

Common Tree Pests and Diseases



Larry Figart

Urban Forestry Extension Agent

Duval County Extension Service

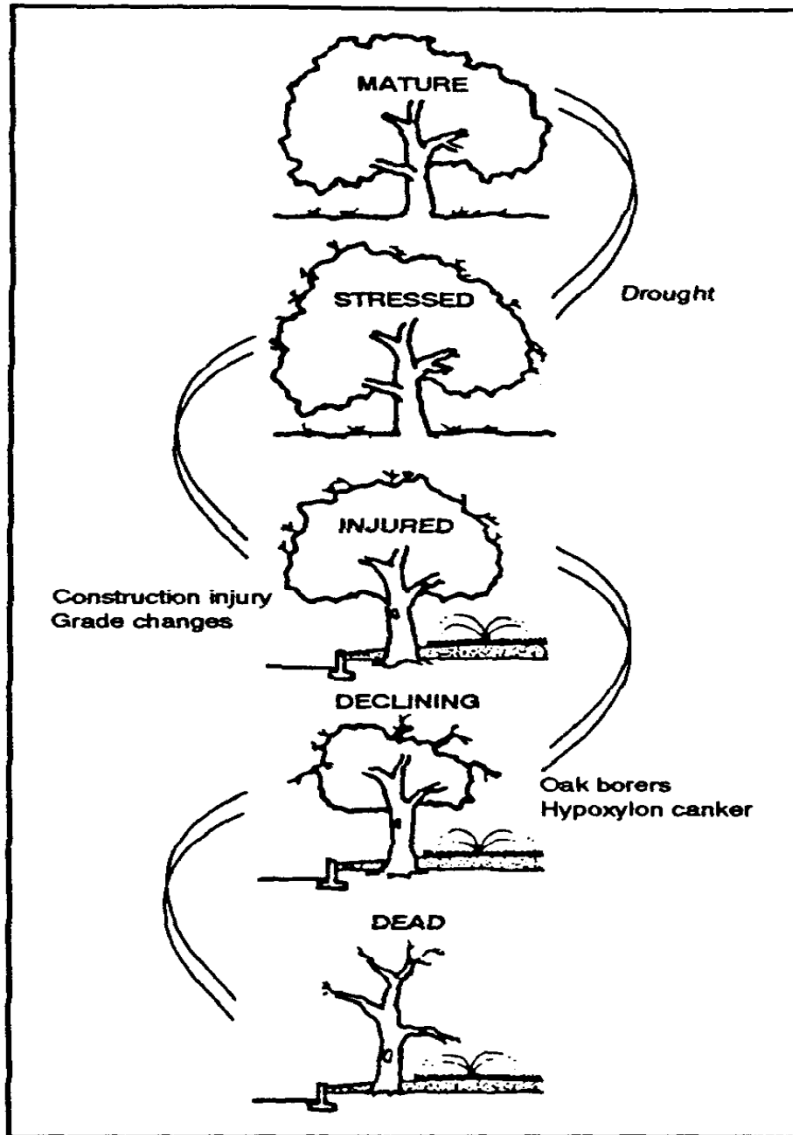
lfigart@coj.net

Pest Manager Training

St Simons Island

November 3rd, 2017

Tree Mortality Spiral for Mature Trees



Typical mortality spiral for red oaks.

Anthracnose



- Anthracnose is a general term for a group of diseases on hardwoods that cause lesions on leaves, twigs, and fruits.
- Usually the lower canopy is the most affected

Anthracnose



- in general the most obvious symptoms are the leaf lesions produced in the spring and expand throughout the summer. Lesions often begin as pale green or greenish-grey blotches, but then turn yellow, tan, reddish-brown, or brown. Often lesions have a distinct, colorful margin.
- Leaves will drop
- Usually not a big deal
- Control via sanitation & fungicides

Anthracnose

- This spring was a perfect storm of cool temperatures, wet weather, all happening at the time that new leaves are forming.



Dogwood Anthracnose (one of the bad guys)



Fire Blight

- Bacterial pathogen (*Erwinia amylovora*)
- Rose Family (apple, pear)
- Pathogen overwinters in host tissues
- Prune & destroy infected materials
- Clean Tools



Redcedars, Leyland Cypress, (Foliage)



What do you see in this picture?
What does it tell you?



