

COLD HARDY CITRUS CONNECTION



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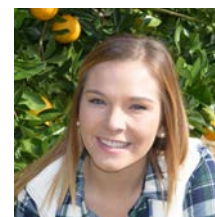
ROOTSTOCK INFLUENCE ON COLD HARDINESS IN SUGAR BELLE®

TO BRAND OR NOT TO BRAND

COLD HARDY CITRUS ASSOCIATION CORNER

Spring has sprung and there's a lot of work to be done! Mainly, pruning, pruning, and more pruning!

In this quarter's edition of the Cold Hardy Citrus Connection, you'll find information on ambrosia beetles, proper pruning practices for citrus, Sugar Belle® ratings from UGA variety trials in Valdosta, and an update from the Cold Hardy Citrus Association president, as well as information on branding. If we can help in any way, please, do not hesitate to reach out!



Danielle S. Williams
UF/IFAS Gadsden County
2140 W. Jefferson St.
Quincy, FL 32351
Office: 850-875-7255
Cell: 850-509-7384
dsprague@ufl.edu

Managing Ambrosia Beetles in Cold Hardy Citrus

By: Dr. Xavier Martini, UF/IFAS NFREC, Assistant Professor of Entomology

Danielle Williams, UF/IFAS Gadsden County, Commercial Horticulture

Derrick Conover, UF/IFAS NFREC, PhD Student and Biological Scientist, Entomology

Winter Storm Elliott brought freezing temperatures to the Panhandle on December 24th that lasted through December 28th, 2022. While we have seen freezing temperatures in years past, none remained below freezing for as long as Winter Storm Elliott did, resulting in significant injury to citrus in our region. Those trees that received significant freeze damage are more vulnerable to pests and diseases. One such pest we are seeing as a result of Winter Storm Elliott, are ambrosia beetles.

Ambrosia beetles are a group of wood-boring insects that attack dead or severely stressed trees or dead wood and are all associated with a fungal symbiont that may accelerated the death of the infested tree. Typically, these beetles bore a hole into the xylem of the tree, where they excavate a gallery to feed and reproduce. They are attracted to the odor that the damaged and dead/dying trees give off, which is why you may be seeing them now in freeze damaged citrus trees. Once they locate a sick tree, they bore into the lower part of the tree (about 2-3 feet from the ground), creating a tunnel or a gallery. You will likely notice sawdust from the galleries at the base of the tree or you may notice a toothpick like protrusion of sawdust at the base of the gallery (Fig. 1).



Figure 1. Toothpick like protrusions from Ambrosia Beetles.

Few species of ambrosia beetles are considered true pests that attack living trees, but most species are pest that attack stressed, damaged, or dying trees. Because ambrosia beetles generally prefer dead or dying trees, they are not typically a problem for citrus trees. However, following a stress, trees become more attractive to the beetles and susceptible to them. If you are seeing signs of ambrosia beetles on your trees, the beetles are likely targeting trees that sustained major freeze damage from Winter Storm Elliott.

Managing Ambrosia Beetles Continued

Our team recently started a survey of ambrosia beetles in citrus in North Florida. We observed an increase in the capture number in April as compared to March. The primary species found were the granulate ambrosia beetle, *Xylosandrus crassiusculus* (32% of beetles caught) and the fruit-tree pinhole borer, *Xyleborinus saxesenii* (27% of beetles caught) (Fig. 2). While *Xylosandrus crassiusculus* is a well-known ornamental and nursery pest that can be quite damaging, *Xyleborinus saxesenii* is only a concern for stressed and damaged citrus trees.



Figure 2. (Left) *Xylosandrus crassiusculus* and (right) *Xyleborinus saxesenii*, the two ambrosia beetles most commonly found in citrus groves in North Florida in March and April 2023. Photo credits: Jiri Hulcr, UF/IFAS.

To monitor for ambrosia beetles, growers can use white sticky traps near the first three feet of the trunk of the tree, and/or an ethanol baited bottle trap (Fig. 3). To create a bottle trap, use a plastic bottle (1 to 2 liters) and cut two rectangular windows on the opposite sides. Hang the bottle to a stick or branch upside down with the lid screw, and fill the bottom with ethanol, or use a pouch of ethanol lure, hang inside the bottle, and fill the bottom with soap water. Beetles will be attracted to the ethanol odor and captured in the bottom of the trap.

Unfortunately, insecticides have limited efficacy against beetles as the beetles live most of their life within the wood, therefore, the first line of defense should be removing infested trees and properly disposing of them by either chipping or burning.

