

Palm Nutrition and Management

Dr. Monica L. Elliott

University of Florida - IFAS

Fort Lauderdale Research & Education Center

melliott@ufl.edu

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!**

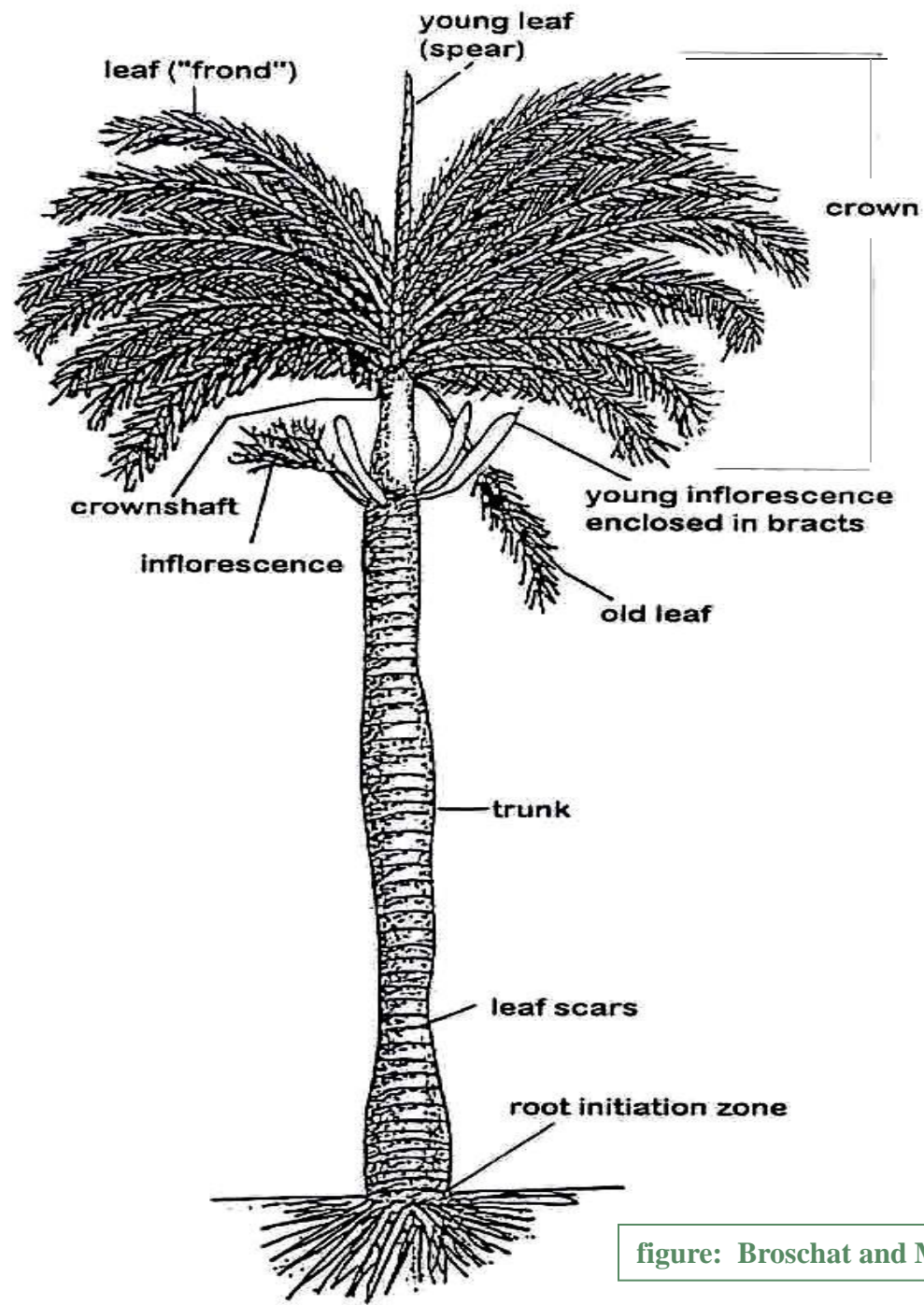
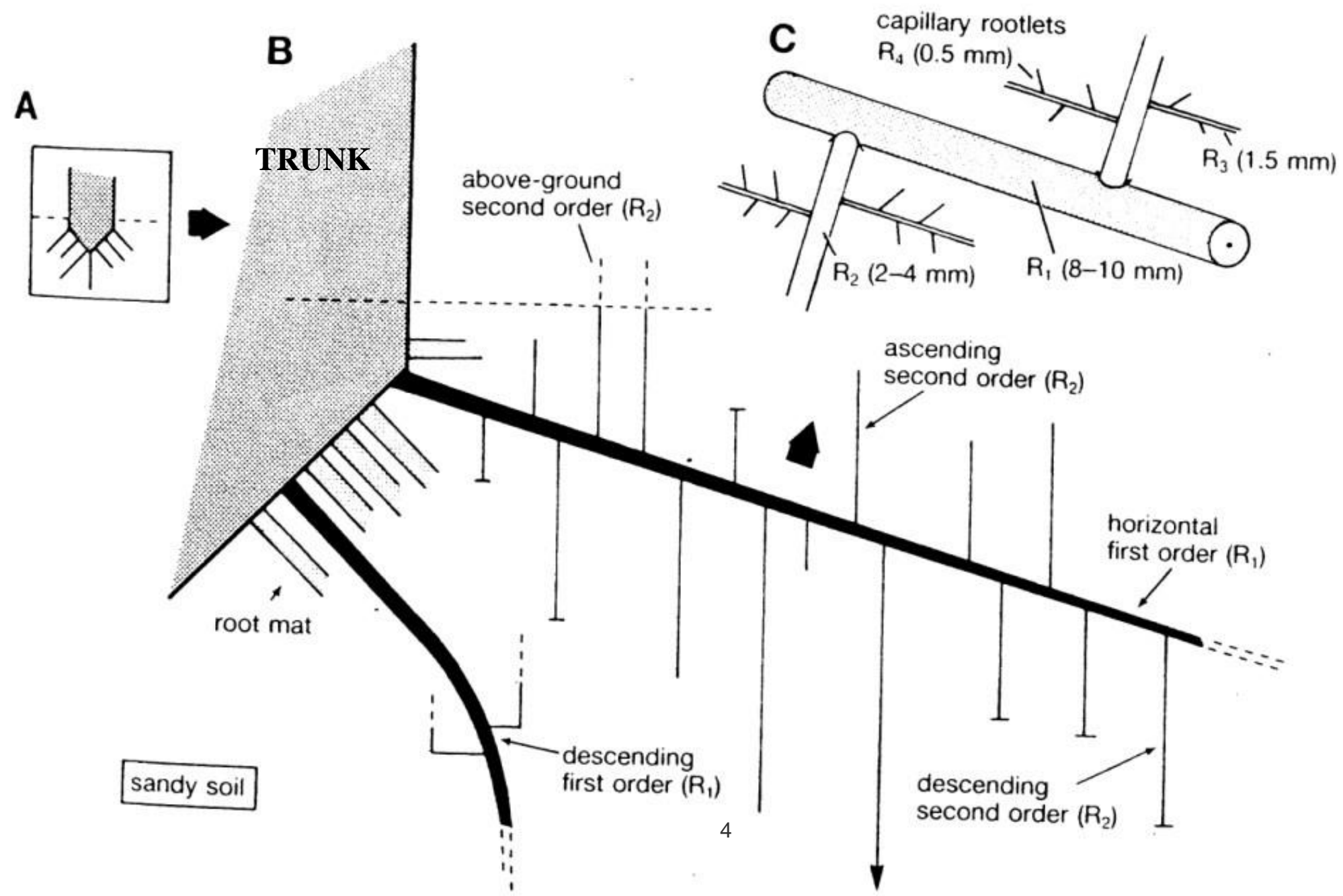