Italian Cypress



- What is a Mediterranean Climate?
- Spider mites (Dry warm weather)
- Foliage blight (shaded, or high humidity)
- Seiridium canker

Oak Leaf Blister



- Caused by a fungus
- Wet cool springs
- Some defoliation may occur
- Usually not a serious problem
- Spray dormant buds in late winter, just before bud break.

Fungicides containing the active ingredient chlorothalonil or mancozeb are labeled for this disease.

Cankers: Botryosphaeria



Botryosphaeria on Oaks

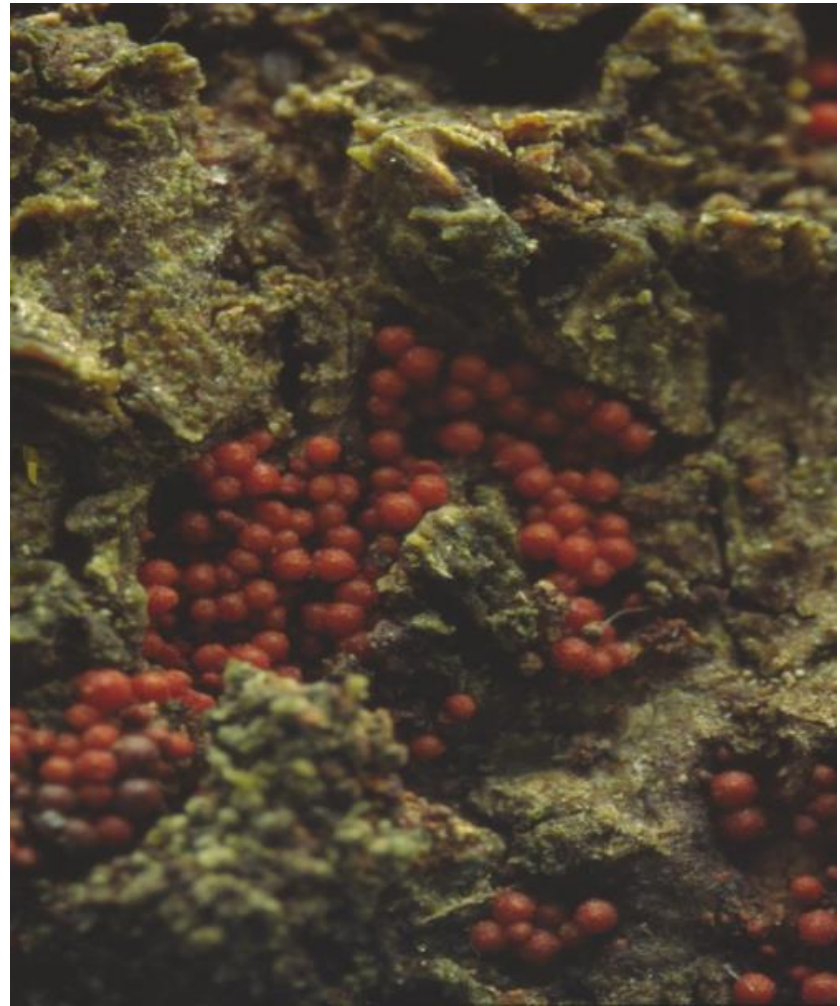
Stress makes oaks susceptible to bot canker, so the best way to ensure they stay healthy is to provide optimum growing conditions.



Cankers: *Nectria*



On Silver Maple



Orange/Red Perithecia

Hypoxylon “Cankers”



**After effects – It is not the
cause of the tree death**

PITCH CANKER OF PINES



- Have noticed this a lot lately in natural areas and around subdivisions
- Is made worse by increased nitrogen fertilization

Basal Cankers on Laurel Oaks



Phytophthora



“Bleeding” Stem Cankers with Callus Folds

**Water-soaked Lesions
in the inner bark with black
zone lines**

Seiridium canker, on Leyland Cypress

- “Flagging” branches
- May affect a single branch or multiple branches throughout the tree
- Oval Cankers
- Prune at least one inch below the canker
- Sterilize tools