Although insecticides have limited efficacy, a good preventive measure is the use of verbenone, which is an anti-aggregate and repellent and has been proved to repel a wide range of ambrosia species including *X. crassiusculus*. Verbenone is sold by different providers either as pouches to hang directly on the tree or as a SPLAT (SPLAT Verb®).



Figure 3. Bottle trap for ambrosia beetle trapping.

SPLAT is a wax matrix that is slow releasing verbenone and has the advantage to be applied directly on the trunk. SPLAT or verbenone pouch should be applied/attached on the first three feet of the trunk, where ambrosia beetles attack. Usually, SPLAT is efficient up to 6 weeks (Fig. 4). It is recommended to only apply SPLAT on trees with significant damage from the freeze and are at risk of attack by the beetles.

As a reminder, ambrosia beetles are attracted to stressed and dying trees, so it is important to keep your trees as healthy as possible!

For more information, please contact Xavier Martini at the UF/IFAS NFREC at 850-875-7160.



Figure 4. Application of SPLAT Verb® on a citrus tree.

Pruning Practices for Cold Hardy Citrus Production

By: Dr. Muhmmad A. Shahid, UF/IFAS NFREC, Assistant Professor of Horticulture
Shahid Iqbal, UF/IFAS NFREC, Horticulture Sciences
Fernando Alferez, UF/IFAS SWFREC, Assistant Professor of Horticulture

Pruning is a basic technique to remove selectively unnecessary branches and improve tree structure, healthy growth and encourage the development of new leaves, flowers, and fruit. It is one of the most important cultural practices to properly maintain tree fruit crops. Pruning also helps to improve fruit quality, by facilitating light penetration and air circulation, and mitigating physiological disorders such as fruit puffiness. It can regulate alternate bearing and decrease the risk of disease and insect pest pressure. Pruning also reduces grower input cost by reducing labor for harvesting, weeding, and other cultural practices. Pruning is a mix of art and science. Making a proper pruning cut is an art, while how and when to prune for maximum benefit, is a science. Accurate pruning requires a basic

understanding of how plants respond to pruning. Since the cold hardy citrus industry is a newly emerging industry in the southeast and many groves are young, establishment of proper plant structure and canopy through pruning is very critical for getting good quality and uniform size fruit for fresh market.

What to do before pruning?

The correct use of equipment tools is very important before pruning. There are several pruning tools available like loppers, scissors, saw pruners, hedge shears, and trimmers. Keep the tools sharp and in good working condition and remember to disinfect the tools before and after use every time to prevent the spread of disease and between trees, this will avoid disease spread. Sterilize your pruning tool when moving from one plant to another one. It's better to sanitize with alcohol, Lysol, 5% bleach, or pine-sol instead of heating (Figure 1).

When and how to prune?

Time is very important for pruning and it varies with the type of scion and rootstock. Prune at the time that best complements plant growth, its characteristics, flowering, or any other objective you desire to achieve. Early spring is the best time for pruning in most

fruit-bearing trees including citrus. Pruning in citrus too early may stimulate new growth but if a late freeze event occurs, it can cause serious damage. Always prune back to or just above the branch or bud growing point. Figure 2 shows the right pruning angle and a clear picture of a tree before and after pruning.



Figure 1. Pruning tools and sterilization of tools.

Here are some points to keep in mind when going to prune:

- Prune off the 4Ds: dead, damaged, diseased, and dysfunctional branches of any size.
- The branches that go toward the center to block light penetration or crossing each other.
- Don't cut the branches with the collar and flush with the trunks (Figure 3).

- Citrus has brittle wood so always prevent bark tearing during pruning of branches larger than 2.5 cm diameter. Use three-cut system for larger branches.
- 1) 1st cut 25-30cm away from the branch union but under the stem 2) 2nd cut on the upper side of branch but little way from the underneath cut 3) 3rd cut just above the branch collar (Figure 3)

