**UF/IFAS EXTENSION** 

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# COLD HARDY CITRUS CONNECTION





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COLD HARDY CITRUS ASSOCIATION CORNER Harvest season is almost upon us and while production will be down in the cold hardy region due to last year's freeze event, we're still hopeful for a successful and safe harvest season. In this issue, we have information on pruning young citrus, an update from UGA on freeze damage assessments of non-satsuma varieties, and information on packaging for retail success. The 2023-2024 Florida Citrus Production Guides are now available, and copies will be available at the <u>Cold Hardy Citrus Field Day</u> in Quincy on October 26th! If we can help in any way, please, do not hesitate to reach out!



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# Pruning and Training of Young Citrus Trees

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Pruning is an important aspect of plant care and maintenance in citrus production. Proper manual pruning is important to encourage fruiting, maintain tree health, and control size and accessibility for harvesting high quality fruit for fresh market. In citrus, canopy management is critical and involves two main components, i.e., selective pruning, which refers to the right time of pruning in their phenological cycle, and the management of resulted vegetative regrowth, which refers to the thinning out of excessive vegetative growth comes after pruning. Canopy management is a valuable method to induce precocity and maintain optimum fruit size and quality with high production. Better canopy management facilitates other cultural operations such as fertigation, irrigation, pesticide application, weed management, and inter-row access, etc. This article aims to provide growers a practical knowledge on managing trees for maximum production with high fruit quality. Here's a step-by-step guide on how to effectively prune and train young citrus trees for better canopy development. Figure 1 shows a clear view of before and after pruning in a newly planted citrus tree to encourage tree architecture development.



Figure 1. Demonstration view of before and after pruning of young citrus plant.

## **1. Initial Pruning to Improve Structure**

Remove any dead, damaged, or diseased branches. This will ensure that the tree allocates its energy to healthy growth. Trim the prominent central leader (the main upright stem) slightly (about 10 cm from the top and at least 45 cm from graft union) to encourage branching but avoid heavy pruning at this stage (Figure 2). Avoid removing more than 25% of a young tree's leaf surface at a given time and allow 2-4 months for recovery after aggressive pruning. Prune to shape young trees, but don't cut back the leader. Remove crossing branches and branches that grow back towards the tree's center. Removing suckers and water sprouts is particularly important when trees are young because they slow down the growth of grafted wood.



**Figure 2.** New growth showing branching after the initial pruning cut upon tree planting.

# **2. Scaffold Branch Selection**

Scaffold branches are the primary lateral branches that form the tree's framework. Aim for 3-5 scaffold branches evenly spaced around the trunk. Choose scaffold branches with wide crotch angles (45-60 degrees) for strength and stability. Avoid branches with narrow angles, as they may be weak and prone to splitting. Use stakes or training wires to gently guide the growth of scaffold branches into a balanced and open structure. Prune away any competing branches or shoots too close to the scaffold branches or grow in undesirable directions. Maintain a central leader but avoid excessive vertical growth by periodically pruning.

## 3. Seasonal Pruning for Canopy Development and Good Quality Fruit Production

Encourage an open canopy by removing inward-growing or crossing branches that create blocking. Thin-out excess growth allows sunlight and air circulation throughout the canopy, promoting better fruit development and reducing disease risk. Prune water sprouts (vertical shoots) and suckers (shoots emerging from the base) regularly. As the tree matures, thin out excess fruit to prevent overbearing. This will help ensure that the remaining fruit develops to a good size with better quality. Prune away low-hanging branches that may touch the ground or interfere with maintenance and harvesting. **UF/IFAS EXTENSION** 

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Schedule regular pruning sessions during the dormant season, typically in late winter or early spring, before new growth begins. Avoid pruning during periods of active growth, as this can stress the tree. Consider using stakes, trellises, or training wires to support the young tree's growth and shape it according to your desired canopy structure.

As the tree gets older (15 years or older) and branches get exhausted, a rejuvenation pruning can be performed to ensure new vigorous growth (Figure 3). Then, new productive branches can be selected.



