

# **Piercing Sucking Insects and Their Control**

James A. Bethke

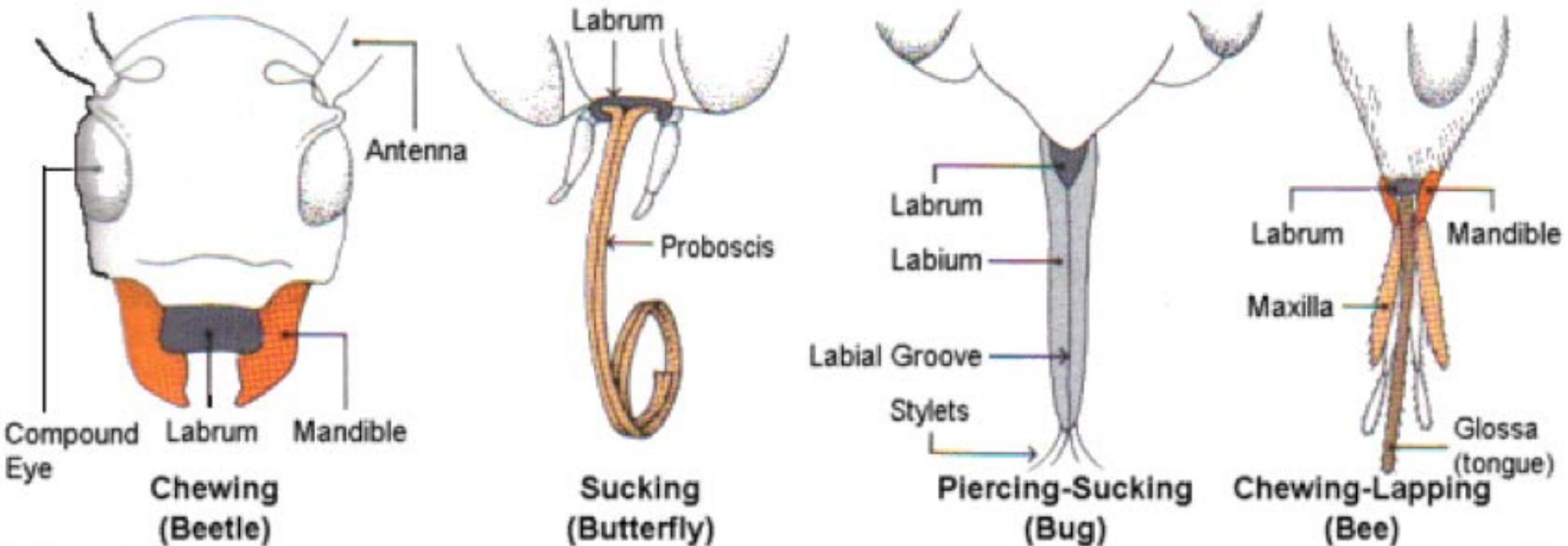
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# Presentation Outline

- Piercing and sucking mouth parts
- Piercing sucking insects
- Feeding behavior and how it relates to control
- Control options

