Arboles y Huracánes

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http://miami-dade.ifas.ufl.edu
South Florida es “Hurricane Country”
Puede ser su carro!!!
HURRICANE DAMAGE AND RESTORATION... (OR LACK OF IT!)

Monarch Lakes Blvd., Miramar, Fl.
Con dedicación su comunidad puede ser un modelo para otras comunidades
Un bosque urbano saludable promueve:

- ♦️ Conserva energía y baja las facturas de servicios públicos
- ♦️ Mejora la calidad del aire
- ♦️ Proporciona sombra y enfriamiento
- ♦️ Aumenta el valor de la propiedad
- ♦️ Beneficia la salud
- ♦️ Reduce inundaciones y erosión
- ♦️ Mitiga los vientos huracánicos
Bosque Urbano 2007-2008

Los Bosques Urbanos son diferentes y cambian!!

*http://www.nrs.fs.fed.us/data/urban/state/?state=FL*
Recommendacion:
Establezca y maneje un buen programa mediante:

- Selecting the right species
- Designing the right place
- Planting high-quality trees
- Choosing more wind resistance species
- Having a comprehensive tree management plan
- Having a structural pruning program for young and mature trees
Pérdida de árboles depende de:

- Tree species, age, health, and structure
- Conditions during the hurricane such as precipitation and the time to move through an area
- Site characteristics such as soil conditions (for example soil depth and moisture)
- Urban forest conditions such as overall tree canopy and composition
Lista de árboles resistentes a los vientos

Tropical/Subtropical Trees

<table>
<thead>
<tr>
<th>Highest Wind Resistance</th>
<th>Palms</th>
<th>Medium–High Wind Resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Broad - Leaved</strong></td>
<td></td>
<td><strong>Amona glabra</strong> , pondapple</td>
</tr>
<tr>
<td>Bursera simaruba , gumbo limbo</td>
<td>Adonidia merrillii , Manila</td>
<td>Chrysophyllum oliviforme , satinleaf</td>
</tr>
<tr>
<td>Carya floridana , FL scrub hickory</td>
<td>Butia capitata , pindo</td>
<td>Coccoloba uvifera , sea grape</td>
</tr>
<tr>
<td>Conocarpus erectus , buttonwood</td>
<td>Dypsis lutescens , areca</td>
<td>Coccoloba diversifolia , pigeon plum</td>
</tr>
<tr>
<td>Chrysobalanus icaco , cocoplum</td>
<td>Cocoyx argenta , FL silver</td>
<td>Liquidambar styraciflua , sweetgum</td>
</tr>
<tr>
<td>Cordia sebestena , geiger tree</td>
<td>Hyophorbe loganicaulis</td>
<td>Lysiloma latisiliquum , false tamarind</td>
</tr>
<tr>
<td>Eugenia ayilaria , white stopper</td>
<td>Hyophorbe verschaffeltii , spindle</td>
<td>Magnolia virginiana , sweetbay</td>
</tr>
<tr>
<td>Eugenia confusa , redberry</td>
<td>Latania loddigesi , blue latan</td>
<td>Nysa sylvatica , black tupelo</td>
</tr>
<tr>
<td>Eugenia foetida , boxleaf stopper</td>
<td>Livistona chinensis</td>
<td>Sideroxylon foetidissimum , mastic tree</td>
</tr>
<tr>
<td>Guaiacum sanctum , lignumvitae</td>
<td>Chinese fan**</td>
<td>Simarouba glauca , paradise tree</td>
</tr>
<tr>
<td>Ilex cassine , dacon holly</td>
<td>Phoenix canariensis</td>
<td>Swietenia mahagoni , mahogany</td>
</tr>
<tr>
<td>Krogiodendron ferreum , ironwood</td>
<td>Canary Island date</td>
<td><strong>Palms</strong></td>
</tr>
<tr>
<td>Lagerstroemia indica , crape myrtle</td>
<td>Phoenix dactylifera , date</td>
<td>Caryota mitis , fishtail</td>
</tr>
<tr>
<td>Magnolia grandiflora , southern magnolia</td>
<td>Phoenix reinatana</td>
<td>Cocca nucifera , coconut</td>
</tr>
<tr>
<td>Podocarpus spp. , podocarpus</td>
<td>Senegal date*</td>
<td>Dypsis decaryi , triangle</td>
</tr>
<tr>
<td>Quercus virginiana , live oak</td>
<td>Phoenix roebelenii , pygmy date palm</td>
<td>Roystenes elata , royal</td>
</tr>
<tr>
<td>Quercus geminata , sand live oak</td>
<td>Pruncheraptra elegans , Alexander palm</td>
<td>Fruit Trees</td>
</tr>
<tr>
<td><strong>Conifers</strong></td>
<td></td>
<td>Litchi chinensis , lychee</td>
</tr>
<tr>
<td>Taxodium distichum , baldcypress</td>
<td>Sabal palmetto , cabbage</td>
<td>* Invasive, not recommended by IFAS</td>
</tr>
<tr>
<td>Taxodium ascendens , pondcypress</td>
<td>Thrinax maorii , key thatch</td>
<td>** Caution: manage to prevent escape</td>
</tr>
<tr>
<td></td>
<td>Thrinax radiata</td>
<td>*** Prohibited in FL</td>
</tr>
<tr>
<td></td>
<td>Florida thatch</td>
<td></td>
</tr>
</tbody>
</table>
Especies que resisten la podredumbre:

<table>
<thead>
<tr>
<th>Trees that resist decay</th>
<th>Trees prone to decay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live oak</td>
<td>Laurel oak</td>
</tr>
<tr>
<td>Mahogany</td>
<td>Royal poinciana</td>
</tr>
<tr>
<td>Gumbo-limbo</td>
<td>Ficus</td>
</tr>
<tr>
<td>Tamarind</td>
<td>Orchid tree</td>
</tr>
</tbody>
</table>
A mayor velocidad del viento más árboles se caerán.
Siembre los árboles en grupos
Cuando un árbol se cae SIEMPRE otro!
The larger and older a tree is, the more branches it will lose.
Arboles con daño interno se quiebran más!
Arboles con mala estructura se quiebran más!
Arboles bien podados sobreviven más!
Porque podar?

- Clustered branches
- Young tree with narrow crotches and clustered branches
- Pruning
- Upright branches are cut back or removed and major limbs are spaced along trunk
- Save branches that are more horizontally oriented
- Included bark indicates weak structure
- Branches less than two-thirds the trunk diameter, without included bark indicate strong structure

10 years later
Débil vs. Fuerte
Buena estructura!
Case Study: Weston Lakes Maintenance Association, Weston, FL

Structural Pruning of 100 Common Area and 700 Swale Mahogany Trees
Case Study: Weston Lakes Maintenance Association, Weston, FL

Structural Remediation Complete
Los árboles necesitan espacio para las raíces!

街道树木，停车场，庭院

64% 生存率

0到3平方米（0到39平方英尺）

73% 生存率

4到7平方米（40到75平方英尺）

91% 生存率

>7平方米（>75平方英尺）

校园，公园，庭院
Falta de espacio!

Lack of mature rooting space/site constraints
Give small trees at least 10' by 10'.

Give medium trees at least 20' by 20'.

Give large trees at least 30' by 30'.

Recommendation: Give trees enough rooting space according to their mature size.
Tree/Soil Volume Requirements

Example: A 16 inch diameter tree requires 1000 cu ft of soil

Courtesy: James Urban
1. Árbol se sale del hoyo
2. Ramas quebradas
3. Tronco principal partido
4. Árbol inclinado
5. Sin daño aparente
6. Perdida de hojas
Plan de Respuesta

Immediately following storm
Step 1: Remove hazards
Step 2: Stake fallen trees where possible
Step 3: Clean canopies of damaged trees

Before the next visit
• Allow trees to regenerate energy reserves
• Develop a tree management program in the community
RECOMMENDATION: If a large tree uproots and falls over, it is basically dead and should be removed.
A small tree (under 4 inches in diameter) may be righted. Its future care needs to include staking and watering as though it was freshly planted.
Resiembra

• Water as if the tree were recently planted. Irrigate 3x a week with 3 gallons/inch trunk diameter. There is no need to fertilize at this time.

• Stake the tree. Adjust stakes and remove when tree is stable.
Tronco principal partido

- is essentially dead as an urban tree
- should be removed
Muchas ramas partidas

- Large broken branches may be able to be repaired through pruning.
- Small branches can be pruned.
- If a tree has lost more than $\frac{1}{2}$ its crown, it may never regain its structure and health.
Limpieza de la copa

Haga cortes lisos en los tocones y ramas.

Reduce back to lateral branch if one is present.
CONEXION FUERTE

Collar
Nunca haga cortes a ras

Wound wood does not develop evenly.
Cola de león

**Lions-tailing:**
trees with foliage concentrated at the tips of branches because inner branches were removed.
- More susceptible to hurricane damage
- Difficult to restore
Arboles caídos
Programa de Poda

<table>
<thead>
<tr>
<th>Time needed to restore:</th>
<th>Young (under 5” dbh)</th>
<th>Medium-aged (5-10” dbh)</th>
<th>Mature (over 10” dbh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 – 3 yrs.</td>
<td>3 – 4 yrs.</td>
<td>4 + yrs.</td>
</tr>
<tr>
<td></td>
<td>about two visits</td>
<td>about three visits</td>
<td>four or more visits</td>
</tr>
</tbody>
</table>

* dbh – diameter at breast height
Manejo de Brotes
Reduzca algunos
- Shorten 1/3 of the sprouts. They will continue to store energy, but will eventually be removed.

Remueva algunos
- Remove 1/3 of the sprouts to allow space for the most vigorous ones to grow.

Deje algunos
- These will develop into the new branches.
Remueve a Deje?
Remueva hojas que dañan al cogollo
Pruning Palms: 9:00 - 3:00 position

SIN PODA

ACEPTABLE

DEMASIADA PODA
Pines may show no immediate visible damage after a hurricane but may decline over time.
Contract specification requirements: All trees FL grade No. 1 or better; UF-IFAS planting detail; post-plant inspection;
SE NECESITA VER LA RAÍZ
Antes

Después
Siembra – 5 ″ profundo!
Pre-plant root ball inspection, excavation and preparation
Kept covered and moist, the cut ends do regenerate an amazing number of roots.
Si daña las raíces el árbol se caerá!
REMUEVALAS!

Poor maintenance practices
REMUEVALAS!
Questions or Comments?