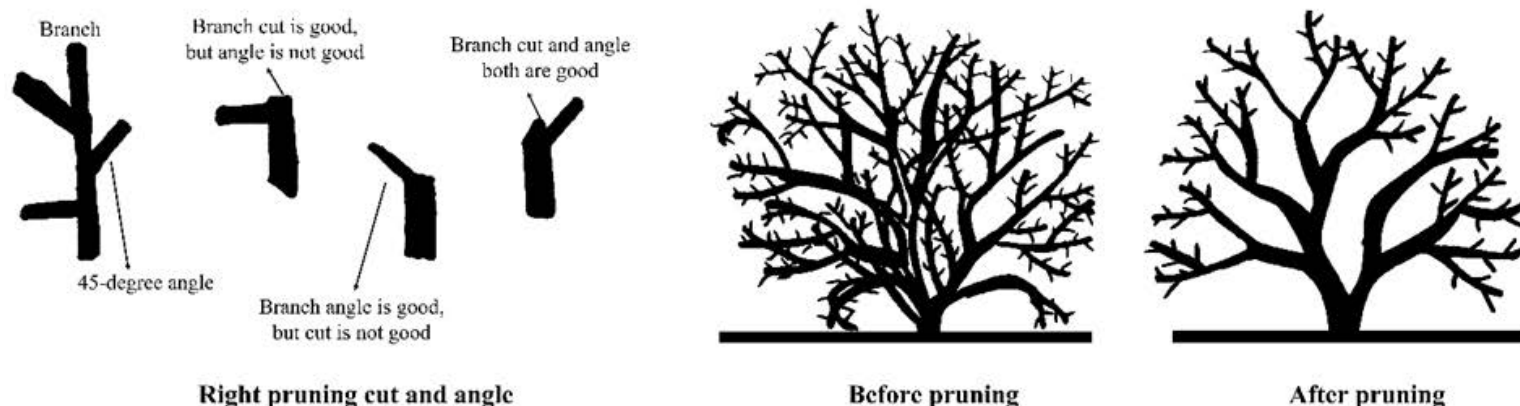


Figure 2. Demonstration of appropriate pruning angle, cut, and thinning effect on tree.

- Remove suckers and water sprouts (Figure 4B).
- Thin dense growth for proper air circulation and light penetration to improve tree health.
- In young fruit-bearing trees, never prune more than 10% of the biomass. Pruning should be only on the 4D branches and on sucker branches.
- Until the trees start to produce fruit, pruning should be avoided or intended only to form the tree (i.e., select the 2nd or 3rd main-scaffold branches that will sustain productive branches as the tree enters bearing age).

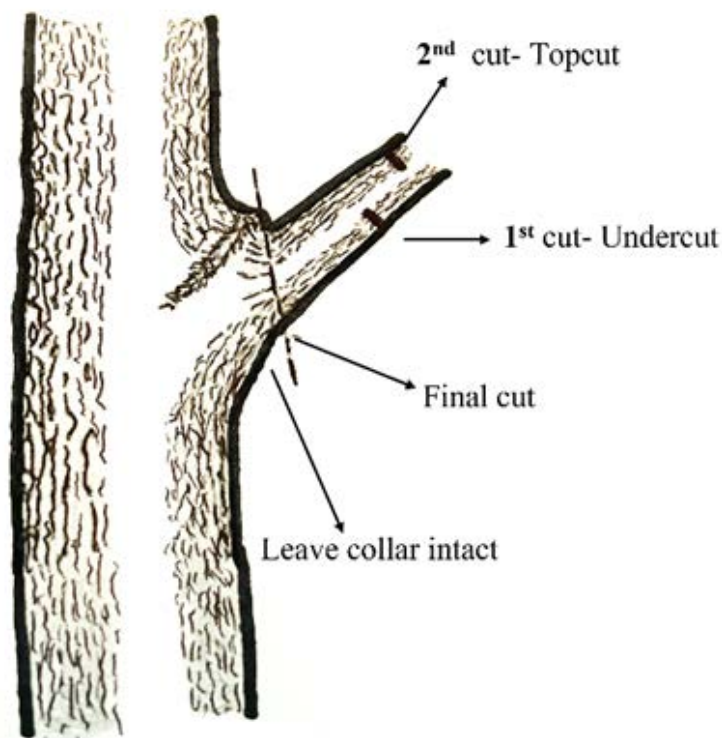


Figure 3. Demonstration of three-cut pruning in citrus.

Types of pruning

There are four basic types of pruning i.e., topping, suckering, skirting, and hedging. Every type of pruning has different growth responses and specific uses.

Topping: Topping is pruning the large upright branches of the young plants or trees, and sometimes is done to reduce the height of the tree. Topping is generally done to help the plant to reallocate the growth hormones from the main stem to the side branches. It promotes the lateral branches to maintain proper structure and canopy (Figure 4A).

Suckering: Suckers are robust vertical growth generally from the tree root system or below the graft union that diverts the nutrients from the main stem/plant, take the plant's energy, and slow its growth. It mostly occurs in response to different kinds of stress or any injury and should be removed for healthy growth (Figure 4B). Suckers may also emerge above the graft union and in scaffold branches. These are recommended to be pruned as well.