# Feeding Behavior



# Feeding Behavior



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# Order Hemiptera

- Heteroptera



- Auchenorrhyncha

Fulgoromorpha



Cicadomorpha



- Sternorrhyncha

Psylloidea



Aleyrodoidea

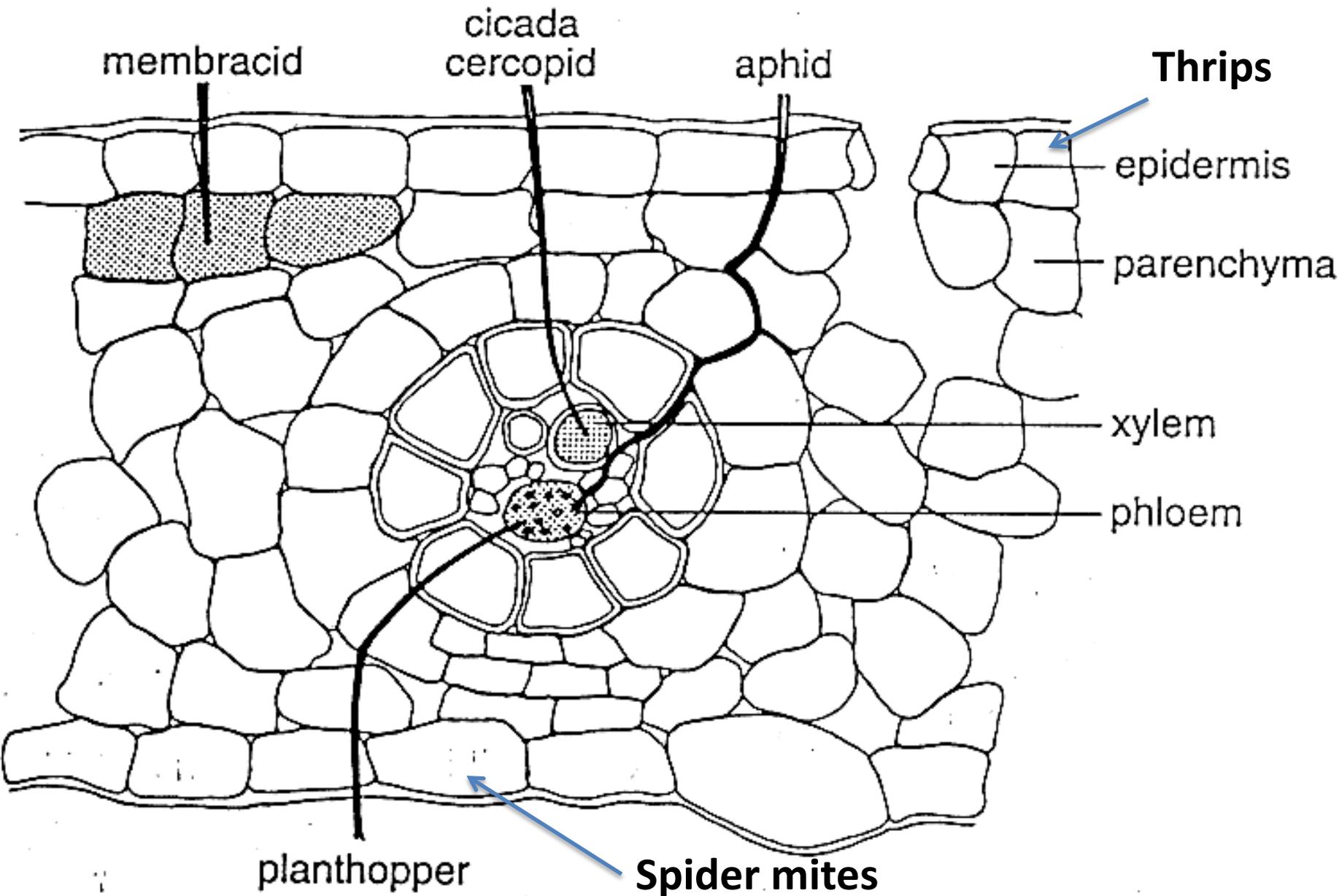


Aphidoidea



Coccoidea





# Aphids



# Whiteflies



# Mealybugs

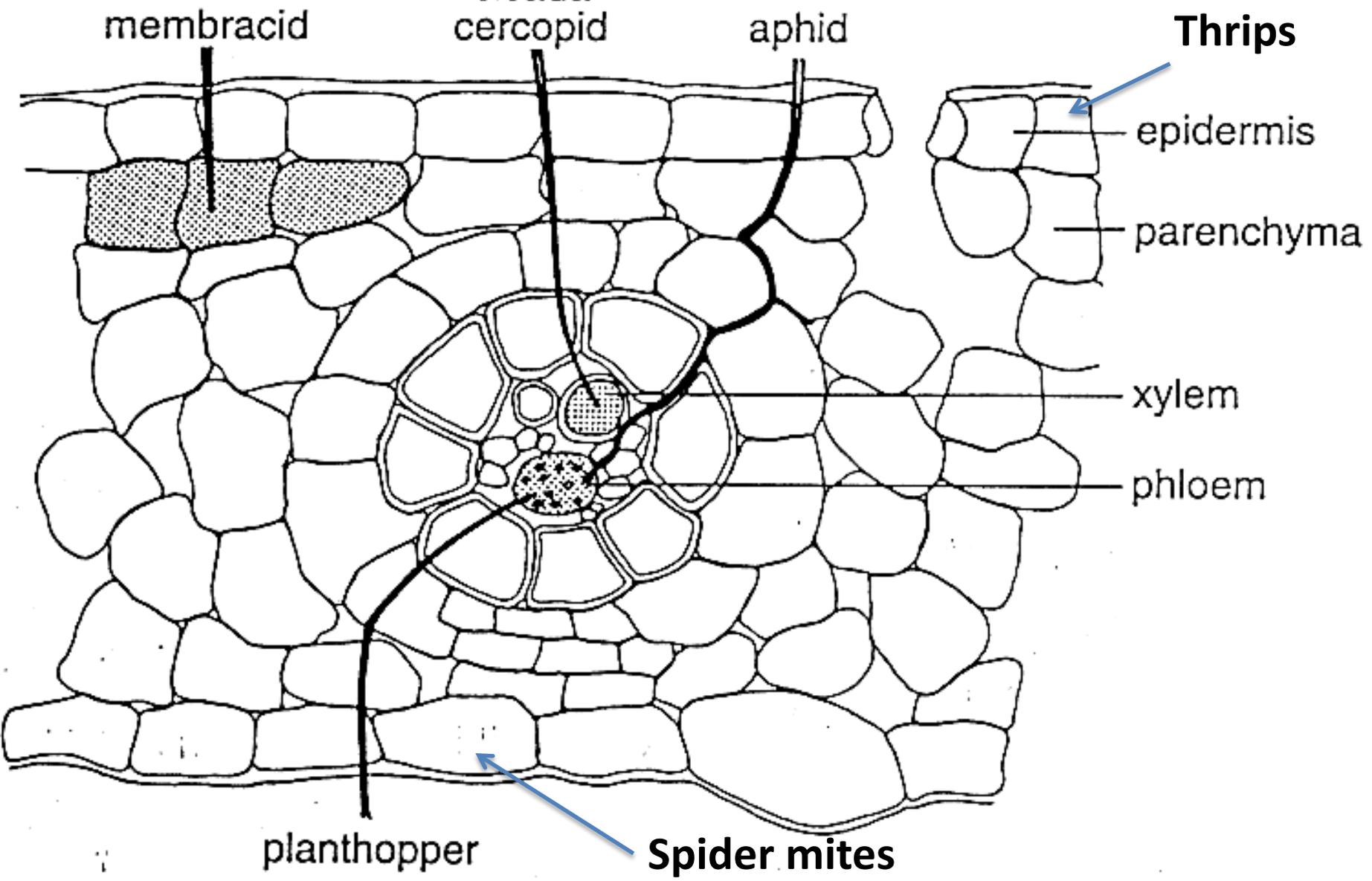


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# Soft Scale Insects



