# Cold Protection for Plants

**Floridians have a saying, if you don't like the weather here in paradise, wait 15 minutes and it will change.**
And the weather is indeed changing. Temperatures close to freezing along with scattered frost are near, with the lowest temperatures occurring near dawn. What does this mean for our landscapes? It means it's time to put into action our winter protection plans.

## Christmas lights

Trees can be protected by wrapping Christmas lights around the tree limbs and branches. The closer the lights are wrapped around the limbs and branches the better. Note: the small twinkle Christmas lights should not be used as they give off very little heat.

## Home Blanket

Use a blanket for protecting small to large plants during short freezes. Coverings placed over plants help to hold in radiant heat released from the soil and from the plants themselves. These coverings can be cloth sheets, blankets, several sheets of newspaper, paper grocery sacks, cardboard boxes or plastic. The thicker the plastic the better it will resist tearing in the wind. **Do not drape plastic directly on the plants because it conducts cold through to the leaves instead of insulating the leaves.** For overnight protection only most anything that traps the heat will do - just remember to remove it in the morning, especially plastic coverings. If several nights of freezing temperatures are expected and you want to leave the cover in place, you will need to be a little more choosy about the material used so the plants won't be damaged by the heat of the day. **Cover plants all the way to the ground**. On very cold nights, a safe heat source can be placed under the covering. For smaller areas, a low wattage incandescent light bulb (40 to 60 watts) can be used.

## Specially Made Frost Blankets

Purchase blankets designed for cold protection. One example is available in the Tampa Bay area (AgroFabric). AgroFabric comes in degrees of freeze protection from 4°F to 8°F+. I would suggest the PRO70 blanket-poviding 8°F+ of freeze protection. AgroFabric is available in many sizes and can be ordered from Prosource One, 4094 Paul Buchman Hwy, Plant City (813) 754-3882.

## Sprinkle with water

Plants can be protected during a freeze by sprinkling the plants with water. Sprinkling for cold protection helps keep leaf surface temperatures near 32°F (0°C) because sprinkling utilizes latent heat released when water changes from a liquid to a solid state. Sprinkling must begin as freezing temperatures are reached and continue until thawing is completed. Water must be evenly distributed and supplied in ample quantity to maintain a film of liquid water on the foliage surfaces. It is important to remember that ice build up may damage plants.

Sprinklers should be spaced so that, without a breeze, the water from each sprinkler reaches all adjacent sprinklers. If wider spacing is used, protection may not be adequate under windy or very cold conditions. If the wind speed is high (10 to 15 mph or greater), water application even with close sprinkler spacing may be spotty and erratic. Sprinkling with water during freezing temperatures acts as insulation, but if the sprinklers stop while it's still freezing your plants may not survive. **NOTE:** Watering during a freeze can be very damaging to the growth center of several palms - Phoenix, Brahea, Trithrinax and many other genera that prefer to have their heads in dry air during a freeze. If water enters the growth center, ice crystals forming around the growth bud may cause extensive damage and can result in the death of the palm. So, cover the spear with aluminum foil or a plastic to keep it dry or direct your sprinkler away from such a palm's crown.

## Soil Banks and Tree Wraps

Trees can be partially protected by soil banks or tree wraps. Soil banks and tree wraps are used to

protect only the tree trunks and are very evvective.. This provides a basis for growing a new top following removal of the existing freeze-killed top. However, soil banks require backbreaking labor to create and can be difficult to remove after 2 to 3 years because of the tree canopy and roots.

A wide variety of wrap materials is available; including bubble wrap, polyurethane, fiberglass, polyethylene and other synthetics. Most offer only a few degrees of protection. Improved wraps which incorporate a reservoir of heat-retaining liquid provide freeze protection comparable to that achieved with soil banks.

**Heaters**
Heat provided by orchard heaters can be quite effective in cold protection under most circumstances. However, increased costs of heaters, labor and fuel have made such supplemental heating uneconomical. In addition, you will need to stay up during a freezing night to keep a close watch on the operation of the heaters. This definitely is effective but limited to your tolerance for sleep deprivation.

