

Insect Categories, Identification & Management on Ornamentals

Limited Commercial Landscape Maintenance (LCLM)
Pesticide Applicator Certification Workshop

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Insect Pest Control

- 10X hand lens useful for small stuff



Photo: UF Bill Schall

Insects & Mites Are **Arthropods**

An arthropod has an external skeleton called an exoskeleton and jointed appendages (legs, antenna, etc.)

Kingdom (Animal, Plant, Fungi, Bacteria, etc.)

Phylum

Class

Order

Family

Genus

Species

Variety or Cultivar

Common Name

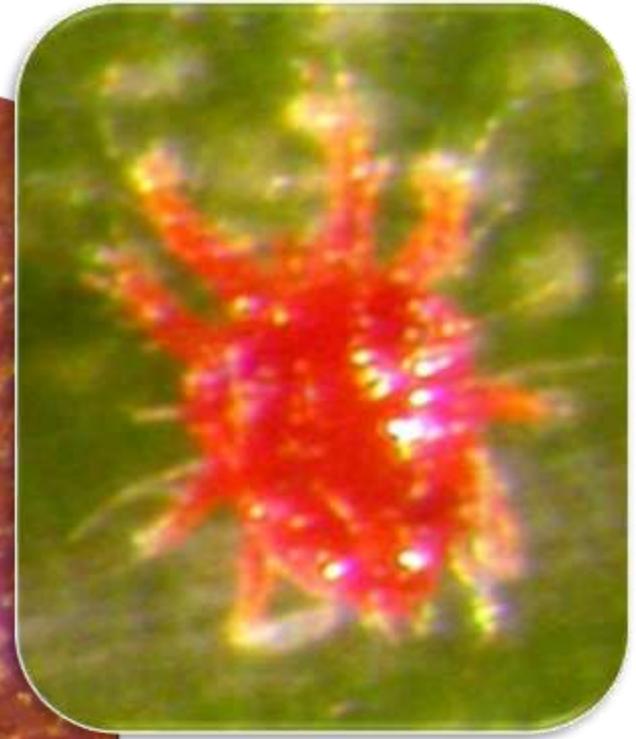
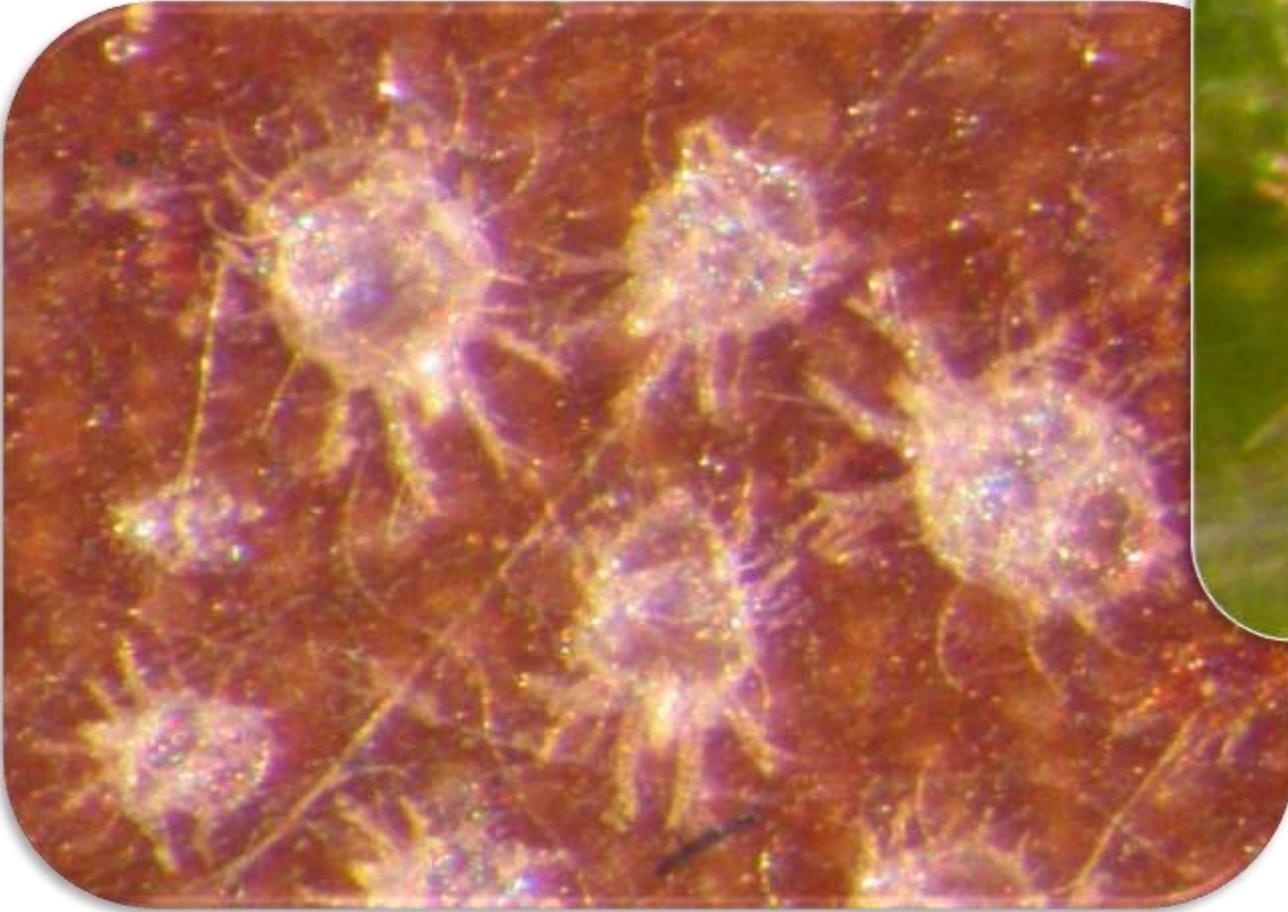


Photo: Michael C. Thomas, Florida Department of Agriculture and Consumer Services, Bugwood.org



Photo: University of Florida

Exoskeleton periodically shed (molts) as insects grow



Cast off exoskeletons from red palm mites

Slugs and Snails are Not Insects

- They do not have jointed appendages or exoskeletons
- They chew & leave slime trails

Giant E. African
Snail in Miami



Insects - Three Body Parts!



Photo: Johnny N. Dell, Bugwood.org

Insects - Three Body Parts!



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Insects - Three Body Parts!

