



Left: Our postcard view of Jamaican Tall coconuts down Broad Avenue may be missing some palms due to the earlier cold damage. Right: Christmas palms damaged by cold exhibited foliar browning as well as these damaged stems when the cold weakened fronds turned black and broke off. photo by Bob Shafer.

Landscape Happenings: Cold Damage Still Unfolding

Ixoras started to leaf out about two weeks ago and it is easier to tell which twigs are dead so pruning is easier. I have a list of crotons which are more cold tolerant than other croton varieties. I was surprised to see such differences in one species! More on that later. I am getting many calls on coconut palms, one of our quintessential tropical species. Remember these are truly tropical as are the arecas and neither fared well at all with our prolonged cold winter. However, I'm surprised that the Bismarckia palms didn't discolor like they have in the past when we had some cold winter nights. Typical horticulture, just when you thought you knew what would happen, it doesn't always go that way!

Coconut and Christmas palms are continuing to spiral into brown droopy fronds and some coconut palms are losing their heads! Here is a fertilizer maintenance reminder, the UF palm researchers are seeing a positive response with palms which were fertilized BEFORE the cold hit. The recommended fertilizer, an 8-2-12-4 (N-P-K-Mg) with 100% of the N, K and Mg sources as controlled release forms (I'd say if you can get 50% or more of each element in a slow release form, you are close enough, if you

can't find the 100% slow release Doug C.). Slow release fertilizers are designed to release nutrients over an extended time (say, 4 to 6 months). On the other hand, quick release fertilizer nutrients are available immediately and gone within a two to eight weeks.

In the U.F. research project, coconut palms were fertilized four times per year with 15 pounds of fertilizer per 1000 square feet. Over a three year period the percent necrosis was 2 to 6 times greater with unfertilized palms. This year there was 32% canopy necrosis with the fertilized, but 68% necrosis with the unfertilized group! There was a strong correlation with the K (potassium) content of the foliage and damage. The palms with greater K had significantly less damage. I'm including earlier recommendations from February 12 column below as a reminder to be patient and wait before removing any palms you think may have died.

Christmas palms are experiencing a unique symptom that as Stephen Brown, Lee County UF-IFAS Extension reports, "The fronds of Christmas palms are broken deep inside the canopy where the fronds come together in a bundle and before they are fully emerged. The fronds are otherwise green." This cold-damaged injury is vulnerable to an anthracnose disease, but it is secondary and the palms seem to recover without extra attention.

New information from palm researchers, Drs. Monica L. Elliott and Timothy K. Broschat, at the UF Research and Education Center in Ft. Lauderdale contained this summary (below) on January 31, 2010 (slight modifications by D. Caldwell) on palms and cold weather. Be wary of salespeople strongly recommending palm treatments at this time. Any bud treatments are of unknown value and probably not needed and the same goes for trunk injections. Fertilizer treatments can be resumed at this time, but I would cut back the normal dose (see above) by 50 %.

"Trying to grow tropical palms in sub-tropical and temperate climates means cold damage is inevitable. This year's cold weather is not atypical for Florida. For example, in the late 1970s and early 1980s, a series of hard freezes destroyed much of the citrus industry located north of Orlando, which is why that industry pushed south to Immokalee. During that same time period, severe freeze damage occurred on palms throughout the state. The only difference between then and now is that there are a lot more palms planted in communities that did not even exist in the early 1980s. So, for many people, this is their first experience with severe cold damage.

Furthermore, while some years experience only one cold event the entire winter season, in other years, such as the current one, you may have an extended cold season. If trunk damage is observed externally due to a freeze, it is likely that there is substantial internal damage to the vascular and structural trunk tissue. These palms should be removed as they can pose a structural hazard in the landscape.

All new leaves of a palm develop from the apical meristem (bud), so the primary tissue that needs to be protected is the apical meristem. Since leaf bases provide insulating protection to the apical meristem, this is one reason to not over-trim palms at any time of the year. Furthermore, good fertilization practices, including routine applications of 8-2-12-4Mg (100% slow-release N, K and Mg), have been shown to greatly enhance cold tolerance.

Copper fungicides are recommended as an attempt (not a guarantee) to protect the apical meristem and developing leaves from secondary microorganisms that may attack damaged spear leaf tissue. There is no research to confirm if this is effective or not and it is not known if using a copper fungicide prior to a freeze event provides any protection against freeze damage to the bud. The recommendation is based on what has been observed regarding cold damage to palms and our knowledge of fungicides. In most situations, it is the base of the spear leaf not yet emerged from the whorl of leaf bases that is damaged first, leading to a spear leaf rot, which may then lead to a bud rot. Thus, the goal of a copper fungicide is to prevent this spear leaf rot from developing into a bud rot that moves downward and kills the apical meristem, and thus the palm.

Copper fungicides are recommended over all other group of fungicides because they have broad activity against both bacteria and fungi. No other fungicides have this broad spectrum of activity. Note that we are not concerned about the typical bud rot pathogens (e.g., *Phytophthora*). Instead, we are concerned about non-specific, secondary pathogens. Copper fungicides are contact fungicides and not systemic fungicides. Thus, you must have complete coverage of the target tissue to be effective – in this case, the base of the spear leaf and the bud. This is more difficult to accomplish in some palm species than others, particularly those with crown shafts, because the leaf bases tightly surround the emerging spear leaf, preventing movement of a fungicide into the bud region. [D. Caldwell note: please read the label and be cautious of staining concrete surfaces and be sure to wear required eye and face protection equipment as copper can cause severe irritation and eye injury.]

If the spear leaf rots and can be easily pulled from the bud, decayed tissue should be removed and cleaned out immediately, followed by a copper fungicide spray or drench of the bud region, which is now exposed. It is important to use a copper fungicide and not a copper nutrient solution. Copper fungicides are insoluble and will not be absorbed by the plant tissue. This limits phytotoxicity (plant tissue injury or death) and provides the protective barrier needed on the plant tissue.

The normal recommendation is to apply the copper fungicides no more than twice because of the possibility of copper phytotoxicity. If it is believed that more chemical protection of the bud is needed after the copper fungicides have been applied, a broad-spectrum contact fungicide may be beneficial. Remember, the bud rot is not due to the primary pathogens we associate with typical bud rots, but is due to secondary microorganisms. The goal is to protect the apical meristem (bud).

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You will not know if the apical meristem has survived until new growth emerges, which may be 4 to 7 months later. Hence, the need for patience! The new growth may be severely malformed or damaged, but the emergence of any living leaf tissue is a sign the palm may be alive. Subsequent leaves will gradually improve in quality, but it may take as long as a year before normal leaves emerge.”

If you replace coconut palms, it may be wise to go with a Maypan coconut which seems more cold tolerant than the Green Malayan according to both Karen Burns at Palmco Nursery and Julie at Soaring Eagle Nursery both on Pine Island. As I survey the landscapes, the Jamaican Tall, an older variety with long, curving trunks (look kind of spindly) seem to have been hit the hardest. So remember to incorporate diversity into your landscape plant selection. Use different cultivars or better yet different species such as a combination of foxtails and royals or try sagisis palm (*Heterospatha elata*), Sentry palm (*Howea forsteriana*) or piccabeen palm (*A. cunninghamiana*).

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