

Preparing Sub-Tropicals for Winter.

Hurricanes! Drought! & Pests! Oh My!
Florida can also get a bad freeze.

1766, 1835, 1894-95, 1899, 1917, 1934, 1940, 1957,
1962, 1977, 1981, 1983, 1985, 1989...

Presentation on 2017.11.16 by
Larry Zimmerman, President of the
Treasure Coast Rare Fruit Club
Port St. Lucie Botanical Garden
www.TreasureCoastRareFruitClub.com

Types of Freezes

- **Radiational:** little or no wind with no cloud cover results in a rapid loss of heat from the ground.
- **Advection:** windy conditions along with a large dry air mass rapidly moving into an area. The sudden and rapid temperature drop is especially hard on sensitive plants.

Cold basics

- Cloud cover holds in heat.
- A little wind keeps cold from settling.
- A strong wind can be deadly.
- Sudden cold is more damaging than a gradual temperature change that gives the trees a chance to acclimate.

Basic cold protection

location, location, location

- Know your micro climates. Note where there is protection from strong winds, or create that protection with fences or plantings.

Basic cold protection

location, location, location

- The south and southeast sides of a home are typically the most warm since they absorb the sun's heat during the day and release it at night.
- The south edge of larger trees still gets sun but can offer protection from radiation heat loss. The base of a large tree is a good spot for a shade-loving sensitive plant like Ceriman (*Monstera deliciosa*)

Basic cold protection

location, location, location

- Espalier trees near south walls. Be sure the tree is not an aggressive grower or has aggressive roots. i.e. trees that are easily dwarfed.
- Bodies of water buffer temperature changes. The ocean or Indian River lagoon, rivers, lakes, ponds or pools, can all protect your plants.

Basic cold protection

Strategies

- Water the ground well before cold weather hits. The wet ground will absorb heat from the sun and slowly release it at night.
- Keep your trees healthy. Regular water, pruning and fertilizer can keep your trees in top condition.
- Foliar feeding late fall and early winter can give your trees enough of a boost that they can withstand a few degrees more cold.

Basic cold protection

other strategies

- Stop fertilizing in the fall to discourage new growth. Plants are most vulnerable to cold damage during growth flushes. New growth should harden off before cold sets in.
- Don't start fertilizing again until mid March, (a little earlier is ok only if the forecast is obviously not for more cold.)

Basic cold protection

what to plant in the Treasure Coast

- Not true tropicals. (Durian, Mangosteen, Breadfruit). Leave them to those with greenhouses in Homestead. Visit the Fruit & Spice Park or Fairchild Garden's greenhouse while you dream of the tropics.
- Sensitive trees that may grow in the Treasure Coast: if you live further south or the closer to water, you may be able to grow Mamey Sapote, perhaps Cashew in a greenhouse.

Basic cold protection

what to plant in the Treasure Coast

- You may have success for a few years with Soursop (Guanabana), Cashew, Mamey, Abiu, but expect setbacks during extremes.
- For more worry-free growing, choose less sensitive trees like blueberry, figs, loquat, lychee, jaboticaba, jujube, pomegranate, persimmon, or white sapote.

Basic cold protection

what to plant in the Treasure Coast

- Avocado varieties that are cold tolerant here are Brogdon, Day, Florida Haas, Joey, Winter Mexican, Mexicola.
- More sensitive avocados but still ok: Choquette, Hall, Lula, Marcus Pumpkin, Monroe.

Basic cold protection

what to plant in the Treasure Coast

- Temperate trees that have been bred to grow in the sub-tropics can be a fail-safe if we have especially cold weather.
- These include low-chill peaches, nectarines, plums, pears, apples.

Basic cold protection

- Young trees are especially sensitive to cold.
- Seedling trees are usually more cold tolerant.
- Keep sensitive plants in pots. Rather than setting them out in the yard, keep them in pots, stepping the size of the pot up eventually to 25 gallons, maybe more. That way you can either move them to a safer location, or tip the tree over and cover it with blankets. Keep the pot on a stepping stone.

Even colder

- For more severe freezes, coverings and supplemental heat can be used.
- The point is to keep the graft, trunk and a few major branches alive. If you can do that, the tree can re-grow.

Even colder

- Standard C-7 or C-9 incandescent Christmas lights are a great source of heat that does not harm the plants or create a fire hazard. Unfortunately, these are being phased out in favor of LED lights.
- While they are still available, take advantage of after-Christmas sales to get a good price.

Even colder

- Do not wrap strings of lights around branches. Instead, pull out a length that will loop around the branch and use the light clip to attach a light to the wire. It is much easier to remove that loop than to unwrap a string with lamps on it.
- If Christmas lights are not available, you could use an outdoor fixture with a flood light. Be sure to follow label instructions so as to not cause a fire.
- Be careful with extension cords, and lights, especially if there might be rain.