Thorax

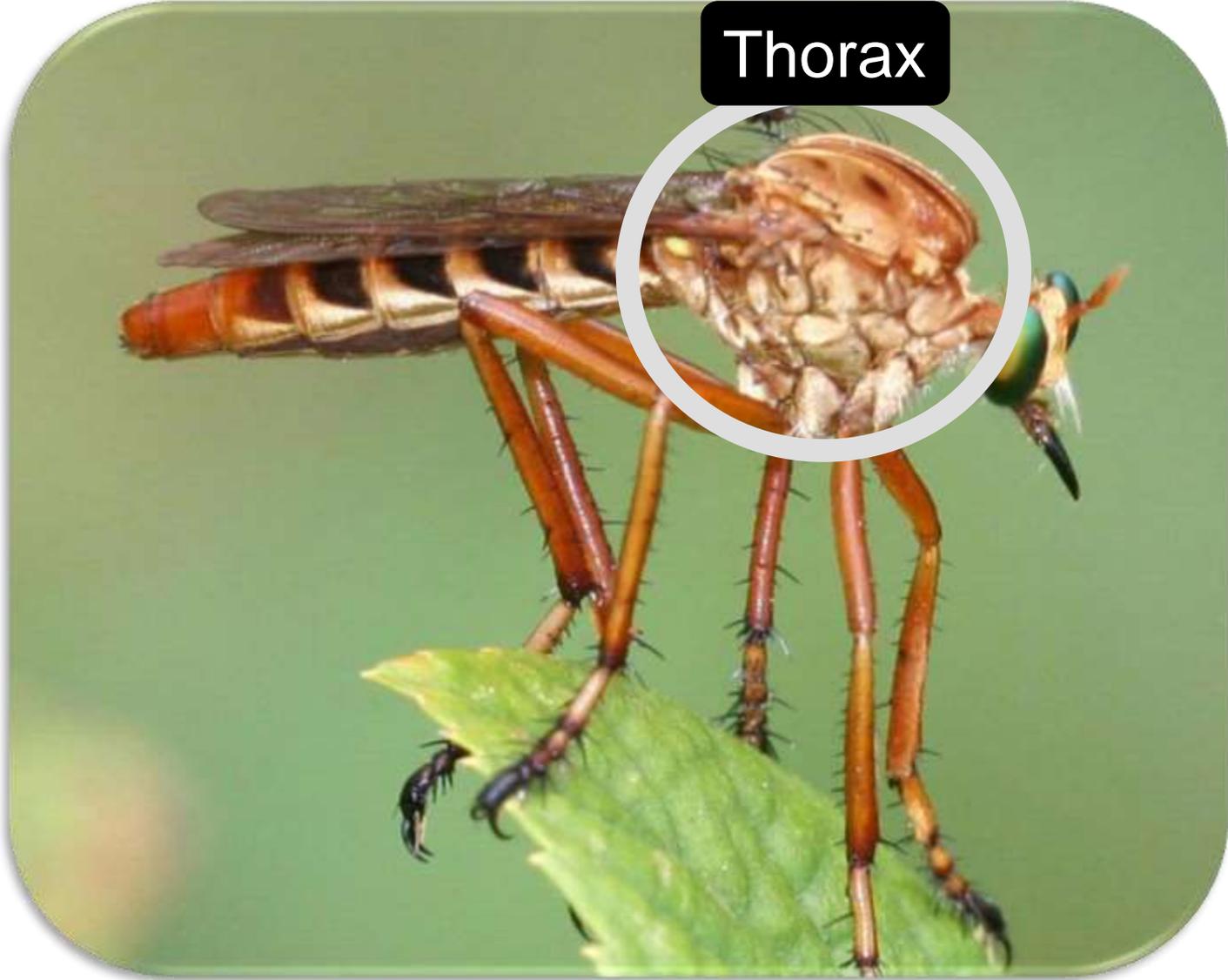


Photo: Johnny N. Dell, Bugwood.org

Insects - Three Body Parts!