Whiteflies Mealybugs & Soft Scales

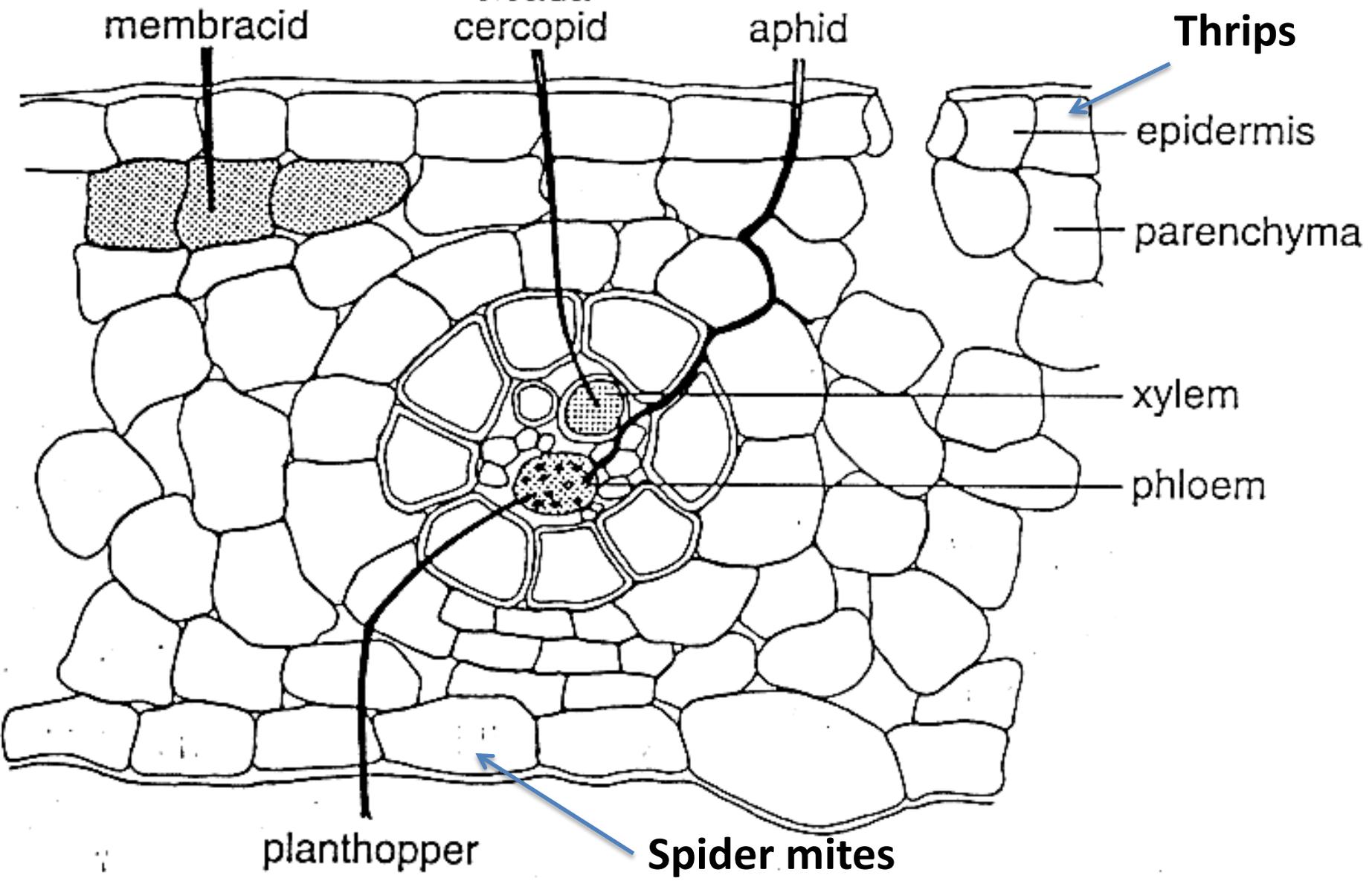


# Armored Scale Insects



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Whiteflies Mealybugs & Soft Scales