figure: Broschat and Meerow, 2000



Top Four Palm Nutritional Deficiencies

Potassium (K)

Magnesium (Mg)

Manganese (Mn)

Boron (B)

All combinations!

Nutritional Deficiencies

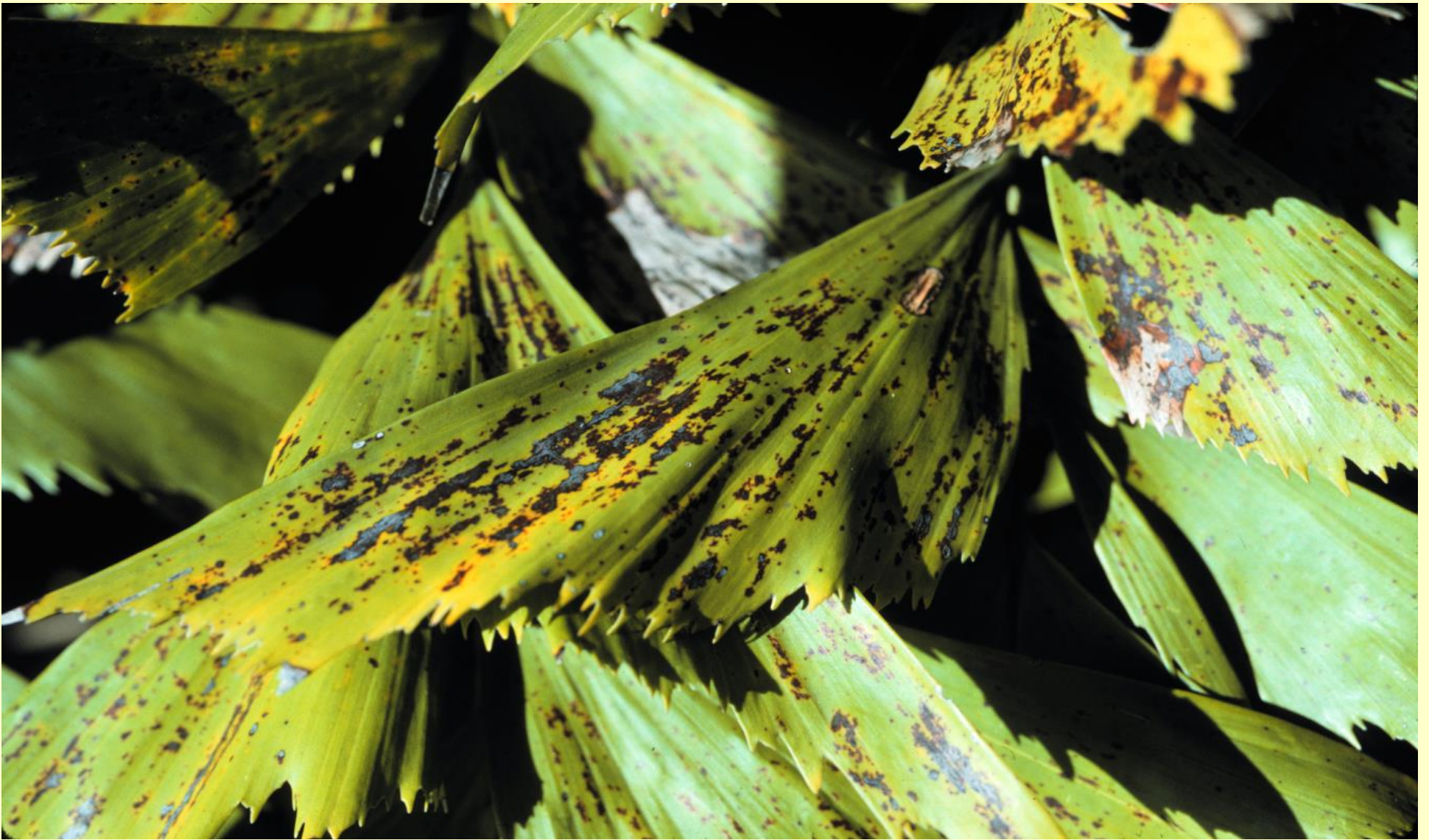
- Leaf symptoms remain forever, especially necrotic (dead) tissue
- Correction of problem requires growth of nutritionally sufficient leaf tissue
- It may take 2-4 years to replace canopy
- Goal is prevention of deficiencies