3 sets - 6 legs

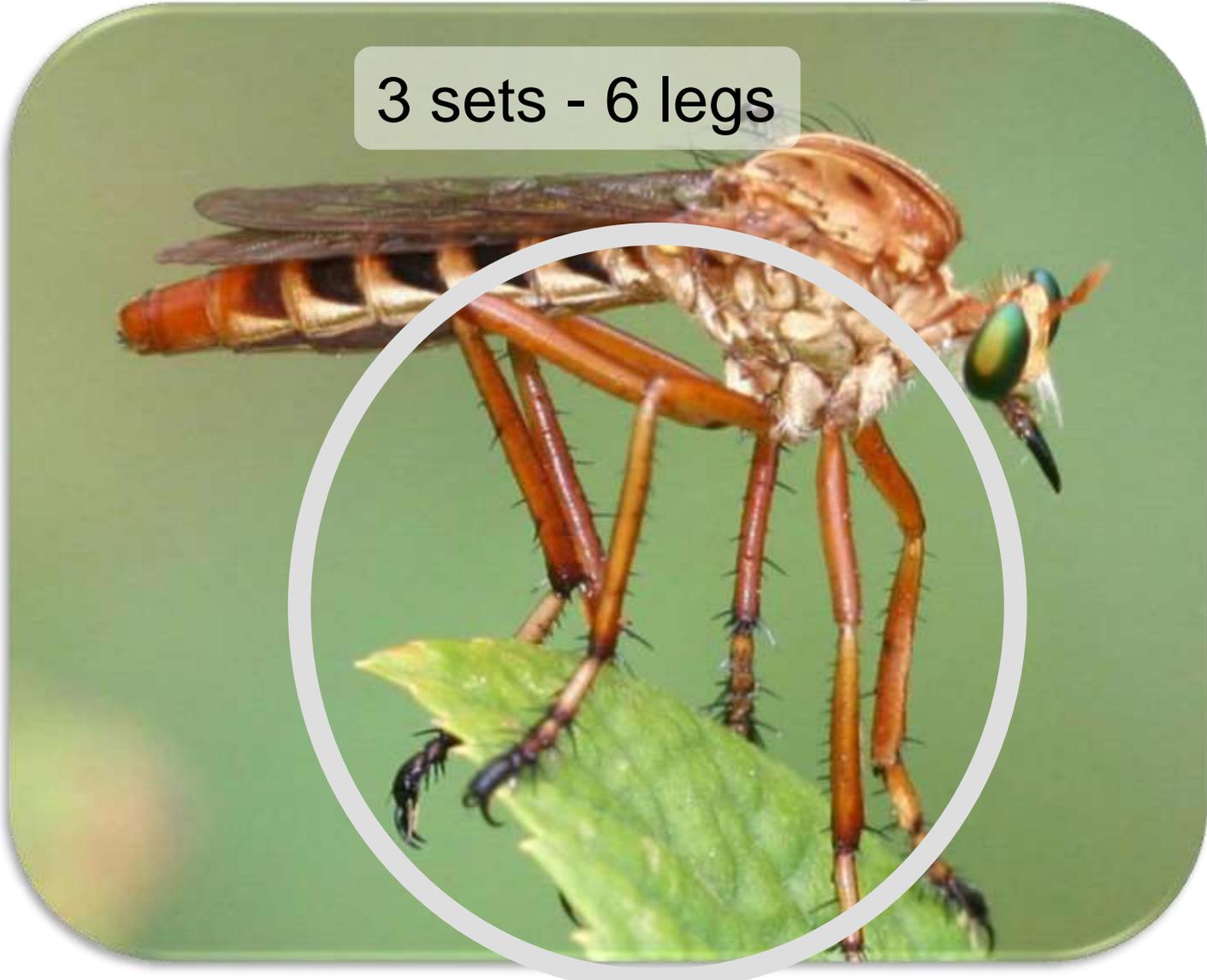


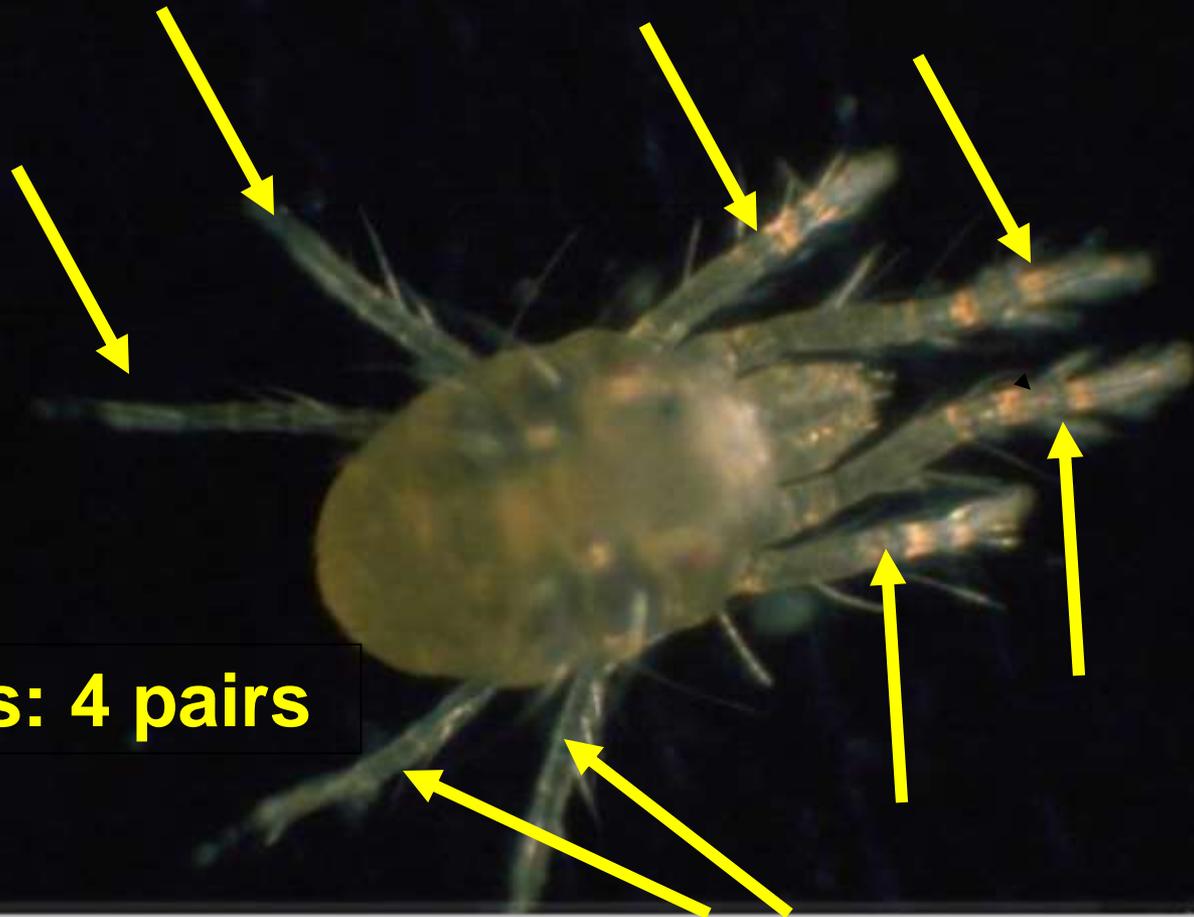
Photo: Johnny N. Dell, Bugwood.org

Insects - Three Body Parts!