**Figure 3.** Detail of a rejuvenation pruning practice in a high quality Navel orchard in Valencia Spain. (A) shows the heavy sprouting after pruning, and (B) shows the productive branch selection.

# **Pruning Recommendations for Better Canopy Management**

• Use sharp and clean pruning tools to make clean cuts. Clean and disinfect tools, ideally after pruning each tree. At least between rows. For this, use a sterilization solution of 3% sodium hypochlorite (bleach).

• Pruning wounds on young trees heal more quickly, so don't be afraid to make necessary cuts to shape the tree properly.

• Begin by removing any dead, damaged, or diseased branches. This prevents the spread of diseases and allows the tree to allocate energy to healthy growth.

• Always prune just above a healthy bud or lateral branch junction to encourage new growth in the desired direction.

• Identify and remove overcrowded, weak, or inward-growing branches. This opens the canopy to improve air circulation and sunlight penetration.

• Avoid over-pruning; young citrus trees need their leaves for photosynthesis and energy production. Do not prune more than 10% of the canopy in the first 3-4 years.

• If you're unsure about pruning techniques for a specific fruit tree or have unique conditions, consider consulting with your local extension agent or horticulturist for tailored advice.

# Cold Hardy Citrus Survey of Non-Satsuma Varieties



By: Jake Price, UGA Citrus Extension Agent

In late December of 2022, Georgia experienced a major, long term freeze event. During this extended freeze all Georgia citrus was exposed to very low freezing temperatures and long durations below freezing. The table below (Fig. 1) shows low temperature data from the University of Georgia weather stations (<u>www.georgiaweather.net</u>), in four counties from December 23–28. The entire citrus growing region experienced long term, hard freezes.

Date	Brooks County	Dougherty County	Crisp County	Bullock County
12/23	25	22	21	22
12/24	18	18	16	15
12/25	22	20	19	22
12/26	20	19	18	22
12/27	26	24	24	25
12/28	27	24	26	27

Fig. 1. The temperatures show the low temperatures recorded by UGA weather stations in four citrus growing counties

From March 3, 2023 to April 13, 2023, fifteen Extension Agents participated in a simple survey to rate non-satsuma citrus plantings that were planted in 2020 and before. Observations of satsumas after the freeze clearly showed they were the most cold-hardy variety so the focus was on non-satsuma varieties. The goal of the survey was to evaluate how established non-satsuma citrus varieties tolerated extreme freezing temperatures in order to determine the varieties most suitable to recommend to growers. Newly planted trees are much more susceptible to freezes so trees that have survived at least two winters were chosen for the survey as these trees would be well established.



loss of 40%.

Agents selected 10 consecutive non-satsuma trees (sometimes 5) in a field and estimated the percent of canopy loss from each tree. February was unusually warm and trees put on a flush of leaves allowing agents to see which limbs were dead (Fig. 2).

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This allowed agents to estimate the percentage of canopy loss in each tree. Agents then gave an overall visual assessment of each tree from zero to five with zero being dead and five having no visible freeze damage (Fig. 3). In some instances, trees put on a flush of growth with little noticeable limb loss but the growth flush was minimal making the trees look unhealthy. The 0-5 rating captured weaker looking trees.



Fig. 3. Visual rating assessment parameters.

Agents also recorded if each tree had developed freeze cracks (Fig. 4) in the bark or on the branches or trunk with a yes or no.

In several instances trees rated were in the same field. If trees were on different rootstocks or planted a different year they were rated separately. For example, if Tango trees were in the same field but on different rootstocks that would be considered two different ratings although they were in the same field.



Fig. 4. Freeze crack on the trunk of a Tango tree.

