In 1874, J.L. Carney purchased lands adjacent to Lake Weir in southern Marion County, Florida (Carney, 1923). On this land he found wild sour orange and bittersweet trees growing and he decided to find a suitable scion to graft onto the trees that were present.

After hearing about a sweet orange (*Citrus sinensis*) of high quality being produced by an individual in the adjacent Sumter County, near the modern town of Webster, Carney visited the Methodist minister who owned five seedling trees. These trees were reported to be seedlings derived from fruit obtained from a ship that had arrived in the port of Savannah, GA, after a journey from China.

Carney chose a tree from this group exhibiting the best quality and earliness. He made an agreement where he purchased the tree from Parson Brown and paid a yearly fee for care of the tree. In return, Carney was the sole individual that could take any budwood for propagation purposes.

Carney used the budwood from Parson Brown’s tree to establish his own groves and eventually the rights to secure propagation material were sold to other area nurseries. After the freezes of 1894–95, the identity of true ‘Carney Parson Brown’ trees became difficult, as budwood became very scarce. Others had made propagations from other trees on Parson Brown’s property in Webster and the true lineage of sweet orange selections being called ‘Parson Brown’ became cloudy.

Citrus greening disease (HLB), caused by a gram negative bacteria called *Candidatus Liberibacter asiaticus* and spread by the insect vector, the Asian citrus psyllid *Diaphorina citri*, was discovered infesting citrus in Florida in 2005 and has hence been spread throughout the commercial production regions of the state. As the severity increased, citrus producers began commenting on certain rootstocks and/or scions that did not seem to be impacted to the degree that “more susceptible” rootstocks and/or scions had exhibited.

An organization called the Citrus Research and Development Foundation (CRDF) was created to coordinate research and other activities associated with finding answers on how the Florida Citrus Industry could continue to prosper in the citrus greening era. The CRDF decided to fund efforts to identify potential rootstock and/or scion selections that were “surviving” better than other trees in blocks with a significant HLB infection.

One of the cultivars mentioned in the conversation about trees that were thriving better than most was ‘Parson Brown’. As mentioned earlier, the true identity of different ‘Parson Brown’ lines had become cloudy. According to the Florida Department of Agriculture and Consumer Services Division of Plant Industry Bureau of Citrus Budwood Registration, at one time, there were 15 different clones of ‘Parson Brown’ (Kesinger, 2014, personal communication), of which one known as F-56-2 (that was derived from a seedling selection made on the University of Florida Campus) is still available to the industry. Another clone (made from what originally was the J.L. Carney Grove on the west shore of Lake Weir known as 3–40–2) is being maintained in the Bureau of Citrus Budwood Registration Block in Dundee, FL, but is not currently available for commercial propagation (Table 1).

Local growers had indicated that many of the original ‘Parson Brown’ blocks were devastated by the freezes of the 1980s. Some of those that replanted to the same cultivar after the freezes indicated their experience revealed the fruit quality of the newer trees did not match that of their original ‘Parson Brown’ trees, perhaps due to the fact that they actually planted a different clone as earlier referenced by E.L. Carney describing various selections being called ‘Parson Brown’ (Carney, 1923).

This project was initiated to determine if we could find any ‘Parson Brown’ trees which may trace their lineage back to the
original ‘Carney Parson Brown’ trees. If such trees were located, did they appear to be showing any increased tolerance to HLB?

Materials and Methods

In May 2015, a visit was made to a property that is now a portion of the Marion County, FL, park system but at one time had been the site of the original J.L. Carney citrus grove on the west shore of Lake Weir. After a brief survey, no sweet orange resembling the description of ‘Parson Brown’ could be identified. Park personnel mentioned that a private residence on the east shore of the lake had a surviving ‘Carney Parson Brown’ tree.

Upon visiting the property on the east side of Lake Weir it was revealed that the property with the tree was the site of the former J.L. Carney residence and this tree was over 100 years old. Two additional trees were identified and samples were collected for qPCR evaluation. Three samples were collected from each of the three trees and were designated Lytle 1, 2, and 3. Three different sample sites were chosen from portions of the trees showing potential visual symptoms of either nutritional deficiency or HLB. A second sampling of these trees was made in February 2015 and additional samples were taken from two other groves (the Preston and Kohn groves) in the Weirsdale area in March 2015. On the Lytle 2, sample site 2 portion of the tree, an area with significant decline, reminiscent of a yellow dragon related to HLB infection, was also sampled.