Abdomen

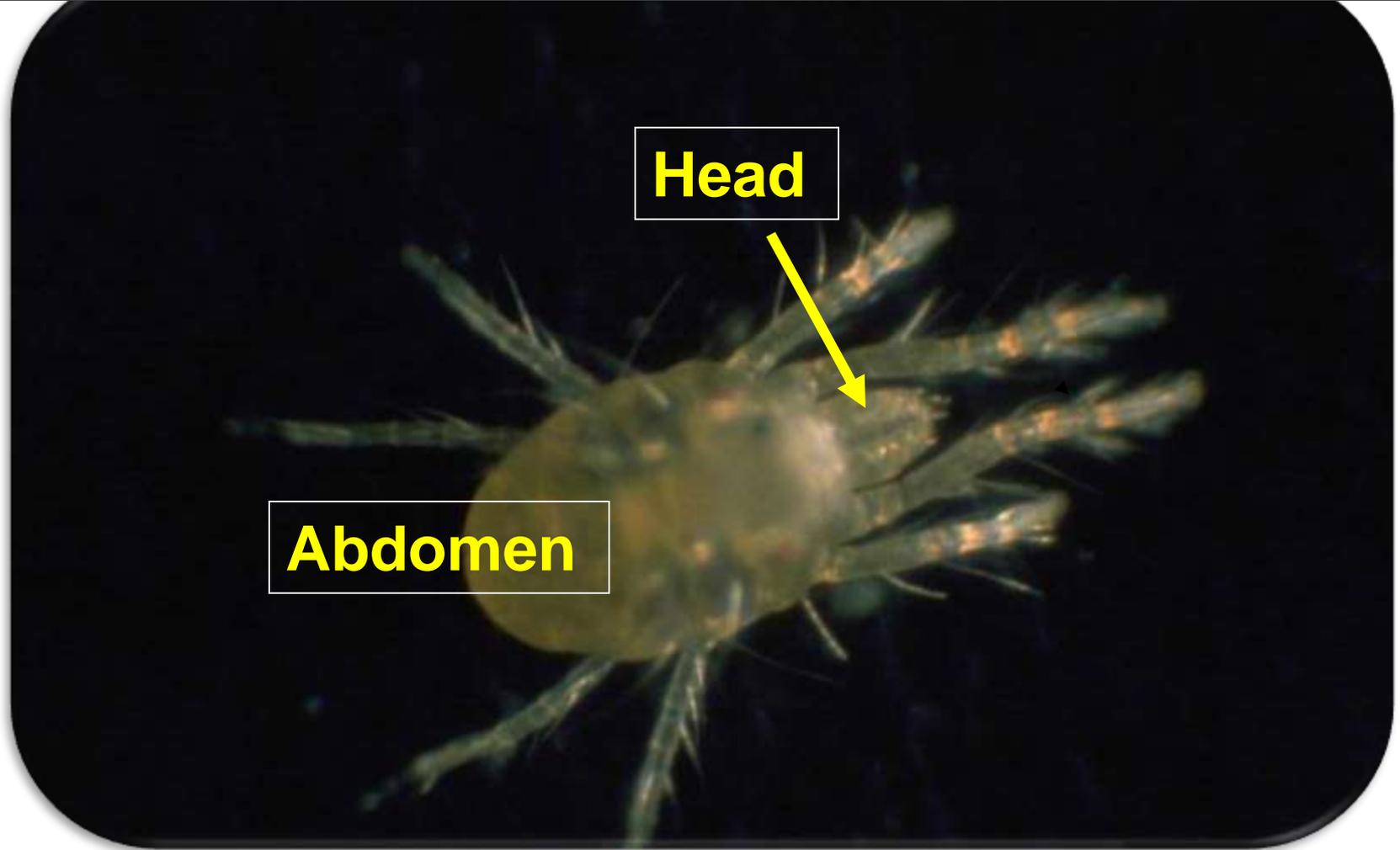


Spider Mites - 8 Legs



Legs: 4 pairs

Spider Mites-2 segments



Insect Life Cycle - metamorphosis

- The change through which arthropods go through from egg to adult
- **Complete** metamorphosis
 - 4 life stages (egg, larva, pupa, adult)
- **Gradual** metamorphosis
 - 3 life stages (egg, nymph, adult)
- Sometimes you hear instars used when discussing the younger stages

Complete metamorphosis

- Immature stages (larvae, caterpillars, grubs, maggots)
 - Typically feed on different hosts than adults
 - Are often the most damaging stage
 - May utilize different habitat than pupae or adults
- Examples: beetles, weevils, moths, butterflies, flies, bees, ants, etc.



Egg



Larva



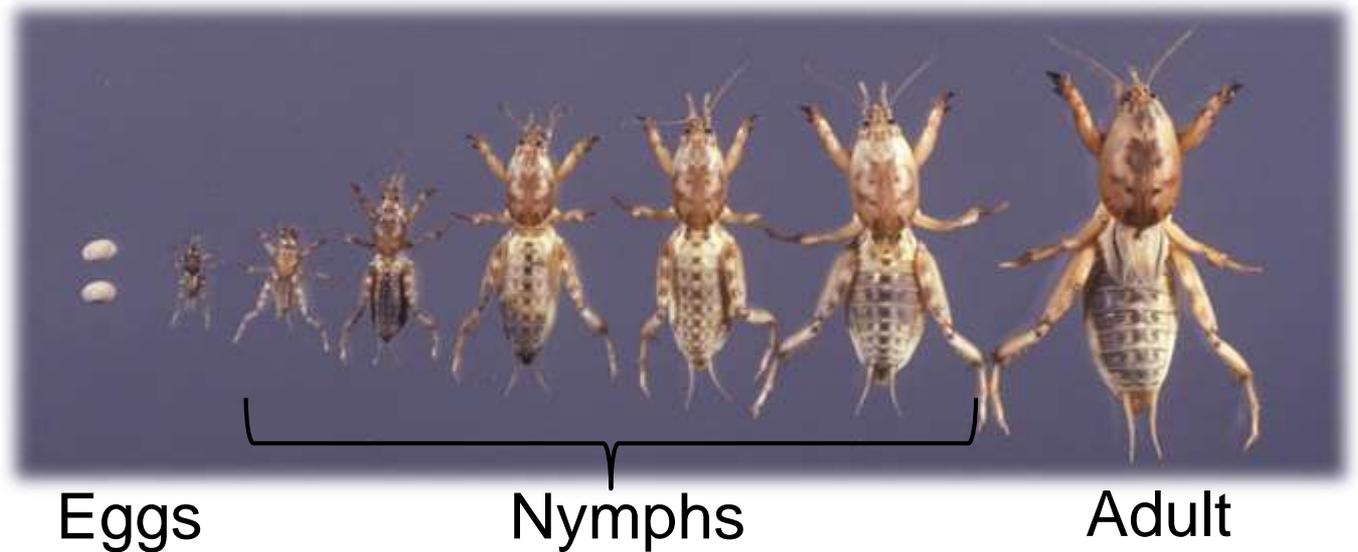
Pupa



Adult

Gradual metamorphosis

- Immature stages (nymphs)
 - Typically feed on same host plants parts as adults
 - Are usually damaging with the adults
 - Can usually be found in the same habitat as adults
- Examples: mites, grasshoppers, stink bugs, termites, scale & aphids, etc.



Feeding Type

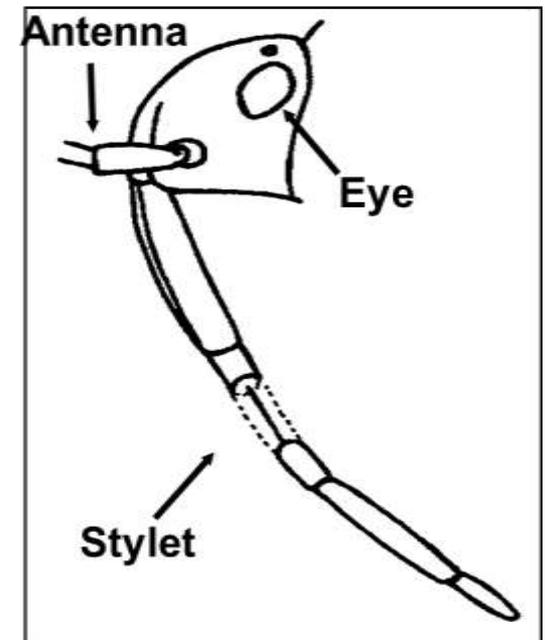
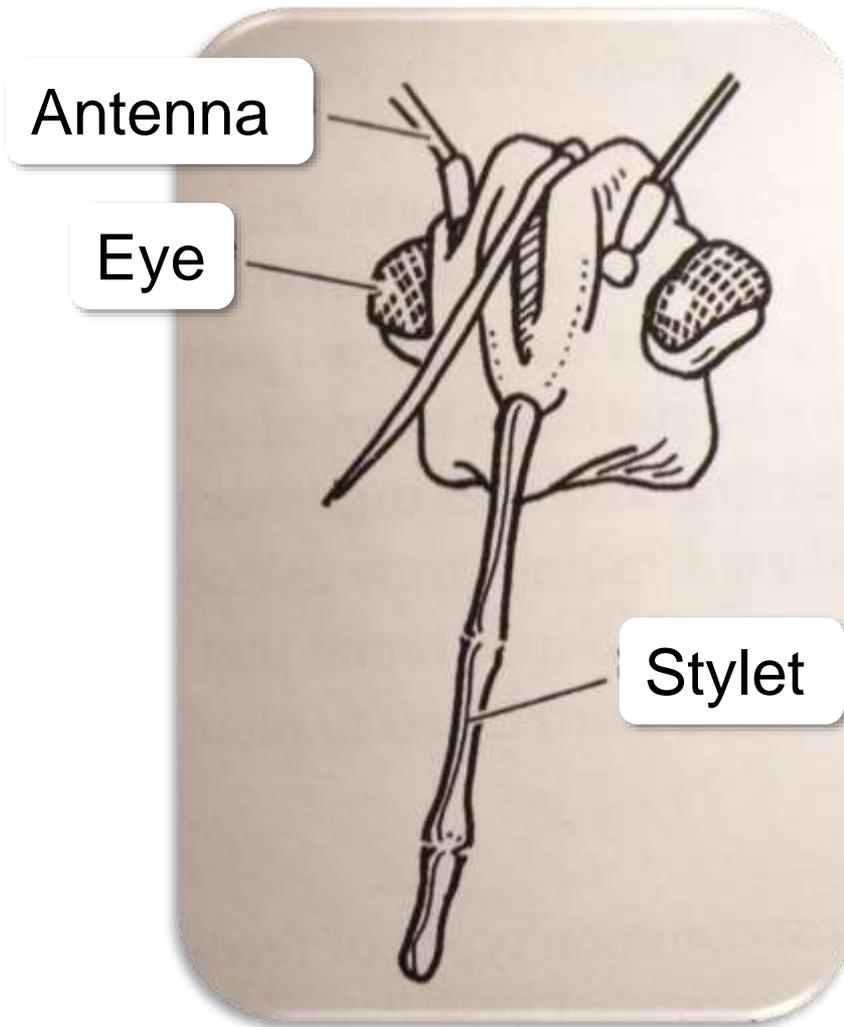
- Piercing-Sucking/Rasping
- Chewing