**Mini-greenhouse**
A cardboard box, garbage can or a bucket work well as a mini-greenhouse for small plants. Wooden mini-greenhouses are the most elaborate and time-consuming, but offer the best and complete protection for the plant. Usually a frame is constructed around the plant and covered with a transparent plastic. Artificial heat is added, such as heating wires/pads, electrical or gas stoves or light bulbs. Be aware that any part of a leaf touching the plastic will get exposed to the outside temperatures and will most likely turn brown. If the winter sun starts to 'bake' too much add a door or window which can be shut during the night. **Note:** Unheated mini-greenhouses are not affective on very cold and windy nights.

**Shading**
Tree canopy covers can reduce cold injury caused by freezing temperatures. Plants in shaded locations usually go dormant earlier in the fall and remain dormant until later in the spring. Tree canopies elevate the minimum night temperatures under them by reducing radiant heat loss from the ground to the atmosphere. Shading from early morning sun may decrease bark splitting of some woody plants. Plants that thrive in light shade usually display less winter dehydration than plants in full sun. But plants requiring sunlight that are grown in shade will be unhealthy, sparsely foliated, and less tolerant of cold temperatures.

**Umbrellas**
Large patio shades can prevent a good deal of frost damage to plants if a cold clear night is expected. Close the umbrella during the day and open it at night to keep what little heat the ground has absorbed that day from radiating away.

**Mulching**
Don't underestimate the effectiveness of a good layer of mulch - about 3 to 6" thick. Most fine and tender feeder roots are close to the surface. In general, these roots are the most cold-tender part of the plant and will suffer the most damage if left unprotected. Mulch will help the soil retain some warmth for a short period. In addition, mulch will improve the looks of your landscape and add to the overall health of your plants. **Note:** Some plants, such as citrus trees, should not be heavily mulched near the trunk as foot rot may occur.

**Grow Plants in Pots**
Plants in pots are easily moved to warm locations during the winter or on cold nights. Placing plants under patio roofs or building overhangs can also provide protection. Warmth radiating up from the ground is trapped by overhead structures. Even placing plants under the canopy of a dense tree or shrub can offer some protection. Large potted plants can be laid down on the ground so the warmth radiating up from the ground will offer some protection from freezing temperatures.

**Leaves Cage**
For relatively small plants a fence cage is placed around the plant and filled with leaves, newspapers or other insulating material. In addition, manure can be used to temporarily increase the temperature.

**Site Selection**
The best method of frost/freeze protection is good site selection. Monitoring locations on your property for one winter may be effective in selecting the best sites for planting. Observing the flow of cold air and its possible buildup in low spots or behind cold air dams; such as fences, hedges and wooded areas, is the most effective, quick method of site selection. South facing walls provide a degree of protection. The warmth of the sun is stored in the masonry wall during the day, and

released at night. This can provide several additional degrees of warmth overnight.

**Foliage Spray AntiStress**
Spray plants with a foliage spray consisting of carbon chain polymers with an acrylic base. This spray is used to reduce the ravaging effects of weather related stress or the plant's exposure to hostile environmental growing conditions, such as: frost and freeze (4 to 6 degrees F of added protection from the freezing level of each plant species), excessive heat, drought conditions, drying winds (hot or cold.) and rapid temperature changes. It also reduces transplant shock and increases survival rates. For more information email info@AntiStress.com, call 281-481-1671 or view website http://www.antistress.com.

**Water Relations**
Watering landscape plants before a freeze can help protect plants. A well-watered soil will absorb more solar radiation than dry soil and will reradiate heat during the night. This practice elevates minimum night temperatures in the canopy of trees by as much as 2°F (1°C). Well-watered soil will only help during mild freezes and only for a few hours. However, prolonged saturated soil conditions damage the root systems of most plants.
**NOTE:** This technique is most efficient if the soil has poor drainage, such as lots of clay. For soils that drain very easily, such as sandy soil, the water will not stay in the upper region of the soil long enough to warm and radiate heat during the freeze-when it is needed.

**And Last**
If everything else fails – **MOVE SOUTH**.

**After a Freeze**
Do not wash frost off plants the morning after a freeze. This action raises the temperature too quickly and usually damages cell tissue. After a freeze don't assume your plants are dead. Wait to see if they put out new growth. The plant's water needs should be checked after a freeze. The foliage could be transpiring (losing water vapor) on a sunny day after a freeze. Soils or mediums with high soluble salts should not be allowed to dry because salts would be concentrated into a small volume of water and can burn plant roots. Plants may benefit from liquid food with a full compliment of minor elements. A 3-12-6 fertilizer is the best for regenerating and 7-9-5 fertilizer is best for growth.

**- Charles Novak**