# Bagrada bug: *Bagrada hilaris*



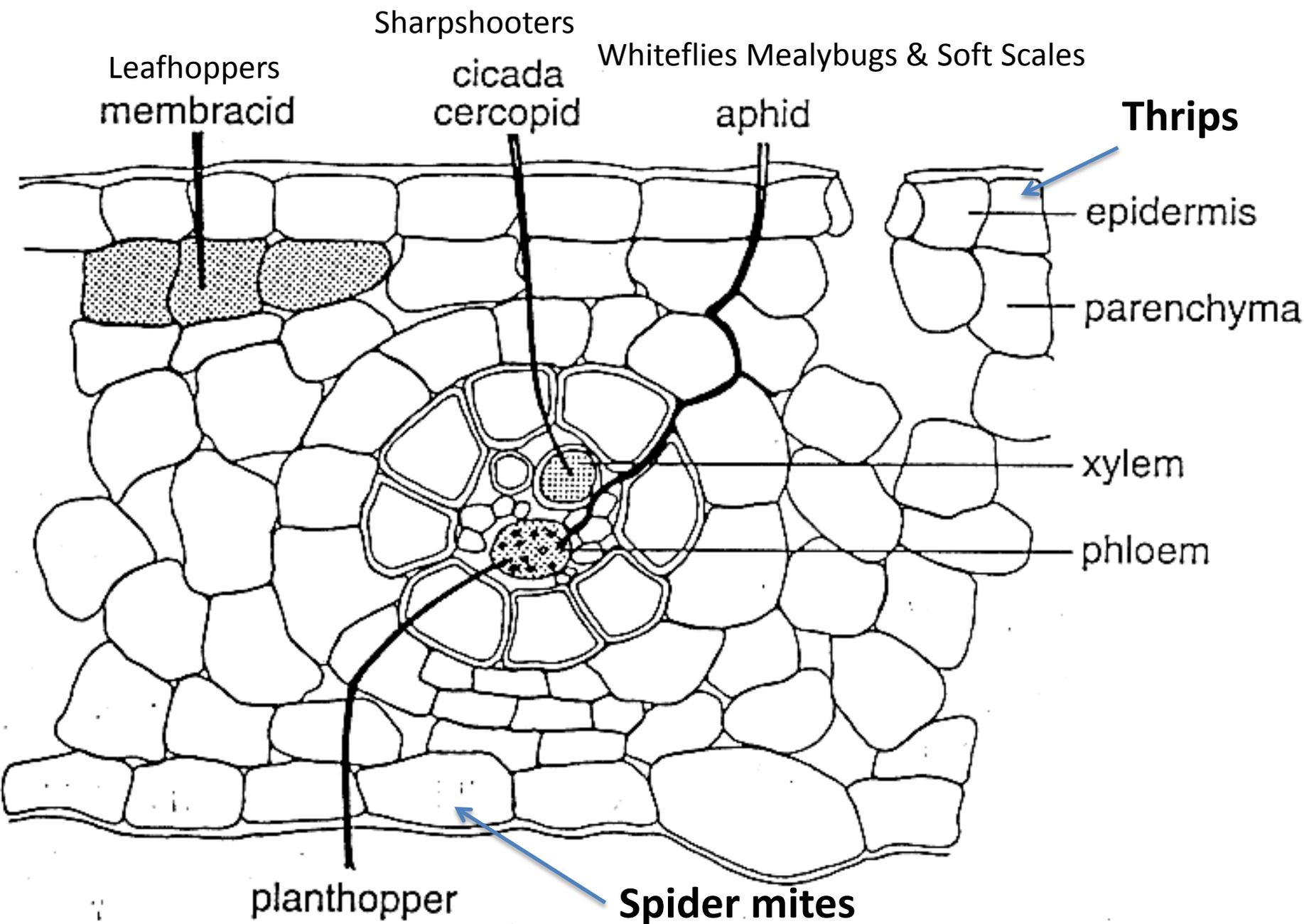
# False Chinch Bugs





Glassy-winged sharpshooter  
(*Homalodisca vitripennis*)