Even colder

- Trees can be covered with blankets, sheets, burlap, frost cloth.
- Do not use plastic except as a last resort. It tends to increase cold damage, and if the sun comes out it can easily cook a plastic covered tree.
- Try to avoid the cover touching the leaves. Moisture tends to condense at contact points and freeze.

Even colder

- Create a tent with poles, or plant sensitive trees alongside a 4x4 post that can be used to support a cover as required.

Even colder

- When trees are so large that covering is no longer practical, lights may be used in combination with blankets or cardboard.
- Wrap the trunk with blankets or insulation, or mound up leaves.
- Even if foliage or small limbs are damaged, the tree itself should recover.
- Be sure to protect the graft area.

Even colder

- Group your most sensitive trees together and use a patio heater in the middle.
- Build a frame and stretch a temporary greenhouse over it. It could be around an individual tree, or could be a place where you move potted plants. Use a heat lamp to provide heat if necessary.
- Consider building a regular greenhouse depending on your interest, budget and commitment. Or use a Harbor Freight portable garage that has a plastic cover.

After the Freeze

- A typical freeze occurs early in the morning. When the temperatures rise above 32°, plants should be uncovered.
- Cold can dehydrate the tree and soil so give your plants a good soaking the next day. Keep an eye on your plants for the next week.
- Damage may not be visible for a few days or weeks.

After the Freeze

- Never prune until the last chance of frost has past, no matter how ugly it looks.
- The dead leaves will protect the tree from the next cold snap.
- Some branches that look damaged may recover.
- Also, pruning may initiate a premature growth flush that could be damaged by another cold event.

Cold Sensitivity of Tropical and Sub Tropical fruits in Florida

Fruit	Scientific name	*Average cold tolerance of established trees (in Fahrenheit)
Avocado	<i>Persea Americana</i>	25-30
Ambarella (Dwarf)	<i>Spondias dulcis</i>	28
Atemoya	<i>Annona cherimola x squamosa</i>	28
Banana	<i>Musa spp.</i>	29
Barbados cherry	<i>Malpighia puniceifolia</i>	29
Black Sapote	<i>Diospyros digyna</i>	29
Blackberry	<i>Robus argatus</i>	20
Blackberry jam fruit	<i>Randia formosa</i>	29
Blueberry**	<i>Vaccinium corymbosum</i>	(blossom) 28
Canistel	<i>Pouteria campechiana</i>	28
Carambola	<i>Averrhoa carambola</i>	28
Ceriman	<i>Monstera deliciosa</i>	31
Cherry of the Rio Grande	<i>Eugenia aggregata</i>	25
Fig**	<i>Ficus carica</i>	15
Green Sapote	<i>Pouteria viridis</i>	27
Grumichama	<i>Eugenia braziliensis</i>	28
Guava	<i>Psidium guajava</i>	27
Jaboticaba	<i>Myrciaria cauliflora</i>	26
Jackfruit	<i>Artocarpus heterophyllus</i>	29
Jujube**	<i>Ziziphus jujuba</i>	26
Longan	<i>Nephelium longana</i>	26
Loquat**	<i>Eriobotrya japonica</i>	22
Lychee	<i>Litchi chinensis</i>	28
Mamey Sapote	<i>Pouteria sapota</i>	29
Mango	<i>Mangifera indica</i>	28
Miracle fruit	<i>Synsepalum dulcificum</i>	29
Mombin	<i>Spondias purpurea</i>	28
Papaya	<i>Carica papaya</i>	30
Passion fruit	<i>Passiflora edulis</i>	30
Peanut butter fruit	<i>Bunchosia argenta</i>	30
Persimmon (Oriental)**	<i>Diospyros kaki L.</i>	15
Pineapple	<i>Ananas comosus</i>	29
Pitaya	<i>Hylocereus sp.</i>	28
Pitomba	<i>Eugenia luschnathiana</i>	28
Pomegranate**	<i>Punica granatum</i>	24
Rollinia	<i>Rollinia deliciosa</i>	29
Rose apple	<i>Syzygium jambos</i>	27
Sapodilla	<i>Manilkara zapota</i>	28
Strawberry tree	<i>Muntingia calabura</i>	28
Sugar apple	<i>Annona squamosa</i>	28
Tamarind	<i>Tamarindus indica</i>	28
White sapote**	<i>Casimiroa edulis</i>	25

*Average from 4 sources: (Florida's Best Fruiting Plants, IFAS, Florida Fruits, Pine Island Nursery)

** Subtropical or Temperate

Summary

- Two types of freezes—Advection, Radiational
- Planting location—south side of house is best.
- Nourish trees early Fall.
- Soak the ground under trees the day before.
- Cover plants / trees with—frost cloth, burlap, sheets or blankets. Large cardboard boxes (refrigerator) can be used for smaller trees.
- Wrap trunk (from ground to branches).
- On coldest nights, Christmas lights (C-9 or C-7) or other heat source.
- After the freeze—remove covers, watch for desiccation and hold off on pruning.
- In a consistently cold area consider less sensitive trees.