All samples for qPCR evaluation were delivered to Ron Bransky, Emeritus Professor at the Citrus Research and Education Center (CREC) in Lake Alfred, FL. Staff from Bill Dawson’s Lab at CREC conducted the evaluations.

Additionally, a ‘Parson Brown’ grove in Umatilla (Faryna grove) was observed but no qPCR was run. This block had numerous 6- to 10-year-old ‘Hamlin’ trees as resets within this grove.

Results and Discussion

The trees on the J.L. Carney homestead continued to show few visual HLB symptoms, until an advanced declining portion of the Lytle tree 2, sample site 2 was observed in December 2014. These trees had an adequate crop, considering their age. Table 2 shows the results of qPCR run at two different times on the Lytle trees and once on trees in two other Weirsdale area groves (Preston and Kohn groves). The declining portion of the Lytle 2 tree did indicate a positive result for HLB in one of two test runs, while other ‘Parson Brown’ samples evaluated did not.

The other groves were visited after harvest, making differentiation of ‘Parson Brown’ and other cultivars somewhat more involved. Late bloom fruit was evaluated for darker color score, increased seed count and a somewhat pebbly texture of the skin (Fig. 1).

In a block called the Parson Brown Block at the Kohn Grove east of Weirsdale, numerous healthy appearing large trees were observed among ones that were significantly smaller in size. Discussions with the current owners, a previous owner and another citrus professional that had previously assisted with production activities in the block indicated that after the freezes of the 1980s decimated the block, it was reset to ‘Parson Brown’ on trifoliate orange rootstock. After a few years, it was determined that the resets were infected with citrus exocortis and numerous unthrifty

Table 1. Informational notes of the two remaining of 15 original Citrus sinensis ‘Parson Brown’ clones being maintained by the Florida Department of Agriculture and Consumer Services (FDACS) Division of Plant Industry, Bureau of Citrus Budwood Registration. Information supplied by M. Kesinger of FDACS.

Parson Brown F-56-2. This is a seedling selection that originated from closed pollinations made by Dr. Mort Cohen from the old citrus grove south of the Century Tower on the University of Florida campus in 1955. Trees were grown at the old budwood grove near the intersection of Interstate Highway I-4 and U.S. Highway 27. This cultivar makes a vigorous tree with good yields. Origin: Florida; chance seedling in the dooryard of Rev. Brown near the town of Webster. Description: Rind moderately pebbled, 10-20 seeds, juice color poorer than Pineapple. Season: Early, October-January.

trees were removed. It was thought that ‘Hamlin’ on sour orange rootstock was utilized to replace these trees.

Evaluation of some late bloom fruit indicated that some of the trees were likely ‘Hamlin’ probably on sour orange but others appeared to have the characteristics of ‘Parson Brown’ fruit. Approximately 50% of this block consists of significantly shorter and off-color trees which are the remaining ‘Parson Brown’ on trifoliate orange rootstock.

Of qPCR samples taken in March 2015 (two per tree, one each on the eastern and western sides) taken on trees 1 and 3 (thought to be ‘Parson Brown’) indicated a negative result, while the results for tree 2 (thought to be ‘Hamlin’ on sour orange) was negative on the east and positive on the west side. The majority of the fruit from this block was packed for the fresh market during the 2014–15 harvest season.

An approximately 5-acre block (Faryna Block) of predominantly ‘Parson Brown’ on sour orange rootstock replanted after the freezes of the 1980s, with resets of ‘Hamlin’ on Swingle rootstock varying in age from three to eight years old, was also visited after harvest. The majority of the trees in this block are comprised of healthy appearing ‘Parson Brown’ trees, with few visual HLB symptoms present (Fig. 2). Many of the ‘Hamlin’ resets in this block were exhibiting visual symptoms of HLB. The grove manager mentioned that this block was also harvested for fresh fruit during the 2014–15 harvest season.

**Conclusion**

During 2014–15, numerous healthy appearing ‘Parson Brown’ trees, with little if any visual HLB symptoms, were observed in the Weirsdale and Umatilla, FL, area. In general, qPCR results of samples taken from some of these trees were negative for HLB.

We will continue to observe and evaluate these trees and if deemed appropriate, will submit to the Florida Department of Agriculture Division of Plant Industry Bureau of Citrus Budwood Registration for entry into the Parent Tree Candidate Program.

**Literature Cited**