Leafhoppers  
membracid

Sharpshooters  
cicada  
cercopid

Whiteflies Mealybugs & Soft Scales  
aphid

**Thrips**

epidermis

parenchyma

xylem

phloem

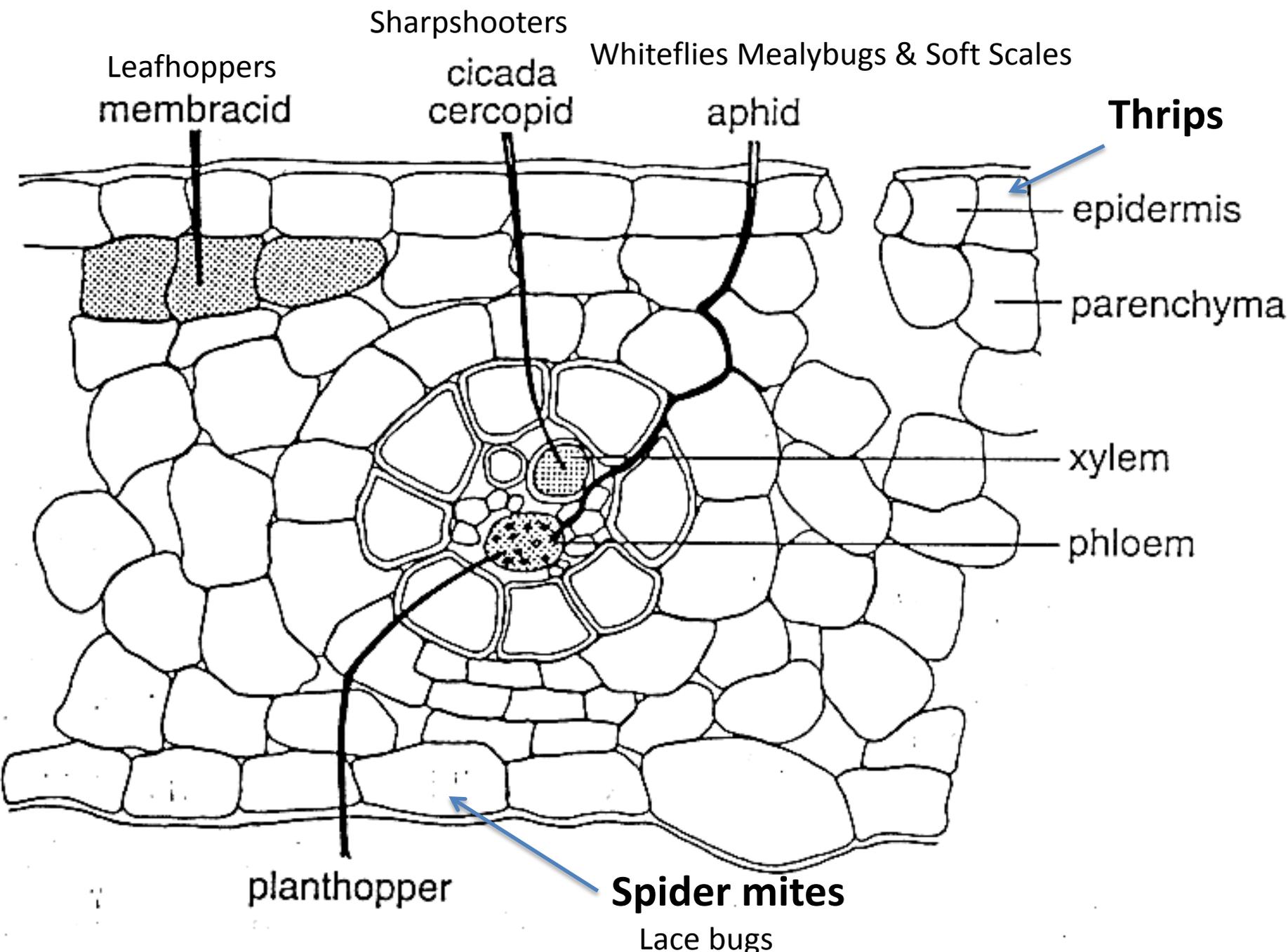
planthopper

**Spider mites**

# Lace Bugs



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# Psyllid Biology

- Year round cycle
- Slower in cooler months
- Bloom in spring during new flush
- Peak in summer

