

A WORD OR TWO ABOUT GARDENING

You too can learn to read palms

No, I am not about to discuss how to hone your skills as a fortune-teller. Instead, since this is a gardening column, my intent is to review some basic pointers on caring for a group of plants regarded as a signature feature of any tropical paradise – palms. By frequently monitoring the palms in your landscape, you can learn to ‘read them’ for warning signs of potential trouble. Of all the homeowner calls to the U.F./Miami-Dade Extension Office about landscape ornamentals, questions concerning palms are those most frequently encountered.

Before reviewing how to read your palms for signs of trouble, and how to proceed if you find them, it is possible to avoid many problems before ever purchasing a palm. First, familiarize yourself with the unique nature of palms, and their special needs. Secondly make an informed choice, deciding which palms are suitable for your particular landscape conditions. Impulse buying has no place in planning a landscape, particularly when it involves a major feature such as a large palm.

For those not familiar with palms, realize that although many are tree like they are quite different from broad-leaf trees. Functionally they are closer to turf grass, bromeliads and philodendrons (all classed as monocots) than oaks and maples (dicots). This means that active stem growth in palms is restricted to an area at the top of the stem/trunk, the apical bud (where all the new foliage emerges). If this bud is removed the palm (or individual stem if it is multi-stemmed) will die. You cannot therefore cut back a palm because it is becoming too tall!

While broadleaf trees continuously increase in girth as they age, there is no further increase in the diameter of a palm trunk behind the apical area of active growth. As it grows the stem/trunk of a palm first develops outward, then elongates (grows upward). Once elongation commences there is no further increase in trunk diameter beneath the point of active growth. For this reason any narrowing that develops in a palm trunk (often indicative of a previous nutritional setback) will remain a permanent feature of that palm, despite any subsequent improvement in the palm’s nutritional status. Similarly any splits, cracks or abrasions (e.g. from line trimmers) to the trunk will not heal as in a broadleaf tree, but remain as permanent wounds.

The arrangement of vascular elements within the palm stem (involved in transporting water and nutrients) is very different to broadleaf shrubs and trees, and renders palms much more susceptible to nutritional deficiencies. It is therefore particularly important to pay attention to providing adequate nutrition for the palm(s) you have chosen.

After familiarizing yourself with some of the unique features of palms, it is time to pay attention to whether the palm you have chosen is suitable for the intended site. While landscape palms are usually planted in full sun, there are many commonly used palms such as the queen, foxtail, areca and pygmy date that can thrive with some partial shade. Majesty palms can be grown in full sun, however, you will need to provide supplemental water and additional fertilizer – they are easier to maintain

under partial shade. For *Chamaedorea* spp. (bamboo palms and related species), and lady palms (*Rhapis* spp.) shade is essential. Conversely, full sun is preferable for washingtonias, most *Phoenix* spp. (date palms), and coconut palms. Some palms such as the majority of *Coccothrinax* spp. (e.g. silver palm), coconut palms and doum palms are highly tolerant of drought and salt. Palms such as the paurotis palm and Florida royal palm naturally occur in moist soil and are not as drought tolerant, while the African oil palm can withstand flooding.

There are palms that slowly die after flowering (hapaxanthic), and this may be mistaken as a sign of some disorder that requires attention. Fishtail palms (*Caryota* spp.) such as the giant and toddy fishtail palms will flower after 15-20 years then slowly die. The clustering fishtail palm produces multiple stems, each of which die after flowering, but are replaced by new stems.

Three other factors need to be mentioned. If you know that lethal yellowing disease (LY – a fatal disease of many popular non-native palms) is present in your neighborhood, consider carefully whether it is advisable to plant susceptible palms (none native palms such as coconut, latan and Christmas palms). If a palm has ever been removed as a result of ganoderma butt rot, do not replant with any other palms in that part of the yard. Finally, avoid power lines. Not only because of the potential hazard, but palms growing within 2-3' of high voltage power lines often decline. They develop yellow/brown foliage, and in severe cases eventually die.

Once you have made an informed choice of which palm(s) are best for your landscape needs, the next step in avoiding future problems is to ensure that the palm is correctly installed. The requirements for successfully planting a field grown as opposed to a container grown palm are different. In either instance purchasing and installing a field grown palm (or large container palm) can be an expensive proposition, so it pays to make sure that it is done correctly. You can request publications from the Miami-Dade Extension Office (305 248-3311) explaining how to successfully install palms. Be aware that when palms are planted too deep or in waterlogged soil, roots will suffocate with eventual death of the palm unless the condition is corrected.

The remainder of this article is devoted to abiotic diseases of palms. That is, palm diseases not caused by infectious agents such as bacteria and fungi. Abiotic refers to disorders due to environmental and cultural factors such as poor nutrition, chemical injury and weather related events. The majority of problems that develop in Miami-Dade landscape palms are the result of nutritional deficiencies, rather than infectious disease organisms (pathogens). Leaf spots/blotches that are restricted to either old or new foliage usually indicate a lack of nutrients rather than infection with a plant pathogen (disease organism). Leaf spots due to an infectious disease are usually more evenly distributed between old and new foliage. It can take more than a year for palms to fully recover from a nutritional deficiency. Apart from overall yellowing due to a deficiency of nitrogen, affected leaves do not recover and must be replaced by new growth.

