

## KINGMAN IS GROWING! Column

### Protect Plants When Temperatures Drop

By *Charlee Ware*, Kingman Area Master Gardener

Fortunately for us, we had three extra weeks of warm fall weather. In most years, that 32-degree freeze mark hits Kingman closer to Halloween.

Kingman residents can expect *average* nighttime lows in the high twenties from now through February. Below freezing nights can continue into early May. Average means many nights colder and many nights warmer. The low last January at my home in west Kingman was 4-degrees.

To protect your plants adequately, you need know what plants you have, and to understand: our desert cold weather; how plants respond to cold; some methods to prevent severe frost damage; and what to do if a plant is frost damaged.

#### Understanding our Desert Cold Weather

Humidity slows temperature changes. Our dry desert air lacks humidity so rapidly cools as the sun sets. It is common to have a 20-to 35-degree difference between daily highs and nighttime lows. That is one of the benefits of living in the desert—cool summer nights, and warm winter days.

During the day, radiant energy from the sun warms the soil and other surfaces. As soon as the sun sets, this gathered heat begins to radiate back into the atmosphere. Our coldest temperatures therefore, normally occur near daybreak.

A cloud cover at night will absorb the earth's radiated heat and reflect it back, usually resulting in a milder overnight temperature. Warning signs for very cold nights are no clouds, still air, very bright stars, and a low early evening temperature. Cold storm winds, especially from the north and beginning after midnight, can bring in lower temperatures, and compound our nighttime heat loss.

### **Understanding the Temperature in your Yard.**

With the internet and news medias providing us with "five, seven and 10-day weather forecasts", we have the advantage of being able to plan ahead. Predictions change from day-to-day, but it certainly is better to know it might get down to 20-degrees in a few days, than finding it out at 10 pm. I remember my Dad, on many a spring night, setting the alarm for 4:00 am in order to check how low the temperature had dropped.

While the media can give us generalities about Kingman's weather, we also need to understand the microclimates in our own yards. It is a good idea to buy a couple of min/max thermometers and record the temperature readings in various places in your yard. You will most likely find distinct temperature zones. Block and rock walls help mediate temperature extremes, as will dense plant cover. Low areas and high areas, will be a few degrees different. You will also discover how the temperature in your yard compares to the local weather reports.

### **Understanding a Plant's Response to Cold.**

Your plants' species, age, water content, general health, and stage of growth determines their reaction to cold temperatures. Young, actively growing, flowering, and/or dehydrated plants tend to be most vulnerable to freezing temperatures. New growth on older plants, which were heavily pruned, and/or fertilized in late summer or fall, is also at risk.

Winter hardy plants need winter acclimation, which begins with the shortening autumn days. Second, plants need the lowering temperatures to result in full hardiness and acclimation. If a hard freeze occurs when there has been no prior cold weather to "harden off" the plant tissue, damage will be more extensive.

The faster the temperature drops, the lower the temperature, and the longer the temperature stays low, the greater the damage to plants. For example, a short 15 minutes at 15-degrees, may cause less plant damage than an hour at 20-degrees.

There are three periods each year when plants are at their biggest risk for heavy frost damage:

--in early fall, before plants acclimatize;

--or, during very cold temperatures after a week or two of warm winter weather, much like the low temperatures we experienced mid-January, 2007. Our temperatures had been close to average for weeks, and then suddenly dropped 15-20 degrees for several days.

--Plants can also experience heavy frost damage in late spring, after the warming weather causes new growth to begin, and fruit trees to bloom. While the trees are cold hardy, the new growth, blooms and tiny young fruit aren't.

### **Understanding Methods to Prevent Severe Frost Damage**

The best frost protection approach for the Kingman area is to grow only fruit trees and landscape plants that are hardy to 5- or 10-degrees. One of the unfortunate mistakes made by new gardeners to this area is to trust that all plants sold by stores here are suitable for growing here. Oops, that's not what we want to hear. Many of us have favorite plants that only survive in warmer climates. Here are some options to protect them.

The safest option is to move the plant indoors for the winter, either into the house or a greenhouse. A variance of this idea is to give them wheels—moved indoors (usually a garage) at night and outdoors on most days.

If, say, your plant is rated for 20-degrees, it is prudent to plant or transplant it to those warmer locations (microclimates) you discovered in your yard. Then watch the weather closely and take further measures when lower temperatures are predicted.

Once we choose our major plants intelligently, some simple winter maintenance will help to lessen frost damage.

--During late summer and fall, do not fertilize plants. Newer growth damages easily.

--During winter, continue to deep water your trees and shrubs monthly, and evergreens twice monthly. Hydrated plants survive better.

--Keep the surrounding area free from weeds, lawns, and organic mulches during the winter. They absorb less solar radiation than bare or gravel mulched soil, thus there is less heat to reradiate at night.