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

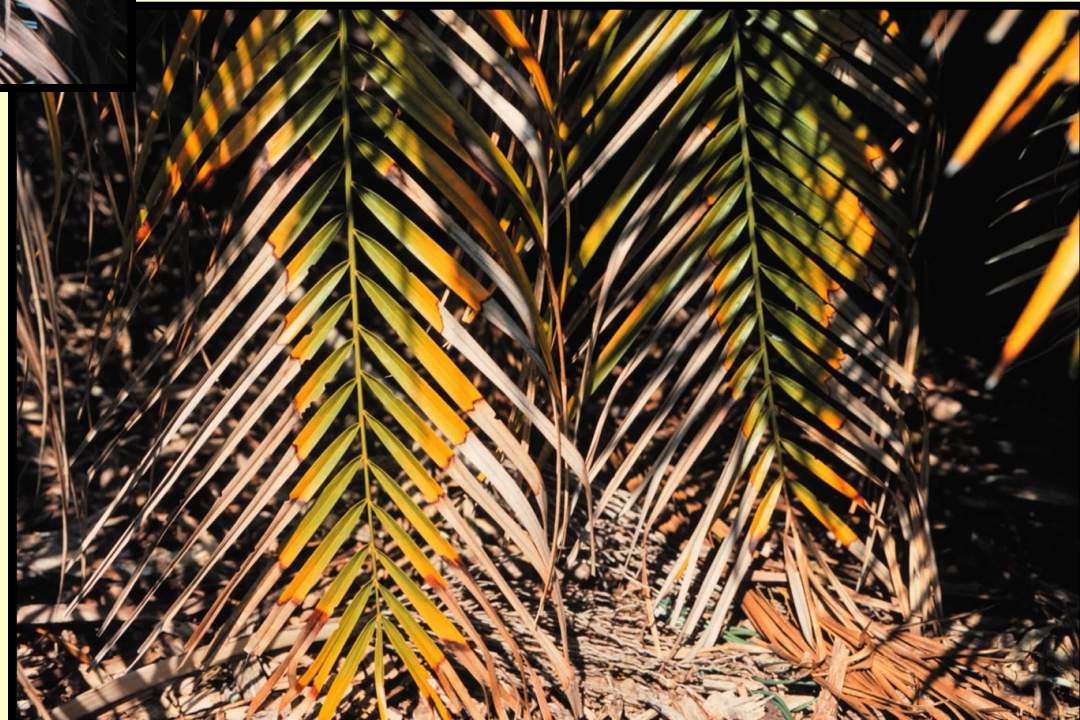


Necrotic spotting of leaflets



**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**



Natural senescence
← occurs within a few days

K deficiency →
leaves linger in half
dead state for
weeks and months



Number of leaves retained

Species	-K	+K
<i>Cocos nucifera</i>	13	26
<i>Phoenix canariensis</i>	65	130



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 & K





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

- **Interveinal 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**





Frizzle top = 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



“Accordion” leaf symptoms



Horizontal growth

It will begin to grow upright again if boron deficiency is corrected - takes years