There were many variables in this survey and the results simply show the average of how extension agents rated each variety as of early spring of 2023. Follow up ratings were not possible due to dead wood being pruned out, and in some cases entire trees being removed. It is likely that many of these trees continued to decline months later. Ratings from all the agents were combined for each variety in an Excel spreadsheet and averaged to get the results in the chart below, (Fig. 5). The order of the ratings was based on the percentage of canopy loss going from least to most. According to the ratings, the Sugar Belle mandarin had the lowest percentage of canopy loss and the highest visual assessment indicating this variety tolerated the freezes the best. Tango mandarin and navels were similar to each other in canopy loss and visual assessment and were behind Sugar Belle in cold tolerance. Kishu mandarin and Grapefruit had very similar canopy loss and visual assessment. Shiranui had the highest percentage of canopy loss and the lowest visual assessment making them the least cold hardy of these six varieties. Other varieties were assessed but not included in Fig. 4 there were so few ratings taken. These include Hamlin, lemons, UF-950, blood oranges, bingo, gold nugget and UGA Sweetfrost.

Variety	# of Ratings Taken for Each Variety	Total # of Trees Rated	% of Canopy Loss	Visual Assessment	% of Trees with Freeze Cracks
Sugar Belle	10	80	22	3.3	28
Tango	12	110	35	2.4	66
Navels	14	135	36	2.7	24
Kishu	9	85	51	2.1	20
Grapefruit	20	195	55	2.1	59
Shiranui	11	110	60	1.7	10

**Fig. 5.** The varieties are ranked based on the percent (%) canopy loss with Sugar Belle losing the least and Shiranui losing the most canopy.

These results represent in the field ratings from 15 counties and sites in southeastern Georgia, southwestern Georgia, and northern Florida and may be helpful when choosing varieties to diversify our citrus industry. With so many variables and different locations rated it is difficult to draw firm conclusions on cold-hardiness and more work needs to be done. The percentage of trees with freeze cracks did not corelate with canopy loss. Many dead trees or severely damaged trees were observed with no freeze cracks indicating trees likely died before forming freeze cracks. Freeze cracks may not be best indicator of cold hardiness although they can contribute to future limb loss or even tree death if they are on the trunk. Rootstocks have an influence on cold hardiness, but there were too many variety/rootstock combinations to make meaningful conclusions with this survey. Trees with heavy fruit loads seemed to suffer more freeze damage than trees with average or light fruit loads so removing fruit as soon as possible will increase cold hardiness. In the future combining the most cold-hardy citrus varieties to the rootstocks that best increase cold-hardiness will give trees maximum cold protection. Trees that were less cold hardy in this survey may still be profitable as they have survived many prior winters and have been producing fruit. From observations, trees from well managed sites rated better than trees from neglected sites. To best assess cold hardiness between varieties in the field, multiple varieties need to be planted in the same location at the same time, on the same rootstock, have the same management, and have multiple repetitions.

# **Packaging for Retail Success**

By: Karen Nardozza, President & CEO, Moxxy Marketing

What's outside sells what's inside. Your packaging is as important as what's on the inside; strategic packaging supports a successful experience for you, your retailers, and your consumers. Hit the high points with the three "Ps"—a clever way to remember the most important goals of your food and beverage packaging.

It doesn't matter if you're selling mandarins or grapefruit, your packaging goals remain the same—promote, protect, and preserve.

## <u>1. Promote.</u>

You only get one chance to make a first impression, so make it a good one. According to research done by Retail Minded, you have a mere seven seconds to convince a consumer to choose you over a competitor.

Getting that first buy opens the door to repeat purchases and brand loyalty, so your packaging should both stand out and be memorable. You want retailers and consumers to recognize and remember—your brand, your product, your value. Your products should confidently appear shoulder-to-shoulder with category competitors, yet stand out as unique, and compel shoppers to put it in their carts. Your packaging must be aesthetically appealing, on-brand, and eye-catching. Use your "billboard on the shelf" to highlight reasons for consumers to try your products and provide usage tips that make consumers' lives easier and better. Go the extra mile and extend your brand conversations with promotion-minded messaging on package. Give your brand deeper reach and control over your story using marketing tools built into your packaging. Educate, connect with, and delight your market using tools such as QR codes and links to landing pages for access to product tips, recipes, and your social media channels. These are effective, strategic add-ons to expand relationshipbuilding opportunities with retailers and consumers.