Skirting: Skirting is the removal of branches that hang down to the ground. Skirting helps to avoid contact with pests and disease, and limits plant growth. It also creates hindrances in weeding and other cultural practices. Therefore, skirting is important to protect plants from these obstacles and should usually be 60–75 cm above the ground (Figure 4C).

Hedging: Hedging involves cutting back the side of the tree to ease the crowding between the rows to allow access for equipment. Hedging can cause extreme vegetative growth resulting in a high reduction in yield. Hedging is usually done at a vertical angle of 10–15 degrees and titled toward the top rather than at the bottom. Remember, hedging helps to maintain yield, not increase the yield. Therefore, hedging should be started before canopy crowding becomes a problem (Figure 4D).



Figure 4. Different types of pruning (A) topping (B) suckering (C) skirting and (D) hedging

Rootstock Influence on Cold-Hardiness in Sugar Belle®



UNIVERSITY OF GEORGIA
EXTENSION

By: Jake Price, UGA Citrus Extension Agent

Now that the dust has somewhat settled and the Sugar Belles have put on the first flush of foliage (Figure 1) after being mostly defoliated, it is apparent that there are freeze damage differences between the trees on four different rootstocks. The trees are snugly located between windbreaks to the west and north and are protected by four rows of trees to the east. All 20 trees have rebounded after having no freeze protection, but there is a difference in wood damage and bark splitting. The Sugar Belle® row consists of 20 trees on 4 rootstocks with 5 repetitions (Figure 2).

The rootstocks are US-897, US-942, Rubidoux, and US-852. I have pruned out the dead wood and measured the diameter of the largest limb removed from each tree. Trees on US-852 had the largest diameter limbs removed and Rubidoux had the smallest limbs removed. I also estimated the percentage of canopy that was lost. US-852 lost the most canopy while



Figure 1. Sugar Belle® on March 15, 2023 after the freeze.

trees on Rubidoux lost the least canopy. I also recorded the percentage of trees with bark splits (Figure 3) due to the freeze on the trunks and major limbs. Sixty percent (3 of 5) trees on 852 had bark split on the trunk and 100% (5 of 5) had bark split on the major limbs. Rubidoux had no bark splits on the trunk or limbs. From these results, it would appear that Rubidoux does increase the cold-hardiness of Sugar Belle® trees more than the other rootstocks. US-942 would be second best, US-897 next, and US-852 had the most damage. The rootstock, US-852 is a hybrid between a large flowered *Poncirus trifoliata* and a Changsha. That combination would make one think this rootstock would increase cold-hardiness and be a good rootstock for Georgia but that was not the case in this situation.

The results in the tables at the end of the article, show the three highest yielding trees, US-942, Cleopatra, and US-852 retained less foliage and the lowest yielding tree, Rubidoux, had the highest foliage retained along with US-812. One thing to note is that the Owari satsumas on Rubidoux were planted two years afterwards and have never caught up in growth but we know Rubidoux is a good rootstock for satsumas.

US-852 is a rarely used rootstock because about 50% of the seed is not true to type, meaning about half of the seeds are not clones of the parent. In most other rootstocks, over 90% of the seeds are true to type. This Sugar Belle® row at our Valdosta research plot was planted in 2018 and is a small sample size, but this information may be helpful to growers wanting to plant Sugar Belle® and trying to decide on a rootstock. The table below shows the data discussed above. There is a chance more limbs could die and alter this data, but as of April 10 this is what we know.

| Rootstock | Bark Split on Trunk % of trees | Bark Split on Limbs % of trees | Diameter of Largest Dead Limb in inches | % of canopy lost |
|-----------|--------------------------------------|--------------------------------------|---|------------------------|
| Rubidoux | 0 | 0 | .28 | 9 |
| US-942 | 0 | 40 | .55 | 11 |
| US-897 | 20 | 80 | 1.06 | 24 |
| US-852 | 60 | 100 | 1.6 | 29 |

Table 1. Sugar Belle x Rootstock ratings.



Figure 2. Sugar Belle row with 20 trees on 4 different rootstocks taken June 27, 2022.



Figure 3. Bark splits on the trunk and major limb of a Sugar Belle on US-852 rootstock.

To Brand or Not to Brand

By: Karen Nardoza, Moxxy Marketing

Whether supplying citrus or other fruits and vegetables, growers and packers have the choice to brand their products, sell them as bulk commodity, or both.

What is a brand?