Photo: Joseph Berger, Bugwood.org



Photo: Clemson University - USDA Cooperative Extension Slide Series, Bugwood.org

Feeding Type- Piercing/Sucking



Feeding Type - piercing/sucking

- Feed by extracting plant sap or fluids
- Some produce excrement called honeydew – it is very sugary
- Whiteflies, aphids, soft scale, mealybugs, plant & leaf hoppers, thrips & psyllids secrete honeydew
- Armored scale do not secrete honeydew

Feeding Type

Piercing-Sucking



Photo: David Cappaert, Bugwood.org

- Scale
- Mealybug
- Aphids
- Whitefly
- Thrips
- Plant/Leaf Hoppers
- Psyllids
- Mites
- Chinch bug, Spittle bug, Ground pearl (on turf)



Photo: UF Schall



Photo: Lisa Ames, University of Georgia, Bugwood.org



Photo: Jeffrey W. Lotz, Florida Department of Agriculture and Consumer Services, Bugwood.org

Piercing Sucking/Rasping

Thrips

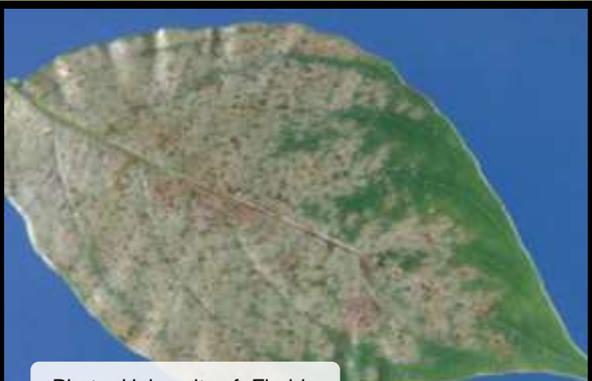


Photo: University of Florida

Photo: UF Buss

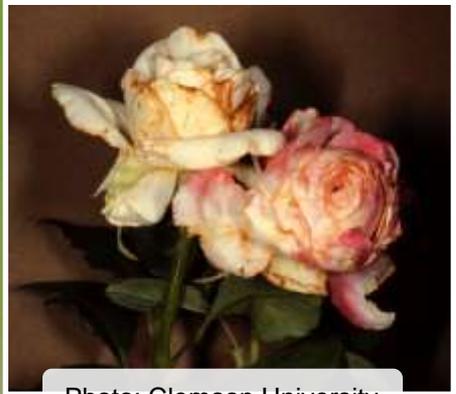


Photo: Clemson University

Feeding Type

Piercing/Sucking
Rasping



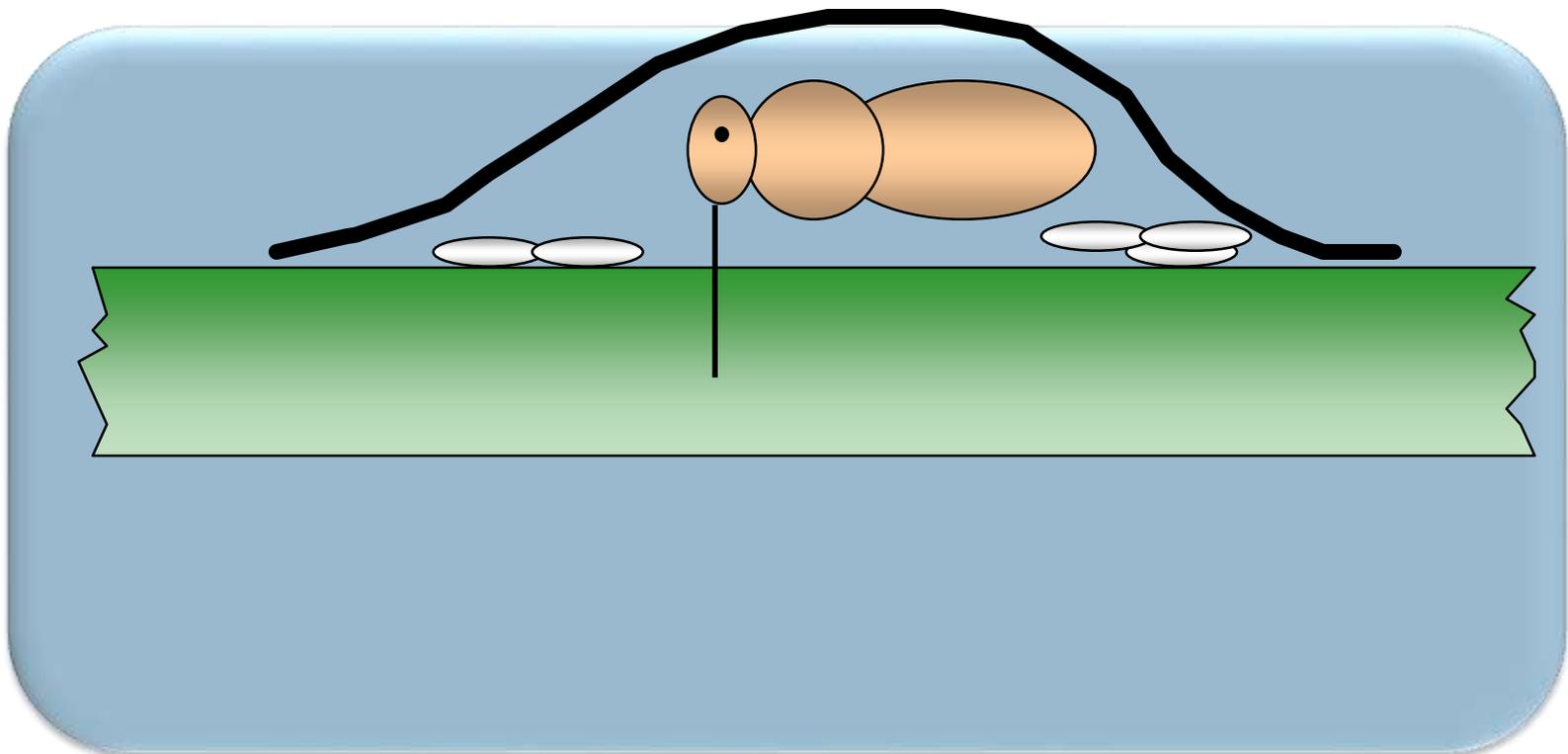
Photo: UF Osborne

Thrips mostly attack flowers, followed by leaves & sometimes young fruit

Ornamental Insects

Scale Insects

- Armored – no honeydew
- Soft – [honeydew](#)



