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Salvaging Hurricane-Damaged Palms in the Nursery¹

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The images of Hurricane Andrew's devastation (August 1992) will haunt all south Floridians for many years. In a matter of hours, the 120 million dollar nursery industry in south Dade county was dealt a blow the likes of which makes a soft economy and Benlate problems seem tame by comparison. Trade associations and IFAS continue to sort out the magnitude of the damage to Florida's nursery industry.

Palms constitute one of the most important and highly valued commodities in the south Florida nursery industry. As many growers surveyed the ravages of Hurricane Andrew on their fields, greenhouses and shade structures, many wondered "What can I save?"

In the field nursery as well as the landscape, many palms were as adversely affected by Andrew's passage as were broad-leaved trees. Others seem to have weathered the storm with only the loss of, or damage to, a few leaves. Thus, the first step in developing a strategy for salvaging hurricane-damaged nursery palms is to assess the damage that they have received.

First Assess the Damage

Many palms, especially those most recently planted in the field, or situated on raised beds as is the case on marl soils in Homestead, were simply uprooted and fell over as soon as the storm's winds became strong enough. In many cases these palms escaped far more crippling damage than palms that remained upright. These palms should be stood upright as soon as possible and replanted at the same depth at which they stood previously. For larger field nursery specimens, support bracing may be necessary. Short lengths of 2" x 4" lumber should be banded or strapped to the trunk (a foundation of burlap or asphalt paper can be placed around the trunk under these), and support braces (also 2" x 4", or 4" x 4" on very large specimens) are then nailed into the smaller pieces. Under no circumstances should nails be driven directly into a palm trunk. Such damage is permanent, and provides an entryway for pathogens and possibly insect pests as well. The braces should be maintained for at least six months. Broken leaves may be trimmed off. As long as no undue stresses were received by the bud in the crown, blown-over palms should recover quickly once righted. If the palms cannot be attended to quickly, the exposed root balls should be covered with burlap or similar material or else kept moist enough to prevent the roots from drying out and

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dying. This may not be feasible for field nurseries without irrigation, but rainfall may be adequate to keep rootballs moist.

If the trunk of a single-stemmed (versus clustering or clumping) palm is broken, whether completely severed at the base or anywhere along its length, splintered or sharply bent (kinked) at some point along its length -- that palm is unredeemably damaged and cannot be saved. Palm stems have no ability to heal as do broad-leaved trees. Clustering or clumping palms, however, continuously produce new stems and should not be removed, even if all the conspicuous, tall stems are badly damaged. Broken stems of a clustering palm should be carefully cut as close to their base as possible. Application of a fungicide after this operation is recommended, since the stumps can provide entryway for disease organisms.

Even though a palm may have been left standing after the hurricane's passage, severe stresses to the crown and, most importantly, the irreplaceable bud or "palm heart" may have been experienced. This sort of damage is not readily visible at first, but can lead to decline later in the year, especially if disease organisms attack the weakened tissue. Application of a prophylactic spray or bud drench to the crown of valuable palms may thus be advisable to help prevent loss due to bacterial and fungal rot of injured tissue. Copper-based chemicals will provide some antibacterial action, but should not be repeated more than twice because of the possibility of copper phytotoxicity. A tank mix of a copper hydroxide compound and a mancozeb fungicide or other compatible broad-spectrum fungicide can be used to drench the bud area. Some palms, though standing, have lost most if not all of their leaves. These, too, should be treated as above. If the crown of a palm was partially snapped off the top of the trunk, recovery may still be possible if the bud or apical meristem was situated below the point of breakage. Such specimens will need to be monitored in the months to come.

Salt tolerance of palm species is not well documented in research literature, and the information available is open to contradiction. If palms were inundated with saltwater in the root zone,

flushing with freshwater as soon as possible will minimize damage from salt burn. Of course this is easier said than done in the hardest hit areas of south Florida and in field nurseries without irrigation. The species listed in Table 1 have traditionally been considered the most salt tolerant of the more commonly cultivated palms. These species should be considered best able to withstand salt exposure, and remedial action should first be applied to palms not in the list.

Fertilization

Fertilizer should not be immediately applied to the root zone or to any palm that was uprooted by the storm. A soluble micronutrient spray can be applied to the crown at the same time as a fungicide if desired, though the value of doing this to a damaged palm has never been objectively proven. A light application of "palm special" granular fertilizer can be broadcasted or banded around the palm (keeping fertilizer clear of the trunk base) once new growth is underway and new roots begin to emerge from the root initiation zone at the base of the trunk. It will take at least several months for the reestablishment of overturned palms to get fully underway.

Container Palms

Shade-grown container palms, if otherwise undamaged, face the threat of sunburn where shadehouses were torn down or shade cloth blown off. As little as 1 day without shade is sufficient to burn leaves that have developed under heavy shade. If shade can be reapplied quickly in some form, the palms should recover. Growers will have to judge if the damage renders a particular species beyond redemption. Obviously, faster-growing species will recover more quickly. High-value species (Kentia palms, for example) should also receive priority. One area of the nursery should be designated as the "first aid" station, and irrigation and shade returned to that area as quickly as possible. High-value palms considered salvageable can then be moved to that central area while rebuilding and clean-up takes place elsewhere on the nursery. Container palms exposed to saltwater need to be washed off and/or the root zone flushed with freshwater as quickly as possible to prevent salt damage. Salvaged palms should be

treated with prophylactic fungicide sprays as used for field-grown material.

For the next 1-2 years, hurricane-damaged palms should be monitored carefully in the nursery. Remember that stressed palm crowns may not immediately show damage, but loss of the palm can still occur as much as 2 years after the stresses were suffered.

Summary

- Assess the damage. Don't waste time on palms that cannot be saved.
- Concentrate efforts on the more valuable species.
- Get toppled palms standing and supported as quickly as possible.
- Apply fungicide to the crown and bud region. Micronutrients can be added to the spray if desired.
- Do not allow root balls to dry out during reestablishment.
- Monitor damaged palms carefully during the next 1-2 years.

Table 1. Commonly cultivated palm species with high salt tolerance

<u>Scientific Name</u>	<u>Common Name</u>
<i>Allagoptera arenaria</i>	Seashore palm
<i>Coccothrinax alta</i>	Silver palm
<i>Coccothrinax argentata</i>	Silver palm
<i>Coccothrinax crinita</i>	Old man palm
<i>Coccothrinax miraguama</i>	Miraquama palm
<i>Cocos nucifera</i>	Coconut
<i>Hyophorbe lagenicaulis</i>	Bottle palm
<i>Hyophorbe verschaffeltii</i>	Spindle palm
<i>Hyphaene spp.</i>	Gingerbread or Duom palms
<i>Phoenix dactylifera</i>	Date palm
<i>Pritchardia pacifica</i>	Fiji fan palm
<i>Pritchardia thurstonii</i>	Thurston fan palm
<i>Pseudophoenix sargentii</i>	Buccaneer palm
<i>Sabal palmetto</i>	Cabbage palm, sabal palm
<i>Serenoa repens</i>	Saw palmetto
<i>Thrinax morrisii</i>	Key thatch palm
<i>Thrinax radiata</i>	Florida thatch palm
<i>Zombia antillarum</i>	Zombie palm