



Urban Harvest

Freeze Protection for Gulf Coast Gardens

By Angela Chandler

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The Gulf Coast is a gardener's paradise. We can grow something beautiful, something useful and something edible all year long. The major weather obstacles we face are heat and humidity in the summer, and cycles of frosts and freezes interspersed with mild, or even warm, spells in the winter. Let's talk about winter protection for our landscape.

First off, not all cold weather is cause for concern. Predictions below 40 degrees are where we have to start paying attention for some of our tropical fruits and ornamentals. Predictions at 35 and below are where we should pay attention for other tender plants.

Understanding frost – Surface frost can occur at temperatures slightly above freezing, but for our purpose we will keep it simple and use freezing - 32°F – as our baseline. A “light frost (freeze)” is defined as ambient temperatures between 28°F and 32°F. A “hard frost (freeze)” is defined as ambient temperatures below 28°F.

Know your plants – Not all plants require protection from the cold. Some actually require a period of chilling and will not perform as well if they are denied sufficient exposure. Research the cold tolerance window for the specific plants you are concerned about. Some very tender plants can be damaged by surface frost – the kind that appears at temperature slightly above freezing. Surface frost can “burn” leaves, tender tips, and flowers as well as leaving unsightly spots on succulent plants. If you know you have especially tender plants, you will need to consider tenting them if any danger of frost is suspected.

Maturity – Mature, well established plants will withstand more cold than newly planted or immature plants. Many tropical fruits will have a higher level of cold tolerance once they have reached maturity than they have in their juvenile stage. More protection should be provided during their first few years in your landscape.

Hardening Off – The timing of the cold event has a significant effect on cold tolerance. Plants that have been exposed to gradually cooling temperature through fall will have had a chance to harden off. They will take colder temperatures than the same plant that has not had the chance to harden off. If an early frost comes suddenly on the heels of warm weather, damage will occur at higher temperatures than those normally tolerated. This is why you may see damage some years and not others on the same plant.

Temperature & Duration – Look at the hourly predictions, not just the predicted low. We often experience the maximum low for a very short “dip” that occurs just before dawn. If the dips are short, such as just an hour or two, little damage may occur because there is no holding time in the tissues at or below 32°F. If the predicted low is expected to last longer than the pre-dawn dip, we should consider taking protective steps.

What protective steps should you take? These steps can be used separately or in combination. Combining methods accumulates layers of protection.

Water – The best thing you can do for your plants when a freeze is predicted is to make sure they are well-watered. Moist soils absorb more solar radiation than dry soils. They release this additional heat through the night; a process called re-radiation. This step alone can give your plants about 2 degrees of protection. Cold, dry winds accelerate evaporation rates and chill plants faster and harder. Well-watered plants can resist this evaporation. Note that nature often precedes a freeze with a period of rain. Wet “northers” are far less damaging than dry “northers”.

Covering (Tenting) – After watering deeply, the next thing to think about is covering. Frost cloth is best because it is specifically designed to do this job. You can buy frost cloth in various sizes and weights; from 1/2 oz. to 3 oz. I prefer 1.1/2 oz. because it gives approximately 7 degrees of protection at a decent price. It is heavy enough to protect sensitive plants, but light enough to handle and store easily. With a combination of a well-watered soil and frost cloth, you can expect about 9 - 10 degrees of protection. Frost cloth can be applied in multiple layers over very tender plants.

If you do not have frost cloth available, you can use old sheets, towels, blankets, cloth shower curtains, or cardboard boxes. You cannot predict the degrees of protection with these items, but they can do a lot of good. It isn't always the air temperature that is the culprit for damage; often it is the ice crystals that come with frost. The crystals rest on tender foliage or in the blooms and kill the tissues there. Frost cloth can prevent the crystals from resting on the surface of the plant. Please don't use plastic sheeting. It gives little to no protection.



It is better to “tent” plants than to “wrap” plants. Do not close the fabric up around the trunk or base of the plant. Drape it over the plant like a tent or a large skirt and anchor it to the ground with bricks, rocks, or milk jugs filled with water for weight. Heat that is stored in the ground will radiate up into the head of the plant or canopy of the tree or shrub.