An **Armored Scale** upside down

(false oleander scale)



Palm Aphid (looks like a scale insect)





Mealybug

Piercing/Sucking
Mouthparts

- Often covered with wax
- Produce honeydew, and therefore sooty mold



Insects with Piercing/Sucking Mouthparts

- Production of “honeydew” causes growth of “sooty mold” (soft scale, whitefly, mealybug, aphids, plant hoppers, thrips, phyllids)
- Fungus grows on honeydew which makes the leaves look dirty and black
- Attract ants
 - Protect insects producing the honeydew
 - Move insects from one plant to another

Aphids

Soft, pear shaped bodies
with cornicles



Photo: UF Schall



Photo: UF L. Buss

Whitefly

Feed on underside of leaves producing yellow mottling on top of leaves



Photo: UF Schall

Photo: UF L. Buss

Lace bug

Feed on underside of leaves producing stippling on top of leaves & excrement on bottom



Photo: UF L. Buss



Another Piercing Sucking

Spider Mites

- Some, like two-spotted spider mites produce silky webbing mostly on leaf undersides or around leaves
- Leaves may also show silvering or yellowing from mite feeding
- Damage often worse during dry weather
- Can shake over white paper to see



Photo: UC Statewide IPM Project



Photo: David Cappaert, Michigan State University, Bugwood.org

Turf Insects-piercing/sucking

- Chinch bugs
- Ground pearls
- Spittlebug



Turf Insects-piercing/sucking



Photo: UF Castner



Chinch bug

- Damage often concentrated & spreads outward
- Grass stunted, wilted and dead
- Often first along sidewalks, poorly irrigated areas or intense sun areas