Summer Oak Mortality





Root Diseases



Root Rot Diseases







Clustered Gilled Mushrooms

Mycelial Felts



**Mycelial Felts or Mats
(perforated)**



It is a cumulative process

- Defoliation & Drought
- High Transpiration needs
- Excess Soil Moisture & Flooding
- Site Disturbance & Root Damage
- Stumps
- Installation Failures

Flooding

- Low oxygen content in soils
- Photosynthesis stops
- Transpiration slows
- Root damage and disease



Incorrect irrigation

- Irrigation after planting is often times the critical factor in whether a new tree dies or becomes established in the landscape.
- Turf irrigation does not provide enough water to most newly planted trees.

Lack of proper irrigation causes the dieback



Irrigation Schedule

Size of Nursery stock	Irrigation schedule (2-3 Gallons per inch of caliper)
< 2 inch caliper	Daily for 2 weeks; every other day for 2 months; weekly until established
2-4 inch caliper	Daily for 1 month; every other day for 3 months; weekly until established.
> 4 inch caliper	Daily for 6 weeks; every other day for 5 months; weekly until established.



Delete daily irrigation when planting in winter or when planting in cool climates. Irrigation frequency can be reduced slightly (e.g. 2-3 times each week instead of every other day) when planting hardened-off, field-grown trees that were root-pruned during production. Establishment takes 4 to months per inch trunk caliper. Never apply irrigation if the soil is saturated.