The word “brand” can be confusing. Besides being valuable intellectual property comprised of a unique tradename, logo, color palate, fonts, and other graphic design imagery, a brand is a marketing tool that helps your customers, employees and other stakeholders identify and remember your products or business.

The logo and other graphics are also the visual representation, or brand identity, of the qualities for which your company and products are known. A brand provides a memorable way for your stakeholders to differentiate your products from your competitors.

Should you create a brand?

Branded products can command higher prices at retail, especially when consumers have good experiences with your products. Even companies selling fruit as commodities can increase sales when they are recognized (aka branded) for providing consistent quality, service, and value. Whether for product or company, creating a brand that can command premium prices and margins requires investment.

A few branding considerations...

Business Goals

Will having a strong, unique brand help achieve better competitive positioning, margins, and growth? Would developing a brand increase the value of your business to future generations or potential investors/buyers? How do these considerations factor into your short- and long-term goals?

Sales Channels

Do your customers and potential customers demonstrate a preference for branded products, private label, or commodity fruits and vegetables? Are you selling through to foodservice buyers, wholesalers, distributors, retailers, or direct-to-consumers? Would having a brand aid in telling your story and differentiating your company from competitors? Does it make sense from an ROI perspective to invest in developing, marketing, and protecting your brand?

Competitive Environment

How do your operation and products compare to your competitors? Is it typical for your competitors to sell branded products, or is a majority bulk commodity? Are existing brands well designed with solid reputations and customer relationships, or is the bar set low? Is there a gap or opportunity in the marketplace for another branded product that could solve a problem or add value for your customers?

Upfront and Ongoing Costs

You don't need a Wonderful Company-sized budget to develop a brand for your products. While you can find a freelance or offshore resource to design a logo for just a few hundred dollars, we don't recommend it. There are too many risks around infringing on existing trademarks, and wasting money on resources who don't understand your sales channels or don't know how to design for reproduction on bags, stickers and cartons.

You should plan for an initial budget of \$6,000 - \$12,000 depending on if you need a name, logo, tagline, and other assets developed. Plus, you should have your lawyer assess the risk and give an opinion on the viability of the new brand, then submit it to the US Patent & Trademark Office to be protected, all of which add costs.

Packaging design, sales and merchandising materials, and other marketing expenses will also be needed to successfully take your brand to market.

The investment to maintain and grow a brand can take companies by surprise. Consumer-facing brands require nurturing and support. If you want your company to be known as a premium brand, you might have to increase customer service and quality control. You'll also need to promote the brand you have created to maximize its value and potential.





COLD HARDY CITRUS ASSOCIATION CORNER

Spring 2023 in the Cold Hardy Citrus region has been a very challenging time for all growers. We've seen a lot of leaf loss and dead wood from the Christmas 2022 freeze. Many growers I spoke with experienced a bloom in mid-February, about 3-4 weeks earlier than we have seen in past years. Then, around March 20th, we had two nights of freezing temperatures during leaf bloom and fruit set. Although, we were glad to see the bloom and fruit set after the freeze, just not the freezing temperatures. The labor cost to remove excess dead wood from surviving groves has been a burden on us.



Mark Clikas, CHCA President

I would encourage all of our members to contact your local USDA Farm Service Agency (FSA) office to sign up for the Noninsured Crop Disaster Assistance Program (NAP). It would benefit growers to be part of the program. It would also be beneficial for growers in the cold hardy region to share yield and loss data with the USDA to generate the county historical data kept by USDA for future programs and assistance. Regardless of the grove age, we need growers to report to the USDA, so in the future we can compare yields year to year.

I would like to ask all members to get involved with the Cold Hardy Citrus Association in any way possible. Our association was founded to help growers improve their production and marketing of citrus grown in the region. Our officers are Buster Corley, Vice-President and Treasurer and Kyli Lamar, Secretary. Please feel free to reach out to any of us or feel free to email us at coldhardycitrus@gmail.com

Mark Clikas
President
Cold Hardy Citrus Association
850-718-6695
markclikas@gmail.com



Upcoming Grower Meetings

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Emerging Farmers Symposium - May 3 & 4

8:30AM - 5:00 PM EST

UF/IFAS NFREC-Quincy

[Click Here for More Information and To Register](#)

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FSPCA Preventive Controls for Human Food Training (PCQI)

June 6-8th - Lake Alfred

[Click Here For More Information and To Register](#)

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North Florida Citrus Production Workshop - September 7th

Perry, FL

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Cold Hardy Citrus Field Day - October 26th

Quincy, FL