The most often observed nutritional problem in Miami-Dade landscape palms results from insufficient potassium. All palms are susceptible to a certain degree, but locally coconut, *Phoenix* spp., royal and queen palms are those most often

encountered with signs of potassium deficiency. Some palms, notably veitchias (e.g. Montgomery palms), are less prone to developing symptoms of potassium deficiency. In Miami-Dade, potassium is quickly leached out of the soil because of its porosity (oolitic limestone/sand) and a lack of clay minerals (which help to retain potassium in an available form). Irrespective of the palm in question, symptoms are always first observed on the oldest fronds. In most palms, including coconut, areca and triangle, these initially appear as translucent yellow spots, which develop into dead brown areas along the tips then margins of individual leaflets. With a severe deficiency the entire frond becomes dry and withered. In royal palms there may be little evidence of yellowing, with only a marginal and tip necrosis (death of living tissue), entire fronds become a grayish tan, dried and withered. Bismarckias exhibit dead areas in the middle (rather than the margin) and tip of a leaflet.

If left untreated, symptoms progress to younger foliage and eventual growth of the palm is affected. This can cause a narrowing of the trunk (pencil pointing) as is often seen in royal palms. Further decline invariably leads to death of the palm. Deficiency symptoms are aggravated if high nitrogen fertilizers, such as those used for turf grass, are used near palms. For palms that exhibit advanced symptoms of potassium deficiency, apply potash (preferably sulfur coated) at a rate of 3-8lbs/palm, plus 1-2lbs of magnesium sulfate directly to the soil. It can take more than a year for a palm to recover from the effects of a nutritional deficiency.

Manganese deficiency is the next most commonly observed nutritional problem, and involves newly emerging fronds, which first appear chlorotic (yellowish), becoming burnt and frizzled (frizzle top) as the condition progresses. Left untreated the affected palm can die. Unlike potassium, which is lacking in Miami-Dade soils, there is sufficient manganese present. However because of the high pH (alkalinity) of local soils it is insoluble and becomes unavailable to plants. For this reason manganese is best applied as a foliar spray where possible. Commonly afflicted palms include queen, paurotis, and *Phoenix roebelenii*, with washingtonias being least affected. Coconut palms can exhibit symptoms of manganese deficiency during and immediately after unusually cool winters. Once soil temperatures rise the symptoms disappear.

Although symptoms of magnesium deficiency can occur in most palms, they are most often seen locally in date palms (*Phoenix* spp.). The oldest leaves develop a broad, bright yellow margin that contrasts sharply with the base and center, which remains green. Other palms that display symptoms include *Livistona* fan palms, *Pritchardia* spp. and the hurricane palm. *Syagrus* spp. (e.g. queen palm) and washingtonias are much less prone to develop symptoms. Application of slow release forms of magnesium (e.g. coated kieserite) is the treatment of choice, however these are not widely available. Soluble forms such as Epsom salts (magnesium sulfate) are rapidly leached out of the soil and need to be applied more often. Be sure to add an equal amount of potassium sulfate at the same time you apply magnesium. There is a belief that magnesium is a cure-all for 'greening up' foliage that appears to be yellowing. Only apply magnesium if indicated by the observed symptoms. Applying magnesium by itself can induce a deficiency of potassium, especially in palms.

A common cause of chlorotic (pale) foliage in many popular, locally grown landscape plants (e.g. ixoras, gardenias hibiscus and roses) is a deficiency of iron, due to its unavailability in Miami-Dade's high pH soils. Landscape palms rarely suffer from insufficient iron, unless the soil in which they are growing remains waterlogged. The only palm where high soil pH is believed to prevent uptake of iron is the foxtail palm (*Wodyetia bifurcata*), otherwise the cause is impaired root uptake due to poor soil aeration – overly wet soil. Iron deficiency is more of a problem in container grown palms.

A lack of boron has emerged as the cause of a range of growth abnormalities in south Florida palms including chlorotic, misshapen and stunted leaves and in some instances a crooked trunk. Symptoms can be difficult to distinguish from other nutritional deficiencies complicating diagnoses. In coconut palms the tips of the leaflets turn brown with a distinctive downward curl like a hook (hookleaf). To correct this problem, apply borax to the root zone dissolved in 3-4 gallons of water, at a rate of 4oz per palm. Be careful: boron can rapidly become phytotoxic so do not exceed the above recommendations.

The simplest way to prevent nutritional problems from developing is to make regular applications of a complete palm fertilizer. Researchers at the University of Florida have developed nutritional guidelines for palms specifically designed for south Florida conditions. The fertilizer used should contain nitrogen (N), phosphate (P) and potassium (K), in a 4:1:6 ratio (e.g. 8/2/12) with 2-4% magnesium and the requisite 'minors' (manganese, iron, boron etc.). The nitrogen, potassium and magnesium sources must be in a slow release form (100% preferably). Fertilizers of this type, available locally on a limited basis, are also suitable for use on tropical shrubs and many tropical fruit trees. Read the tag on the fertilizer bag before making a purchase. Call the Miami-Dade Extension Office (see above) for more information on palm fertilizers, and nutrition in general.

There are other abiotic palm problems. After lightning strikes a palm, the crown may collapse completely, or appear wilted. Often the trunk will exhibit dark longitudinal stripes, large fissures and bleeding. If you are out of town, especially for a brief period, and return to find a palm with any of these symptoms, ask your neighbors if there were any lightning storms during your absence. Sudden very heavy rain, can lead to excessive water uptake, which on rare occasions cause pronounced trunk splitting. Be aware of damage due to garden chemicals. Copper based fungicides applied to palm foliage can cause pronounced leaf spotting. Least likely to cause damage are products containing 'fixed copper' (look for those that use copper hydroxide, copper oxychloride and basic copper sulfate). Palms are especially sensitive to pre-emergent herbicides (used to prevent germination of weed seeds). Post-emergent herbicides are safe if used with care. If you notice palms that are exhibiting poor growth, stunting, leaves that are blotched or do not fully open, check to see if a pre-emergent herbicide was used within the previous six months.