Induced K deficiency



Induced Mg deficiency

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

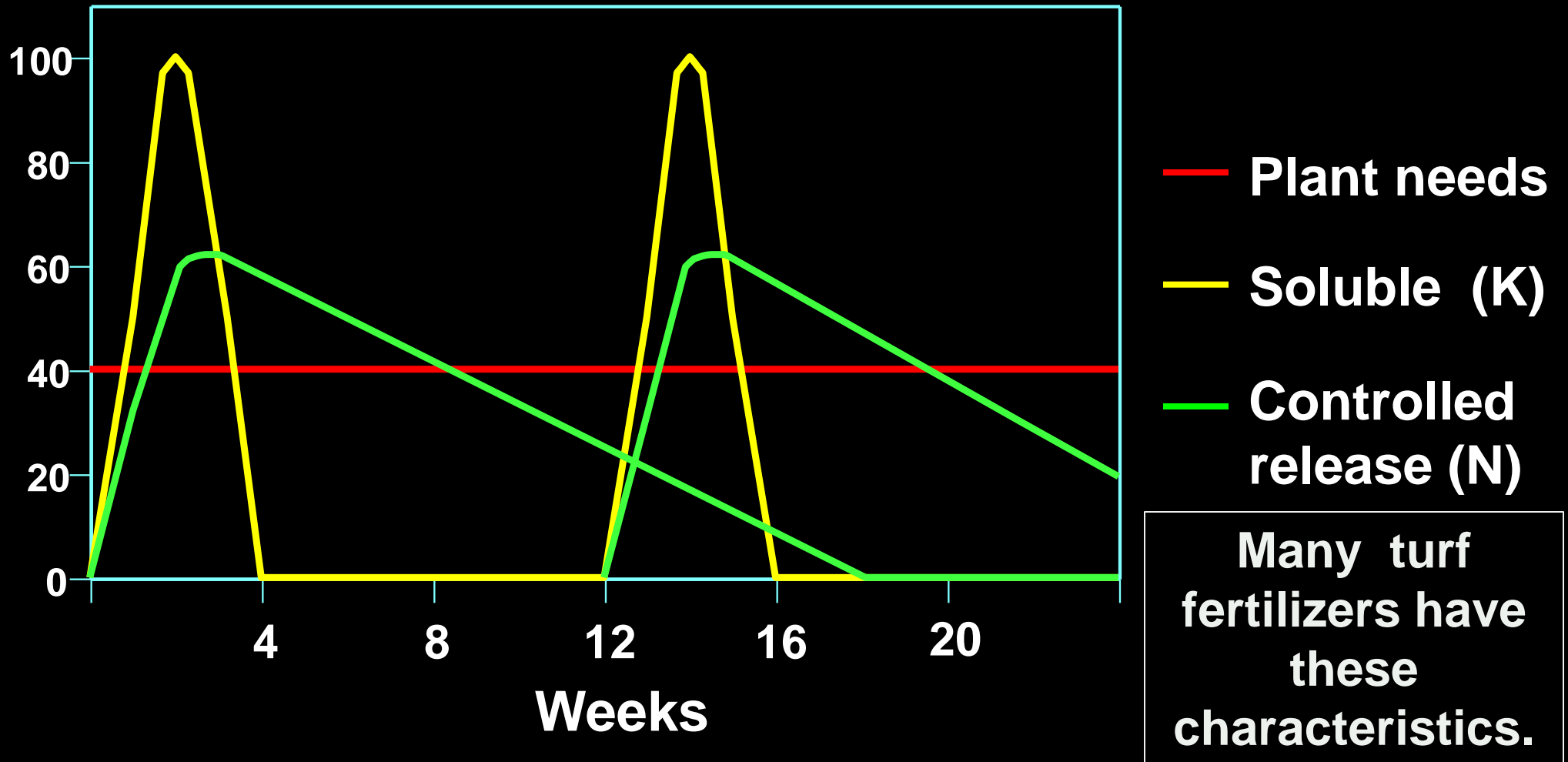
Why integrated approach?

- 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!!!