Establishment

Encourages growth

Loose soil

Proper irrigation management

Mulch 8' or more around planting hole

Root flare slightly above soil surface

Leaving top of tree intact

Limits growth

Compacted soil

Little or no irrigation

Grass and weeds close to trunk

Planting too deep

Pruning at planting

Little or no effect

Peat or organic matter added to backfill soil

Root stimulant products

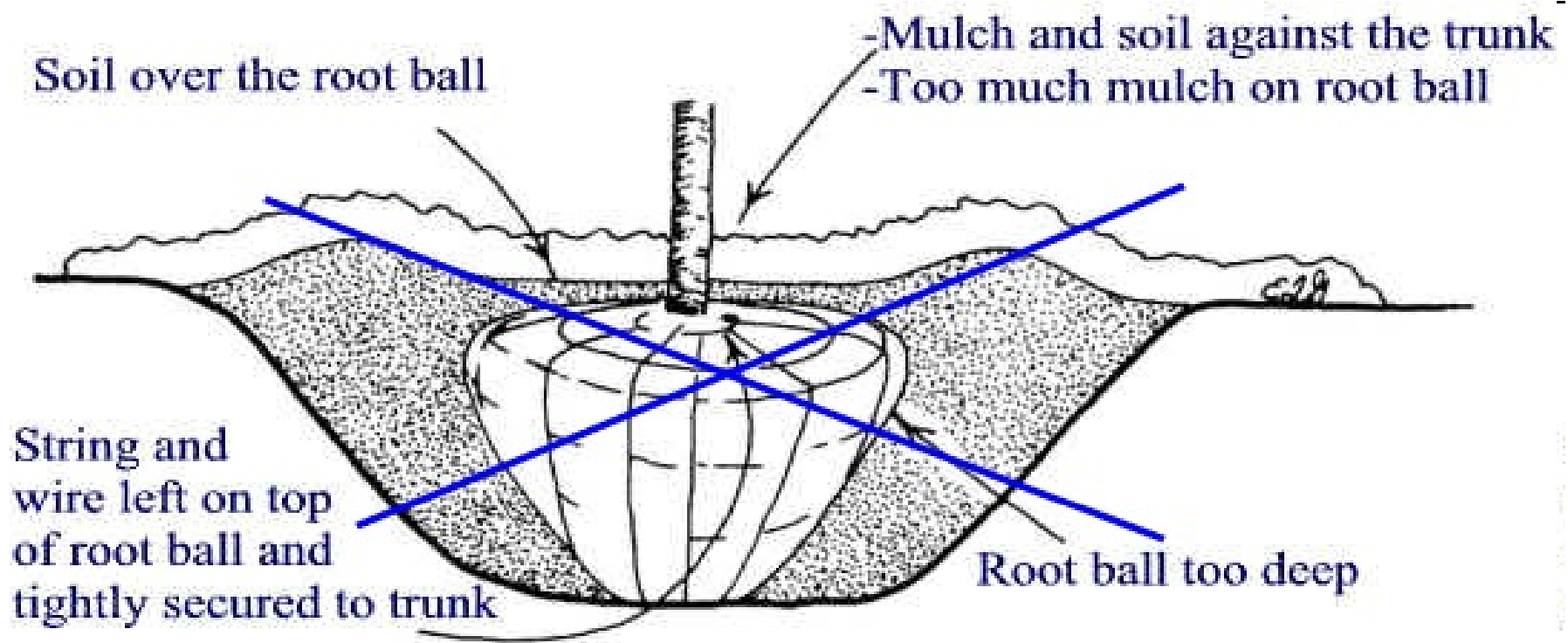
Fertilizing at planting

Adding spores of mycorrhizae*

Water absorbing gels

*can enhance growth on seedlings under certain circumstances

Incorrect Planting (Plant it high and it wont die!)



Nicely positioned root collar



Probably
planted too
deep



Planting too deep



Notice there is no root flare

What can they do?



Rootbound Trees



Example: A tree before planting... Looks good right!!



Same tree 2 ½ years later

- This tree was in the ground for 2 ½ years. Notice where the roots are. More specifically, where they aren't.



PHOTO CREDIT CHUCK LIPPI

The key is to correct the defects at planting





Sphaeropsis gall on Holly
(*Sphaeropsis tumefaciens*)

Sphaeropsis

- Recognition: Symptoms range from inconspicuous swellings of young twigs to irregular galls on older wood. Multiple shoots arise from galled areas, causing a “witches broom” type of growth. Horizontal branches can “tip up” to grow nearly vertically. Dieback of infected branches eventually occurs.



Sphaeropsis



Sphaeropsis

- Contributing factors: Although many Ilex species are susceptible, Sphaeropsis gall has become a severe problem on East Palatka and Savannah hollies in particular. Natural or mechanical wounds in the wood allow entry points for the organism. Pruning may allow it to spread rapidly by transferring the fungus and allowing an entry point into the plant.



Sphaeropsis

- Prune branches at least 6 inches below where symptoms are seen. Look at the cut end of the stem to see if any discoloration from the fungal growth in the wood is noticed. Prune that branch back further if this is noticed.



Sphaeropsis

- Prune during dry times, avoiding periods when rainfall is expected 24 hours before or after pruning. To prevent infection of unaffected plant parts, dip pruning tools in a disinfectant such as 10% Clorox or rubbing alcohol before using them on an other branch or plant.



Sphaeropsis

- Severely infected plants should be removed and destroyed. No chemical fungicides are available to control witches' broom.



Ambrosia Beetle

Common Host

most species of pine and hardwood trees
severely infest weakened and dying trees, green
logs, and unseasoned lumber

Identification

large piles of a fine white granular dust
accumulate below the entrance holes
or at the base of standing trees
adults and larvae do not feed on the
wood but on a fungus the beetles carry
into the tree and culture in the galleries

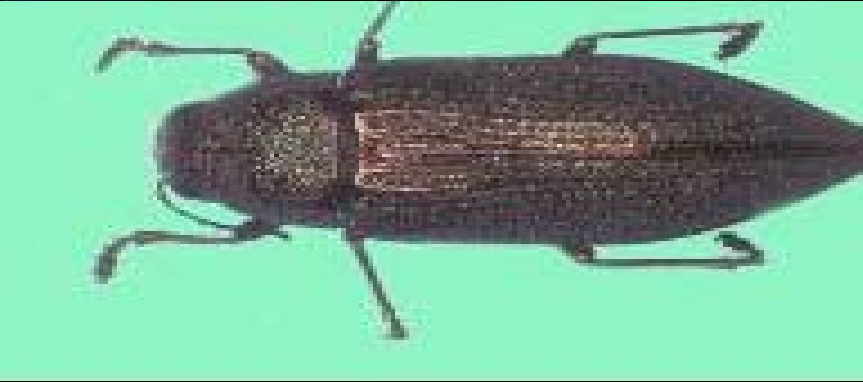
Control

No chemical controls are
recommended under forest conditions.