Then when a heavy freeze is expected, be prepared with a few actions to protect them further:

-- To cover frost susceptible plants, have available old or packing blankets; or heavy duty row covers. You may need to sew several together. Do not use plastic, nor landscape mesh. See sketch for correct way to cover. The cover must go to the ground, as you will be trapping the earth's heat under the blanket. Use several bricks or rocks to hold it down. All covers must be removed during the day.

-- Leave holiday lights on bottom portion of plants until late spring, or have available out-door/weather-proof lights and extension cords. These go under the blanket near the ground. You can set on a rock or brick. Use extreme caution the light doesn't touch the cover or plant materials.

--Cardboard boxes work on smaller plants. Again, use a brick or rock to weight them in place.

--Instead of covering, use overhead sprinklers to form ice around buds, which, strange as it sounds, keeps the temperature in the buds around 32-degrees. This is often used on fruit trees when frost threatens during or after flowering.

### **Understanding What to Do if a Plant is Frost Damaged**

First, do not prune. Wait until the plant begins growth in late spring. Branches may appear damaged, yet some will recover come spring. In addition, pruning too early, may stimulate new growth that then becomes susceptible to late frosts. Damaged leaves and branches remaining on the plant also help to trap warm air close to the plant.

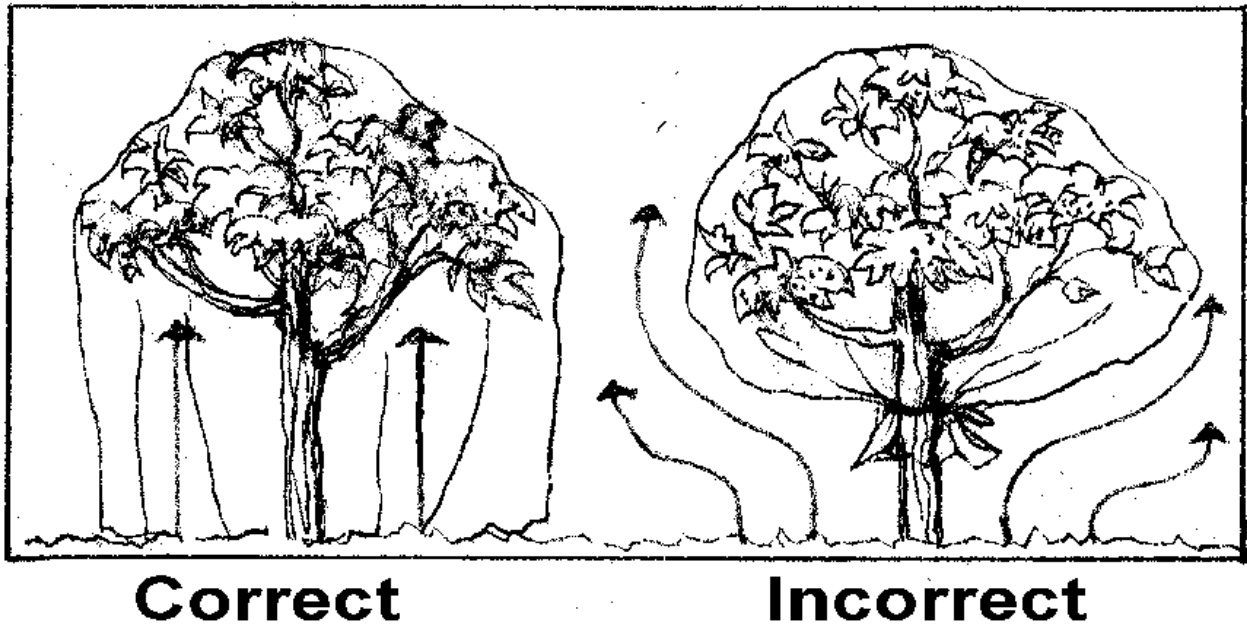
If a palm tree is damaged, check the bud at the top. If there is any mushy tissue, remove all that you can, and give the growth center a disinfectant wash with a copper-based fungicide spray. Unless mushy, leave all browned fronds on the plant. In any case, don't give up on it too soon. An injured palm may need both spring and summer to begin recovery.

There you have it. If you haven't done so already, identify what your plants are and their cold tolerance. Remember, if mature plants survived last January, they are comparatively sturdy—good to identify what they are and their cold hardiness, but use your efforts to first concentrate on any new plantings.

If you want information about the USDA hardiness zones and an online map, check out the website for the US National Arboretum at: <http://www.usna.usda.gov/Hardzone/hzm-sw1.html>.

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see drawing below



drawing taken from University of Arizona Publication AZ1002 which may be accessed at

<http://ag.arizona.edu/pubs/garden/az1002.pdf>

For more information contact The University of Arizona Mohave County Cooperative Extension at 101 E. Beale Street, Suite A, Kingman or telephone 928-753-3788.

**CONTACT:**

The University of Arizona  
Mohave County Cooperative Extension  
101 E Beale Street, Suite A  
Kingman AZ 86401-5808  
928 753-3788 / 928 753-1665 (f)  
[mohavece@cals.arizona.edu](mailto:mohavece@cals.arizona.edu)