Palm Nutrition and Management

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Focus on the problems you can control or manage!

• Nutrition - broadcast fertilize with the best available palm fertilizer
• Prune correctly - don’t abuse your palms; sterilize pruning tools
• There is no perfect palm!
• Diversify your landscape!
A B
TRUNK

above-ground second order \( R_2 \)

root mat

sandy soil

capillary rootlets
\( R_4 \) (0.5 mm)

\( R_3 \) (1.5 mm)

\( R_2 \) (2-4 mm)

\( R_1 \) (8-10 mm)

ascending second order \( R_2 \)

horizontal first order \( R_1 \)

descending second order \( R_2 \)

descending first order \( R_1 \)
Top Four Palm Nutritional Deficiencies

Potassium (K)
Magnesium (Mg)
Manganese (Mn)
Boron (B)

All combinations!
Nutritional Deficiencies

• Leaf symptoms remain forever, especially necrotic (dead) tissue

• Correction of problem requires growth of nutritionally sufficient leaf tissue

• It may take 2-4 years to replace canopy

• Goal is prevention of deficiencies
Potassium (K) Deficiency

• Translucent yellow-orange or necrotic spotting of foliage

• Marginal and/or leaflet tip necrosis (brown due to death)

• Most severe on oldest (lowest) leaves and towards tips of affected leaves
Translucent yellow-orange spotting
Easiest to see if hold leaf up to light
Necrotic spotting of leaflets
Marginal necrosis on fan palm leaf

Marginal necrosis on leaflet tips of feather palm
• Most severe on oldest leaves
• Most severe on leaf tip, decreasing towards leaf base
• Leaf petiole remains green; last leaf part to become necrotic
K deficiency leaves linger in half dead state for weeks and months

Natural senescence occurs within a few days
## Number of leaves retained

<table>
<thead>
<tr>
<th>Species</th>
<th>-K</th>
<th>+K</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Cocos nucifera</em></td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td><em>Phoenix canariensis</em></td>
<td>65</td>
<td>130</td>
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</tbody>
</table>
Magnesium (Mg) Deficiency

- Marginal chlorosis (yellowing) of leaflets or leaves
- Central part of leaflets or leaf segments remain distinctly green
- No necrosis of leaf tissue
- Most severe on oldest (lowest) leaves
Mg: yellow margins

K: brown margins
Mg: yellow margins  K: brown margins

- Mg deficiency occurs naturally primarily on *Phoenix canariensis* (Canary Island date palm)
- Mg deficiency induced on most other palms by improper fertilization
Manganese (Mn) Deficiency

- Interverinal chlorosis with necrotic streaking
- Withering or frizzling of leaflet or leaf segment tips
- Death of meristem (bud)
- Affects newest leaves only
- More severe at leaf base than tip
• **Interveinal chlorosis AND necrosis**

• **More common on feather-leaf palms**
Mn deficiency:

- Youngest leaves are affected
- Leaflets closest to trunk are affected
- Opposite of K deficiency
Frizzletop = Mn deficiency
Meristem (bud) is killed

Queen palm with BOTH K and Mn deficiencies
Boron (B) Deficiency

- Stunted, necrotic-tipped leaves
- Multiple, incompletely opened spear leaves (should only be one unopened spear leaf at one time)
- Abortion of flowers and fruits
- Horizontal growth
- Death of meristem (bud)
- “Accordion” leaf symptoms
- Affects newest leaves
Multiple, unopened new leaves

“Accordian” leaf symptoms
Horizontal growth

It will begin to grow upright again if boron deficiency is corrected - takes years
While deficient soils can be a cause of palm nutrient deficiencies, most are due to improper fertilization – especially turf fertilizers with high N content.
Fertilizing Mixed Landscapes

Common Deficiencies

• Turf: N, Fe
• Broadleaf Trees and Shrubs: Mg, Fe, K, Mn, N
• Palms: K, Mn, B, Mg, Fe, N

Palm deficiencies include all of the turf and broadleaf trees and shrubs deficiencies
Fertilizing Mixed Landscapes

Why integrated approach?

- All types of plants are growing in same deficient soil
- Palm and tree roots coexist with turf roots
- Products applied to turf can be harmful to palms and trees
- Simplicity!!!
Fertilizing Landscape Plants

- Use 8-2-12-4Mg with micronutrients
- Type of materials just as important as ratio
- N, K and Mg in 100% controlled release form
- Micronutrients: form depends on nutrient
  - N – any controlled-release form acceptable
  - K – sulfur-coated potassium sulfate
  - Mg – prilled kieserite (special form of MgSO₄)
  - Mn – sulfate (e.g., TechMangam)
  - Fe – chelate (Trachelene Fe)
  - B – slow-release forms (e.g., Granubor)
Release Patterns of Soluble and Controlled Release Fertilizers

Plant needs
Soluble (K)
Controlled release (N)

Many turf fertilizers have these characteristics.
Release Pattern of N, K and Mg in 8-2-12-4Mg Palm Fertilizer

Plant needs

Controlled Release N, K and Mg

Weeks
Where to find 8-2-12-4Mg?

- Number of companies formulate this fertilizer in Florida, but most are only accessible to professional landscapers.

- John Deere Landscapes (LESCO)
  http://www.johndeereelandscapes.com
  click on “branch locator”
Fertilizing Landscape Plants

- **Broadcast** 15 lbs fertilizer (not N) per 1000 sq. ft. of bed or canopy area every 3 months with 8-2-12-4Mg with micros

- Fertilize turf within 50 ft. of any palm with recommended 8-2-12-4Mg with micros; it won’t hurt the turf, but use less (12.5 lbs)

- If you can’t use the correct fertilizer, better to use no fertilizer at all near palms!
Fertilizing Landscape Plants

If you are located in an area that prohibits:

• P all year, use **8-0-12-4Mg** (same rate)

• N and P during the summer months, apply 8-2-12-4Mg in Feb., May and Nov., but **0-0-16-6Mg** in Aug. (same rate)
Palm Pruning

- affects palm vigor
- affects palm nutritional health
- can transmit diseases
- can reduce vermin
- can affect cold hardiness
Self-cleaning vs. Non self-cleaning
crown shaft
no crown shaft
K deficiency leaves linger in half dead state for weeks and months.

Natural senescence occurs within a few days.
How much to remove?

If deficiencies exist, remove only dead leaves

Never remove leaves at angle above the horizontal (9:00–3:00 position on clock)
Palm Abuse: Pruning Palm to Death!!
K is a mobile element
Palm Abuse!!

- Fusarium Wilt
- Palm Weevils
- K & Mg Def.
Hurricane
Cut
What to trim?

- dead leaves & fruit stalks
- flower stalks?
- fruit stalks?
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