Kelp-Seaweed Sprays – One of the best ways to get your entire

landscape through winter with as little damage as possible is to use a foliar spray of kelp or seaweed solution. The mechanism by which this works is that the cytokinins (a phytohormone) in the seaweed thicken the cell walls and promote cell division, toughening the surfaces. Use it at a rate of 1-tsp of concentrate to a gallon of tepid water. This can be used in a hose end sprayer or a brass siphon mixer (Hozon, Siphonex) to cover large beds or the entire landscape. This should be considered a "pre-conditioning" technique and should be done on a regular basis well before a freeze is expected. However, it is never too late to begin. Take advantage of our frequent winter warm spells to start this beneficial conditioning method.

General Temperature Windows

Although it is best to research the specific hardiness window for your plants, some general recommendations can be made for major plant groups.

- **Likely damaged by light frost:** Beans, cucumbers, eggplants, cantaloupe, New Zealand spinach, okra, peppers, pumpkins, summer squash, sweet corn, tomatoes, watermelon, amaranth, and winter squash
- **Can withstand light frost:** Artichokes, beets, carrots, cauliflower, celery, Chinese cabbage, endive, lettuce, parsnips, peas, Swiss chard, strawberries, escarole, arugula, bok choy, mache, and radicchio
- **Can withstand hard frost:** Broccoli, Brussels sprouts, cabbage, cilantro, collards, kale, kohlrabi, mustard, onions, parsley, peas, radishes, spinach, turnips, leeks, and sorrel
- **Tropicals** – protect below 40°F
- **Semi-Tropicals** – protect between 35°F and 40°F
- **Succulents** – frost tolerance varies widely, but many succulents will sustain some leaf damage during a frost even when the plant itself is undamaged. Cover to prevent spotting if surface frost is anticipated
- **Orchids** – Most of the commonly grown orchids will tolerate temperatures of approx. 55°F, but white and yellow Vandas and antelope-type Dendrobiums will drop leaves below 60°F. Cymbidiums can withstand 40°F, and actually need a period of chilling to set blooms. Cattleyas vary in their tolerance, check your cultivar with the supplier

Assessing the value of protection – Sometimes we have to assess the wisdom of protection. Not every plant can be saved during an extended freeze event. If a plant is commonly available, inexpensive or easily replaced it may not be worth your time and expense to protect it. Valuable landscape plants, heirlooms, family favorites and plants with sentimental value are generally where your time and expense should be applied.

Plan ahead – Try to have all of your protection materials in place before November 1. If you wait until a freeze has been predicted, you may find that your local nursery is sold out of frost cloth. I recommend regular foliar feeding throughout the year, but if you are only using it to increase cold tolerance, you should begin in September. Apply a kelp or seaweed solution every 2 – 3 weeks from September 1 through the first frost.

Late frosts and low chill fruits –

Temperate fruit trees do not normally require any winter protection. However, we are often faced with late winter frosts coming when these fruit trees are in full bloom. While the tree itself is not in danger from the low temperatures, the blooms are susceptible to surface frost. Whether or not to protect the tree depends on the stage of the blooms. Fully closed buds (green stage) will not be damaged until the temperatures drop to 20°F, at which approximately 10% of the buds would be killed. However, once the blooms are fully opened, 90% of the blossoms would be killed at 25°F. Damage begins to occur to fully open blossoms at 28°F.



The easiest way to protect your blooming fruit tree in the event of a killing frost is to drape a frost cloth over the canopy of the tree. Use clothespins to attach the cloth to the outermost branch tips or tie the cloth to the tips with pieces of package twine. Be sure to remove this cover as soon as the frost event has passed. Do not “wrap” the canopy.

This article was originally published on The Arbor Gate Blog. You can read more of Angela’s blogs at <http://arborgate.com/blog/author/angela-chandler/>. Angela can be reached at: www.thegardenacademy.com or www.facebook.com/thegardenacademy

Angela Chandler teaches several classes for Urban Harvest. For a complete class schedule and to find out more about community gardens, school gardens, farmers markets and gardening classes, visit www.urbanharvest.org.