Photo: UF Castner

Turf Insects-piercing/sucking

Ground pearl - in armored scale group

- Cause irregular patches of yellow, brown or dying grass

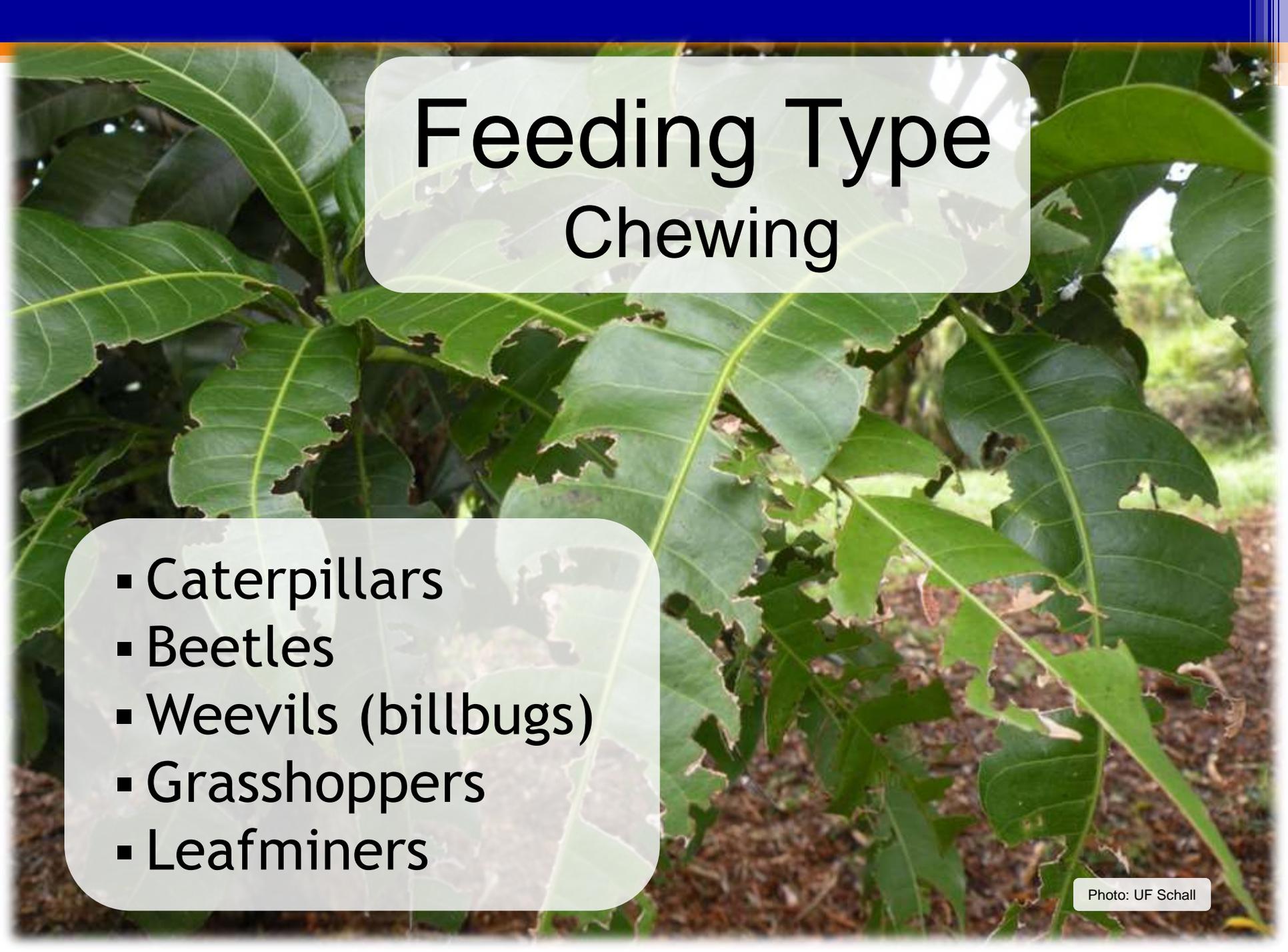
Turf Insects-piercing/sucking



Photos: UF Castner

Spittlebug

- Cause yellowing, browning & blade curling



Feeding Type

Chewing

- Caterpillars
- Beetles
- Weevils (billbugs)
- Grasshoppers
- Leafminers

Ornamental Insects – Chewing

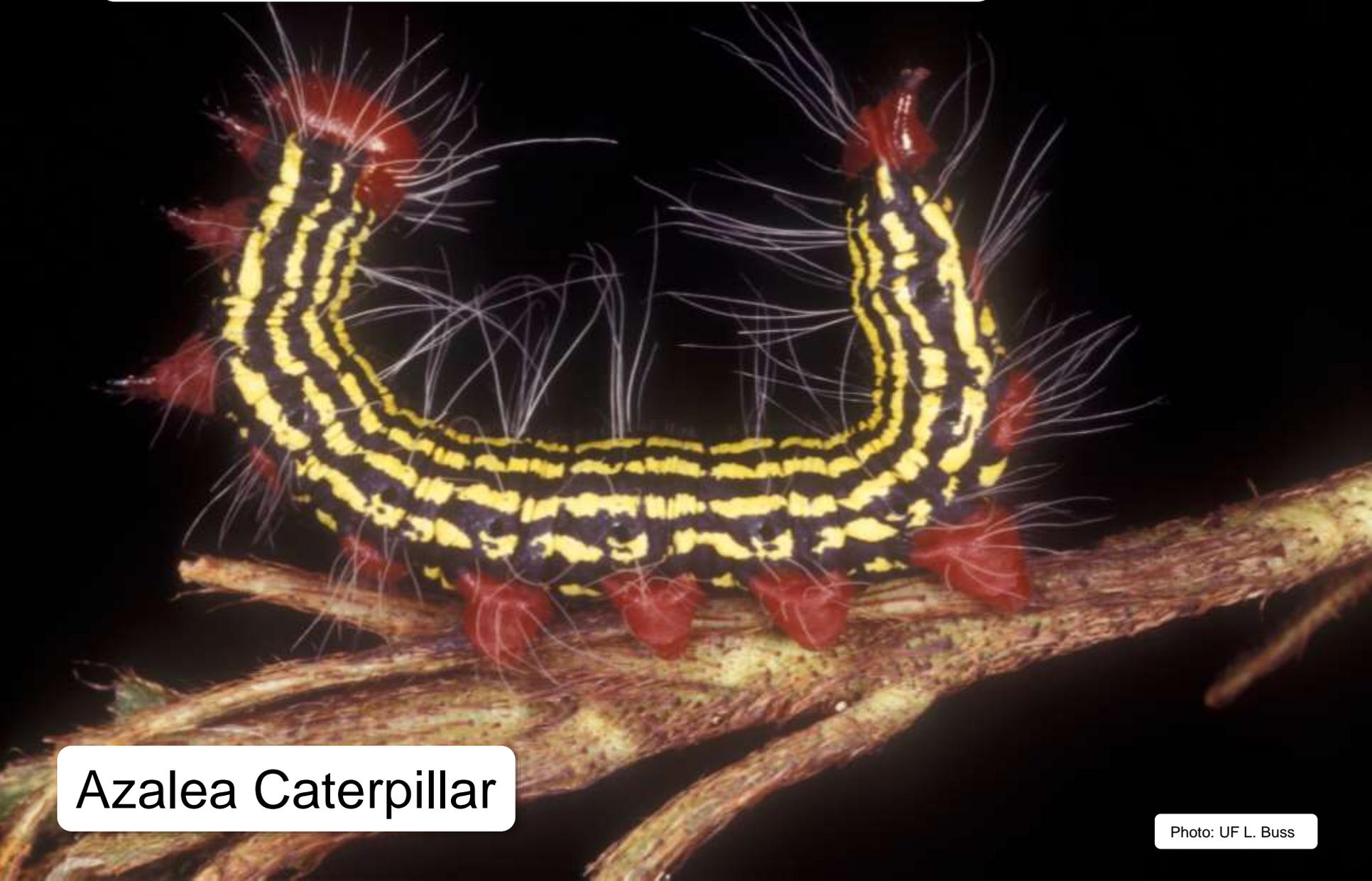
Corn Earworm (caterpillar) Head



Mandibles

Photo: Phillip Roberts, University of Georgia, Bugwood.org

Ornamental Insects – Chewing



Azalea Caterpillar

Ornamental Insects – Chewing



Photo D. Hall

Bagworms



Photo: UF Castner

Ornamental Insects – Chewing

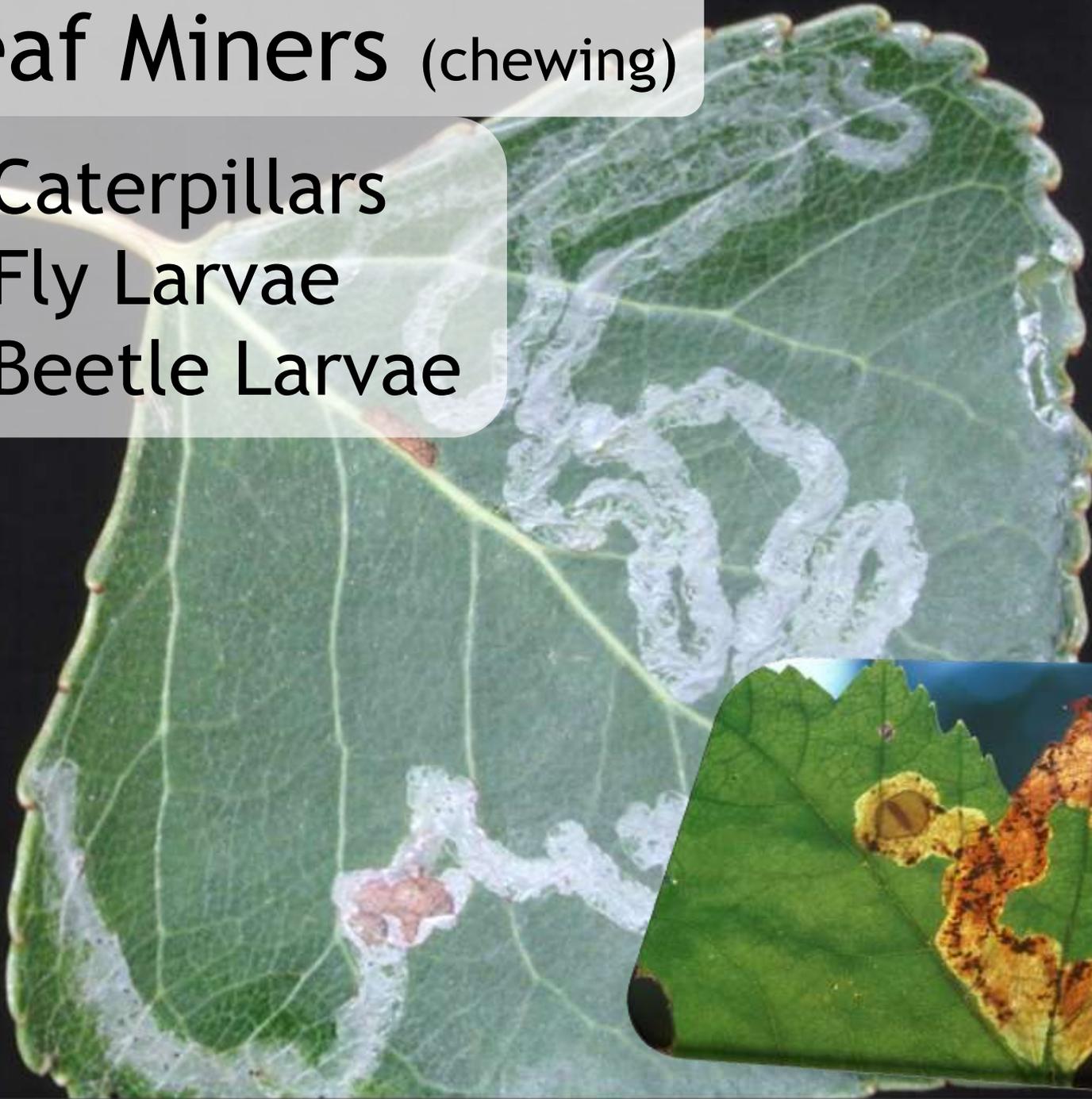


Oleander Moth/Caterpillar

Photo: UF Castner

Leaf Miners (chewing)

- Caterpillars
- Fly Larvae
- Beetle Larvae



UGA17910

Feeding Type Borers (chewing)

- Caterpillars
- Beetles & Weevils
Adults & Larvae



Photo: UF Schall



Photo: University of Florida



Photo: UF Schall

More Chewing Insects

Palm Skeletonizers

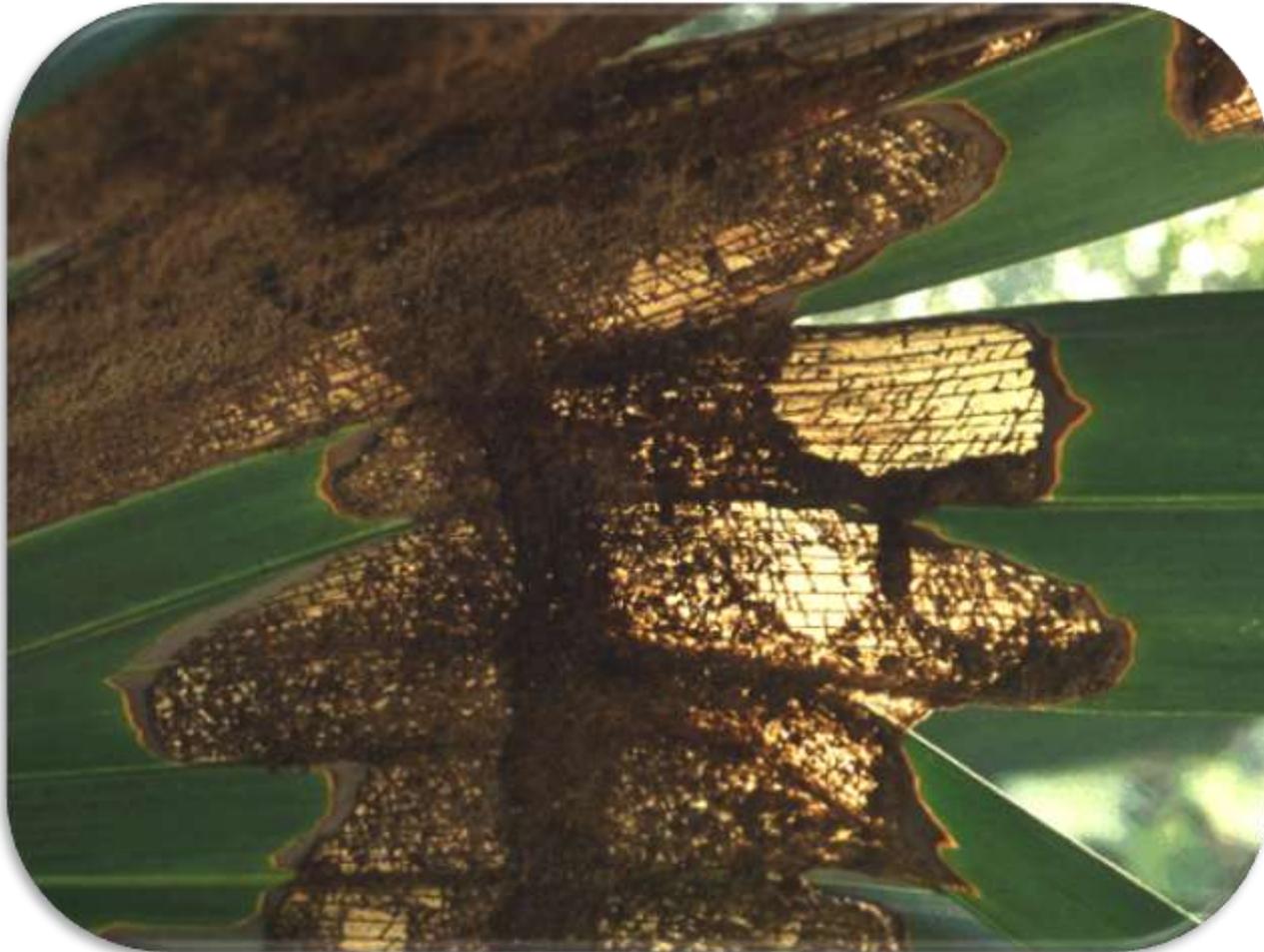


Photo: Tom Weissling, University of Florida

Why do pesticides fail?

- Pest or disease not identified properly
- Wrong rate or dosage
- Wrong timing – more effective on younger early stages
- Did not reach the target pest
- Improper environmental conditions (rain, wind, etc.)
- Outdated pesticide
- Pesticide resistance

1. What type of feeding do thrips do?

1. Masticating
2. Chewing
3. Piercing/Sucking
4. Rasping