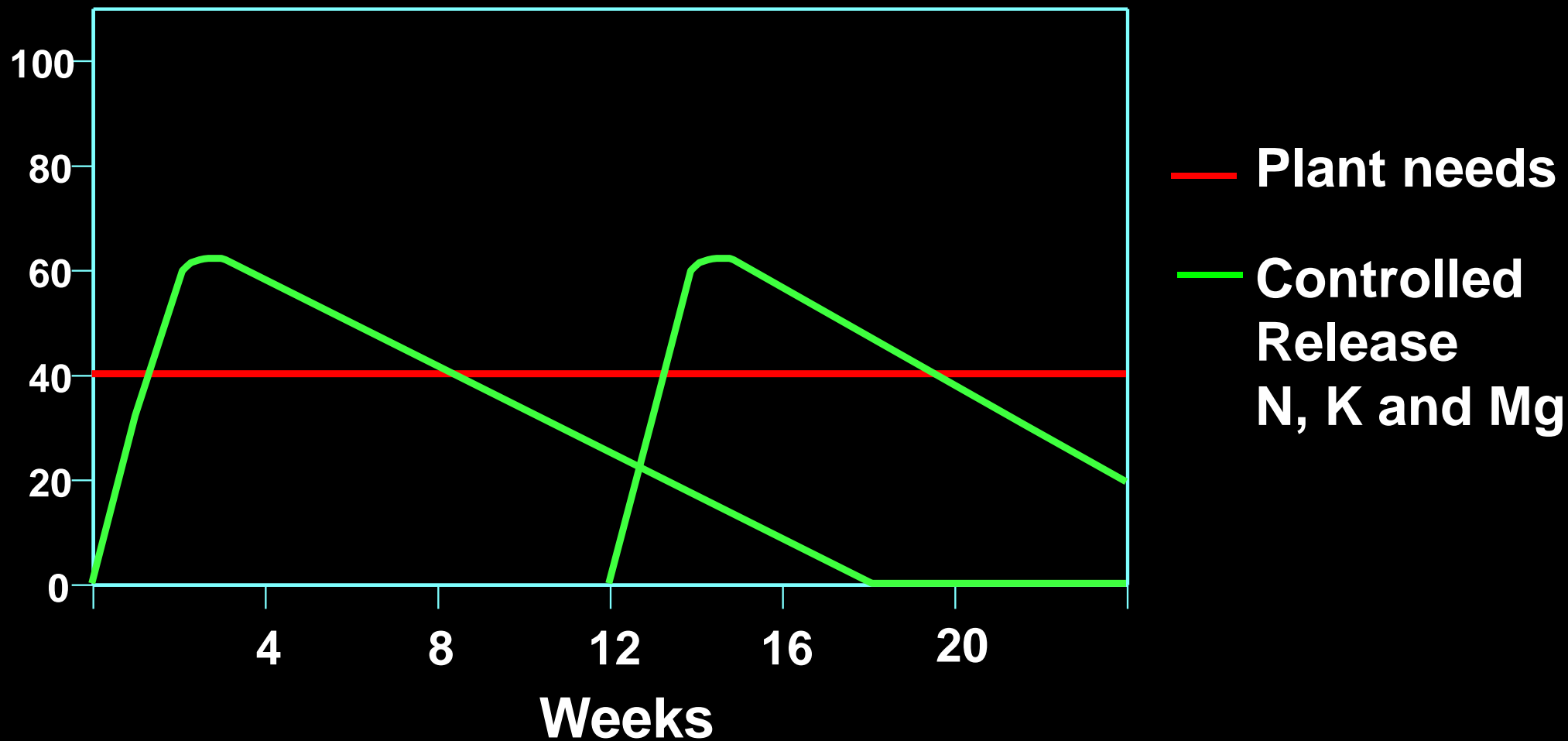
Fertilizing Landscape Plants

- 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 MgSO_4)
 - Mn – sulfate (e.g., TechMangam)
 - Fe – chelate (Trachelene Fe)
 - B – slow-release forms (e.g., Granubor)

Release Patterns of Soluble and Controlled Release Fertilizers



Release Pattern of N, K and Mg in 8-2-12-4Mg Palm Fertilizer



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.johndeerelandscapes.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:

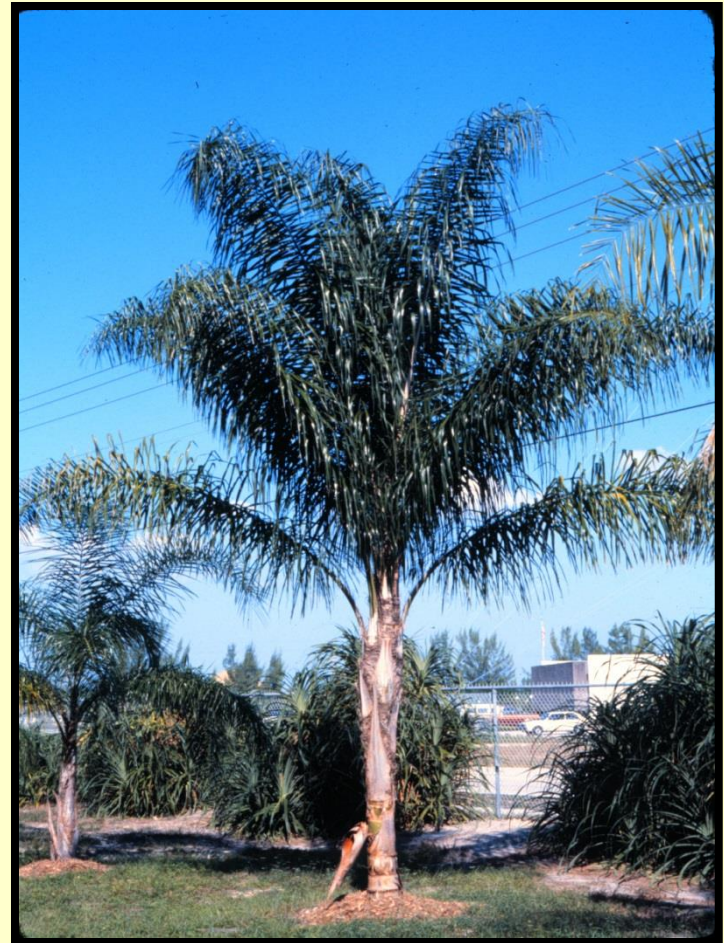
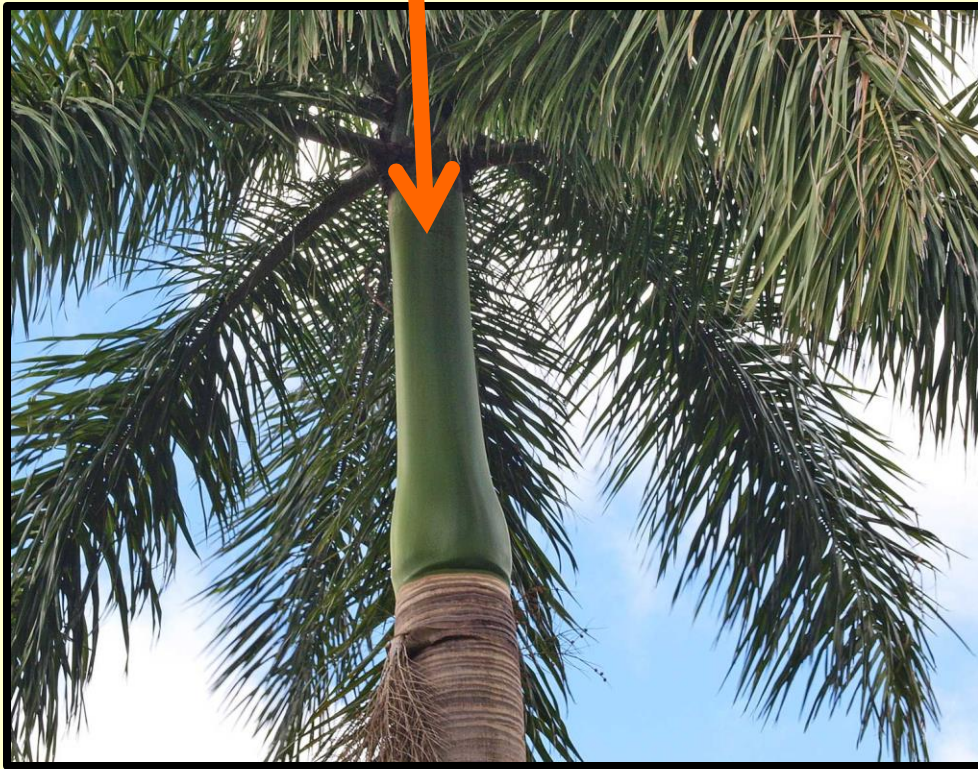
- P all year, use **8-0-12-4Mg** (same rate)
- N and P during the summer months, apply **8-2-12-4Mg** in Feb., May and Nov., but **0-0-16-6Mg** in Aug. (same rate)

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

Self-cleaning crown shaft **Non self-cleaning no crown shaft**





Natural senescence
← occurs within a few days

K deficiency →
leaves linger in half
dead state for
weeks and months



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)**

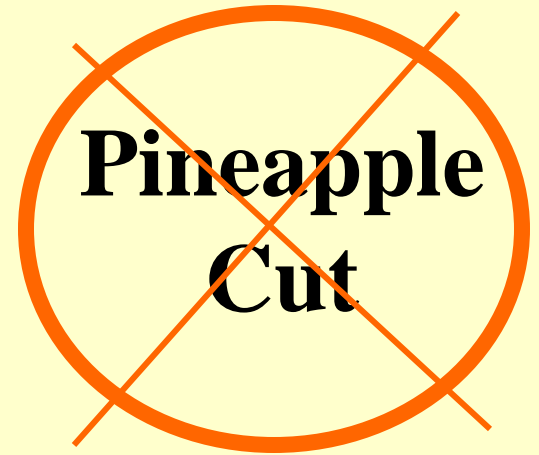
Palm Abuse: Pruning Palm to Death!!





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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