Rapid utilization of cut timber. Urban trees,
By the time beetles are present, tree is
Considered "dead".



Wood Borers

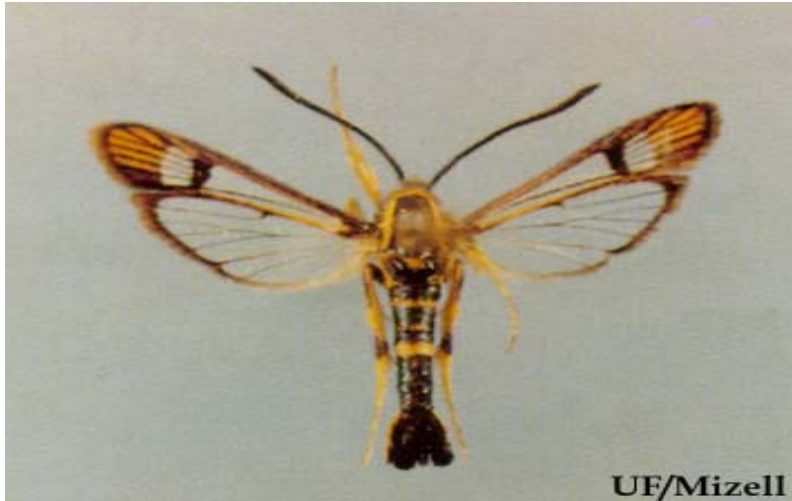


Flat Headed Borers/ Metallic



Round Headed Borers/ Longhorn Beetles

Wood Borers



Wood Borers

- Bifenthrin
 - Pyrethroid
 - Carbaryl
 - Cypermethrin
 - Dinotefuran
 - Imidacloprid
 - Permethrin
- Keeping plants healthy can minimize damage from secondary pests like insect borers.
 - Avoid other physical injury or stress to tree trunks or roots.

Be on the alert!!

- Emerald Ash Borer



- Discovered 2002 in Michigan
- Attacks all species of *Fraxinus*, as well as some *Ulmus*, & *Juglans spp.*
- Larval galleries girdle branches and trees
- Trees often die 2-3 years after Infestation
- Established!



EAB larvae kill ash trees by feeding on phloem tissue beneath the bark, creating galleries which girdle the tree (cut off its ability to transport sugars).



D. Cappaert, MSU

Emerald Ash Borer: Signs/Symptoms

- Distinct, D-shaped exit holes in the bark
- Serpentine-shaped tunnels under the bark on the surface of the wood
- Young sprout growth clustered at the base of the tree
- Unusual activity by woodpeckers
- Die-back on the top third of the tree
- Vertical splits in the bark

Adults

- Adult borers emerge from the tree through 'D'-shaped exit holes in May and during the summer.



Oak Galls



- Chemical control is not recommended for light infestations, especially in the landscape.
- Prune and destroy/burn galls, if possible.
- Chipping does not cut infested plant parts up enough.
- In tree nurseries or during heavy outbreaks, target gall wasps emerging from stem galls with a residual contact insecticide (e.g., acephate, bifenthrin, carbaryl)
- usually from December to March.

Formosan Subterranean Termites

- Create Mud Tubes
- Soldiers will come out to investigate disturbance



Pines



Pitch Canker



- Pitch canker is caused by a fungus that creates a resin-soaked lesion in the inner bark and outer sapwood of southern pine species.
- Use of fertilizers rich in nitrogen is often accompanied by a large increase in pitch canker incidence.