## 2. Protect.

Every package—from the largest shipping carton to the smallest candy wrapper provides an important shield to protect your products from start to finish. This protection must survive the journey from harvest and/or creation to the moment a consumer opens it to enjoy your product.

You also need to protect your company. Make sure your packaging meets the packaging regulations of the country(ies) where you sell your products to minimize potential recalls, legal action and delays. Most food manufacturers and importers are required to include specific nutritional labeling on their product packaging and often have formatting specifics on font size, weight, and placement. If your packaging makes nutrient content or health claims, there are additional regulations there. All of these regulations can change so it's critical to verify if your products will be impacted before packaging production runs. Moxxy stays abreast of packaging regulations specific for food and beverages and will keep your packaging up-to-date and in compliance.

## 3. Preserve.

Maintaining product freshness and/or creating an optimal environment to encourage ripening—often within a determined time—is the third "P" in the packaging scenario. For fresh and perishable food items, this is especially important. Luckily, there are a myriad of packaging materials and packing options to assist in the preservation of freshness or and delay or accelerate maturation. Vacuum sealing, silicon packets, ethylene absorbent fiberboard, gas permeable membranes, freshness sachets, there's a material or method available (and new options emerging) to support your specific products' preservation needs.

Moxxy partners with several packaging companies to provide options for the unique array of food and beverage product packaging needs. We know the printing and production process, designing attractive, printer-friendly packaging. We provide accurate and easily produced files, keeping your business on schedule (helping you stay on budget).

Get these three Ps right and your packaging will serve you perfectly.

Need help getting your packaging aligned with the three "Ps"? Consider a packaging audit to gain an informed view of your brand as it lives in the retail marketplace.

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# COLD HARDY CITRUS ASSOCIATION CORNER

Our Cold Hardy Citrus region has battled mother nature again with Hurricane Idalia. I was able to visit growers in Taylor and Madison County, Florida the days following the storm. There was a lot of damage to structures, but trees in various groves had moderate to little damage at the time. Hopefully, the fruit that withstood hurricane wind and rains will remain on the tree for harvest. Best of luck to the growers affected by this recent hurricane. Our thoughts are with you.



The reports that I am hearing about the volume of fresh fruit in our region is probably better than we all originally estimated to be 10–20%. We are hoping for the best for every grower in our Cold Hardy Citrus region.

The Cold Hardy Citrus Association's marketing grant from 2020 has been closed. Amy, our grant administrator has worked hard this year to get the marketing grant funds reimbursed to our association. We are still waiting to hear back from the Florida Department of Agriculture on the new marketing grant that we applied for, but we hope to have word by the end of January.

Thank you, to all members of CHCA that have paid their annual dues. I look forward to visiting with our membership at the Cold Hardy Citrus Field Day at the UF/IFAS North Florida REC on October 26th in Quincy, FL. If you have any questions or need more information, please feel free to reach out to a board member or email us at <u>coldhardycitrus@gmail.com</u>

We are always open to suggestions on how to improve our commodity association to best represent our growers.

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# **Upcoming Grower Meetings**

Cold Hardy Citrus Field Day - October 26th UF/IFAS NFREC, Quincy, FL For more information or to register, please visit: <u>Cold Hardy</u> <u>Citrus Field Day</u>

Southeastern Fruit & Vegetable Conference - January 11-14, 2024

Savannah, GA

For more information or to register, please visit: <u>SE Regional</u> <u>Fruit & Vegetable Conference</u>

Produce Safety Alliance Grower Training - January 17, 2024 Gadsden County Extension Office, Quincy, FL For more information or to register, please visit: <u>PSA Grower</u> <u>Training Quincy, FL</u>

> **2024 Citrus Health Forum - February 22, 2024** UF/IFAS NFREC, Quincy, FL

**2024 Georgia Citrus Conference - February 27, 2024** Tifton, GA