as they have better eating quality than Valencia with good size, highly colored smooth rinds and easier peeling.

Seven-year-old trees of OLL 8 under enhanced nutrition

on rough lemon rootstock appear to be growing through HLB better than Hamlin, Valquarius, Vernia and Valencia, showing larger trees with more and bigger fruit in a trial at Orié Lee's Alligator grove. A few OLL trees topworked onto HLB-infected and highly symptomatic Valencia/Swingle trees are showing normal growth and exceptional productivity after being grown back with enhanced nutrition (Figure 2).



Figure 2. Right: An OLL sweet orange tree topworked onto HLB-infected, highly symptomatic Valencia/Swingle tree in the Orié Lee Alligator grove (St. Cloud) grown back with supplemental enhanced nutrition. Left: Valencia/Swingle under a standard program.

Other new UF sweet orange selections available include:

- **Valencia B9-65**, a precocious-bearing, high-solids, high-yielding Valencia somaclone with standard Valencia maturity and good potential for advanced citrus production systems
- **Valencia N7-3**, a seedless Valencia somaclone with fresh-market crossover potential that holds quality into June
- **Hamlin N13-32**, a somaclone selected for improved juice color in late-harvested fruit (January)
- **UF 11-1-24**, a nearly seedless midseason sweet orange with earlier maturity and higher soluble solids per box, ratio and juice color than the current industry standard Midsweet.

For information on licensing these selections, contact John Watson at jwatson7@ufl.edu at Florida Foundation Seed Producers, Inc.

FRESH FRUIT OPTIONS

MANDARINS

Florida growers have observed significant differences among traditional Florida fresh fruit varieties in response to HLB. Murcott (honey tangerine) is the most sensitive mandarin variety, whereas Temple, Nova and Fallglo are less so, usually declining more slowly after infection. Thus, there is significant genetic diversity for HLB tolerance that can be exploited in breeding.

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Among more recently available varieties, LB8-9 (marketed under the **Sugar Belle™** brand name) is by far the most HLB tolerant. Trees that have been HLB positive for more than eight years are producing up to 7.5 boxes of normal, high-quality fruit. However, this requires careful attention to nutrition and cultural practices such as canopy and fruit load management (figures 3 and 4). The Sugar Belle™ market is growing, and there could be an increased demand for this delicious fruit. LB8-9 seems to be a good fresh-fruit option for replanting in Florida.

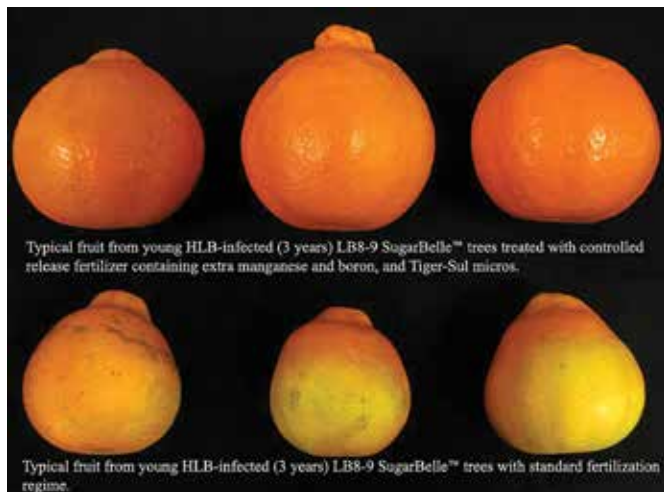


Figure 3. Fruit from 6-year-old LB8-9 trees grown at the Citrus Research and Education Center with and without enhanced ground-applied nutrition.



(Left) Figure 4. Ten-year-old LB8-9 trees are 100 percent HLB positive in September 2014.

(Right) Figure 5. Fruiting habit of 7-6-27, an apparently HLB-tolerant mandarin.

There are other HLB-tolerant fresh-fruit selections, perhaps most notable being the Fast Track release 7-6-27 (Figure 5), a very early-maturing, high-quality seedless mandarin. Looking forward, more high-quality seedless selections with significant HLB tolerance will become available.

LEMONS

Lemons are more tolerant of HLB than most other commercial scions. Although trees can be symptomatic in winter, with good nutrition they rebound in spring to produce good crops of normal fruit. The ideal lemon

for Florida should have both industrial and fresh-market potential, with high yields of peel oil and juice, and nearly seedless. The UF/CREC breeding team has developed lemon selections with significantly improved oil yields, some of which are nearly seedless. Through field trials currently being implemented, we expect to identify lemon varieties that are likely going to be a part of Florida's future.

GRAPEFRUIT/PUMMELOS

Grapefruit production has been more seriously impacted by HLB than oranges, and citrus canker remains a challenge. Among the UF/CREC new releases in Fast Track Suite 1, the grapefruit-sized red pummelo 5-1-99-2 (Pummelette) is showing the best HLB and canker tolerance. It produces a red-fleshed fruit that is sweeter and less bitter than traditional grapefruit. The original selection produces seedy fruit when cross-pollinated, but we are working toward release of a seedless version in the near future.

We have recently released the cybrid grapefruit N2-28 that can be harvested from December into August. A very high-quality, red-fleshed grapefruit hybrid, 914 was released in Fast Track Suite 1. It has much higher ratios than ordinary grapefruit and very low potential for drug interactions, thus representing a unique variety with potential to produce a high-value product. Other grapefruit-like seedless hybrids are being developed from HLB- and canker-tolerant parents and offer great potential for the future.

HOW TO GROW THE TREES

We have described new scion options for new plantings. The best chances for success may result from combining these with newly available, HLB-tolerant rootstocks being developed by UF/CREC and the U.S. Department of Agriculture (see more on page 30). Despite limited seed supplies, we are working together with micropropagation companies to alleviate the problem. Except for oranges, there is little information on how the new scions will perform on the new rootstocks; collaborations with industry partners will help generate this information over time, but time is a luxury we cannot afford now.

New plantings grown with controlled-release fertilizer, at least for the first three years, as well as timely psyllid control are likely critical to success. Subsequently, less costly "hybrid" ground fertilizer programs, along with good foliar nutrition, may be successful. The key seems to be providing a constant source of micronutrients, especially calcium, zinc, iron, magnesium and, more critically, manganese and boron, but that is another topic.

It's no longer business as usual. Growing new high-value scion cultivars with more HLB-tolerant rootstocks, and using the best production systems featuring optimized nutrition and state-of-the-art psyllid control, offer the best chances for future success. 🍊

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