Bark Beetles

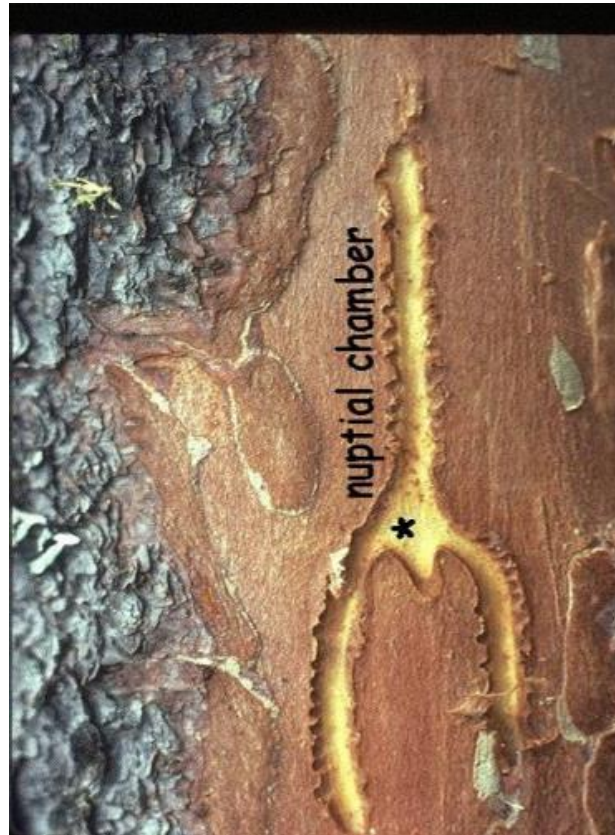
Pine Bark Beetles

Native, naturally occurring pine bark beetles that occur throughout the Southeastern United States



Common Hosts
Stressed, dying, or recently-dead pines as hosts. Preferred host (loblolly pine).

Galleries



SPB (southern pine beetle)

During one of Florida's worst SPB years on record (2001), there were over 2900 infestations and 17,600 acres of killed timber statewide



Bark Beetles

Control

- Avoid disturbances or activities that damage or harm desired pines (e.g., physical wounding, excessive fertilization and/or irrigation, severe fire, changes in grade (fill or excavation), root-raking, soil compaction etc.).
- promptly cut and remove the trees to avoid beetle spread to adjacent living trees. In forests, a buffer strip of uninfected green trees is also cut and removed to ensure the infestation has been completely eradicated.



Pruning Errors

Lions-tailing: trees with foliage concentrated at the tips of branches because inner branches were removed.

- More susceptible to hurricane damage
- Difficult to restore



- Lions tailing

Myth: Spanish Moss and Lichen Kill Trees

- Spanish moss is an air plant that gets its nutrition from the air and rain.
- Lichens are simply attached to the bark



Lichen



Lichens are flaky moss-like organisms that live attached to the bark and branches of our landscape trees or shrubs. They do not attack and kill. It is actually an algae and a fungus living together mutualistically, an association which is advantageous to both organisms. The bulk of a lichen is comprised of fungal hyphae called rhizoids. Rhizoids serve to attach the lichen to things like rocks, bark, branches, etc. Rhizoids also obtain minerals from rain water, plant leachates and organic debris, like bird excrement and wind blown particles.

Spanish Moss is an air plant in the pineapple family



Palms

Pruning Canary Island Date Palm Case Study (very common scenario)

- A fly by night company talked the homeowner into pruning the palm with the “pineapple cut” method
- Palm Weevils were attracted to the “fresh cuts”
- They mated and laid eggs on the cuts.
- The larvae tunneled into the bud and consumed it.
- Then.....







Nutritional Deficiencies

- Most leaf symptoms remain for the life of the leaf!
- New leaf becomes an old leaf
- Correction of problem requires growth of nutritionally sufficient leaf tissue
- It may take 2 years to replace canopy
- Goal is prevention of deficiencies

Fertilizing Landscape Palms

- Broadcast 15 lbs fertilizer (not N) per 1000 sq. ft. of bed or canopy area every 3 months with 8-2-12-4 Mg with micros
- Fertilize turf within 50 ft. of any palm with recommended 8-2-12-4Mg with micros; it won't hurt the turf
- If you can't use the correct fertilizer, add additional potassium (0-0-16). It is better to use nothing at all than to use the wrong product