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2. Where do you find most thrips damage?

1. Flowers
2. Never underside of leaves
3. Never top of leaves
4. Stems

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3. What is an example of an insect with a piercing sucking mouthpart?

1. Billbug
2. Chinch bug
3. Beetle
4. Caterpillar

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4. What are some examples of insects with chewing mouthparts?

1. Caterpillar
2. Beetle
3. Planthopper
4. Both 1 & 2

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5. How can you tell the difference between adult spider mites & insects?

1. Spider Mites – 6 legs
2. Spider Mites - 8 legs
3. Mites have a thorax
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(clue: sooty mold often grows on it)

1. Flocculent
2. Frass
3. Syrup
4. Honeydew

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7. Are slugs & snails insects?

1. Yes
2. No

7. Are slugs & snails insects?

1. Yes
2. **No**

8. What is a sign that plants have spider mites?

1. Waxy flocculent
2. Silvery or yellowing leaves
3. Webbing
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9. What do we call an insect skeleton, and where is it located on/in the insect body?

1. Exoskeleton – on the inside
2. Exoskeleton – on the outside
3. Endoskeleton – on the outside
4. Endoskeleton – on the inside

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10. Insects with cornicles and pear shaped bodies are which of the following?

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2. Thrips
3. Aphids
4. Spider Mites

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