Induced K deficiency

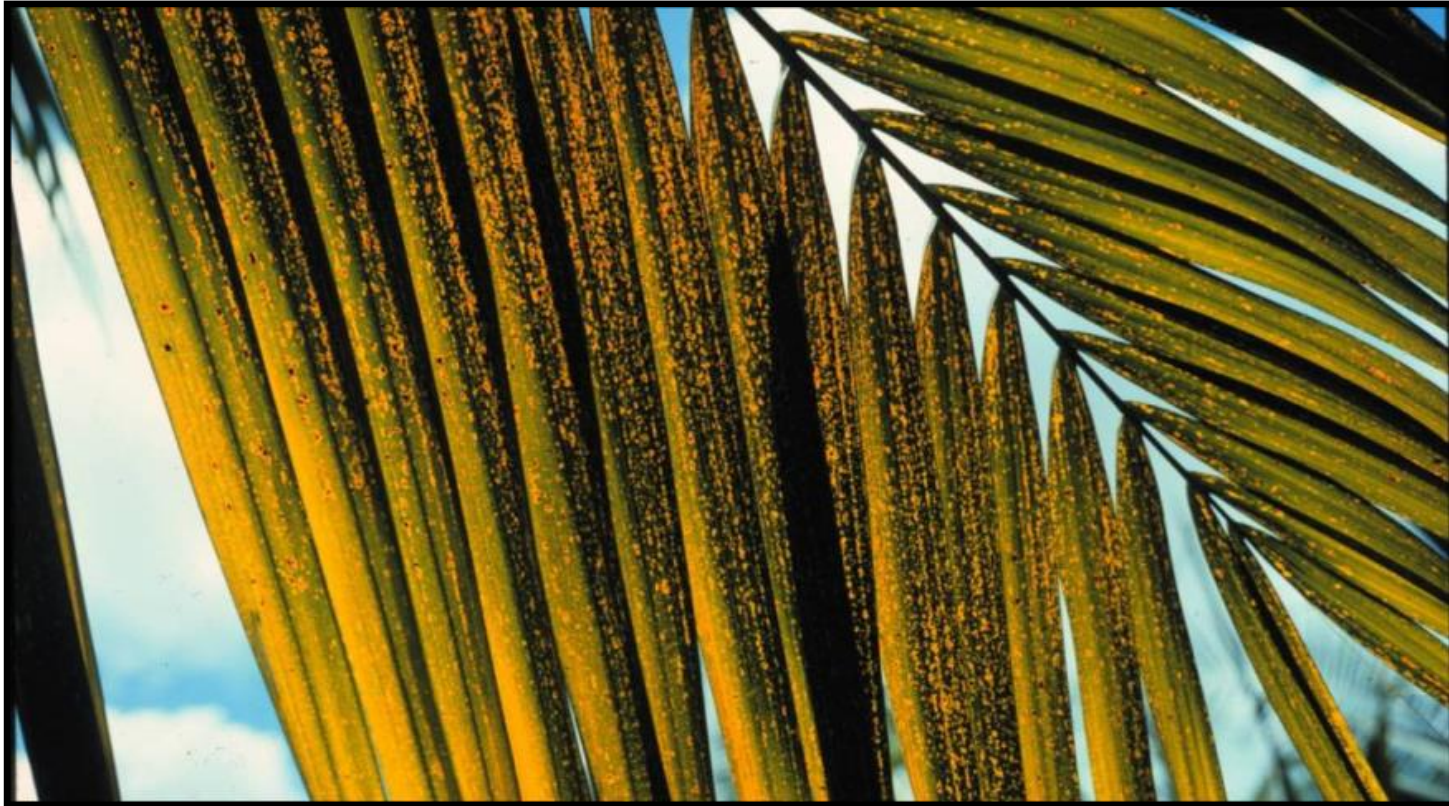


Induced Mg deficiency

While deficient soils can be a cause of palm nutrient deficiencies, most are due to improper fertilization – especially turf fertilizers with high N content

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



Marginal necrosis on fan palm leaf

Marginal necrosis on leaflet tips of feather palm







Other K deficiency symptoms:

- trunk tapering (pencil pointing)
- fewer leaves in canopy than normal for that palm species

Florida soils naturally deficient in K, but K deficiency often induced by improper fertilization



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 deficiency: yellow margins

K deficiency: 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

Mg & K



Any Questions???