## Monitoring

Watch for activity on new flush growth

- Beat sampling
- Sweep netting
- Sticky cards

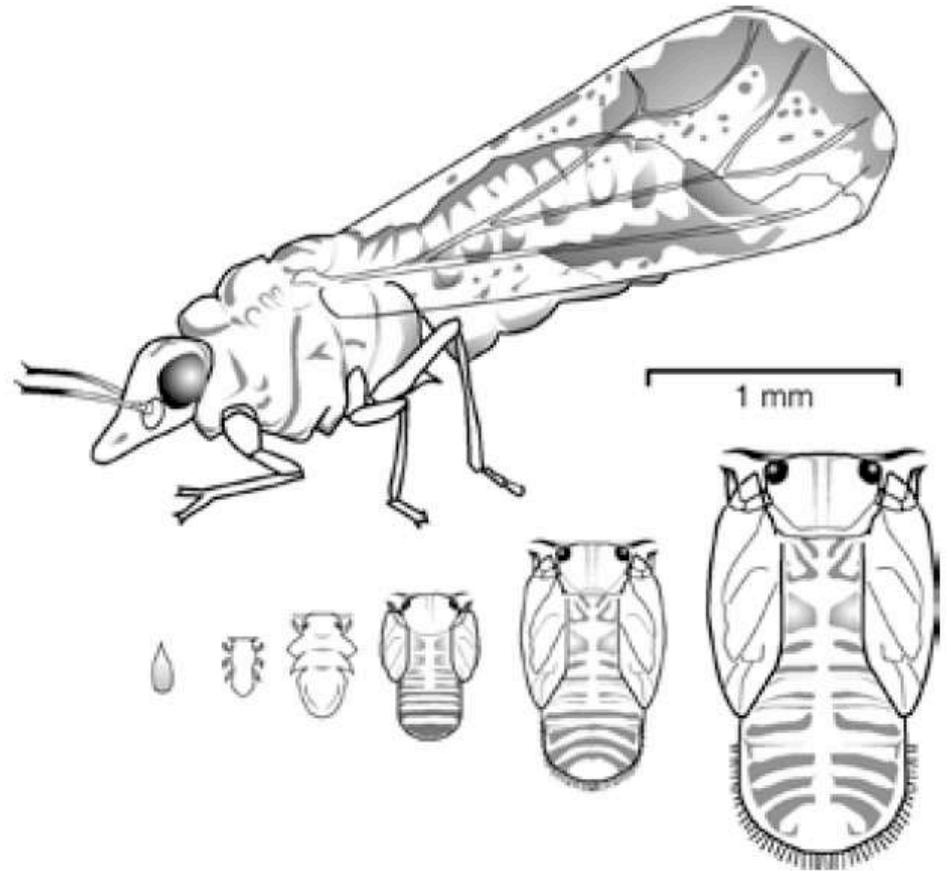


Figure 4. Life cycle of Asian citrus psyllid.  
Illustration by G. O. Conville after Catling 1970.

*Platycorypha nigrivirga* TIPU PSYLLID



Tipu Psyllid



Photo by G. Arakelian

Pittosporum Psyllid Nymphs



Photo by G. Arakelian

Pittosporum Psyllid Damage



*Trioza eugeniae* EUGENIA PSYLLID





**Eugenia  
Psyllid on  
*Syzygium***

Olive Psyllid



Pit Forming Psyllids

Sharpshooters

Psyllids

Whiteflies Mealybugs & Soft Scales

Leafhoppers

cicada  
cercopid

aphid

**Thrips**

membracid

epidermis

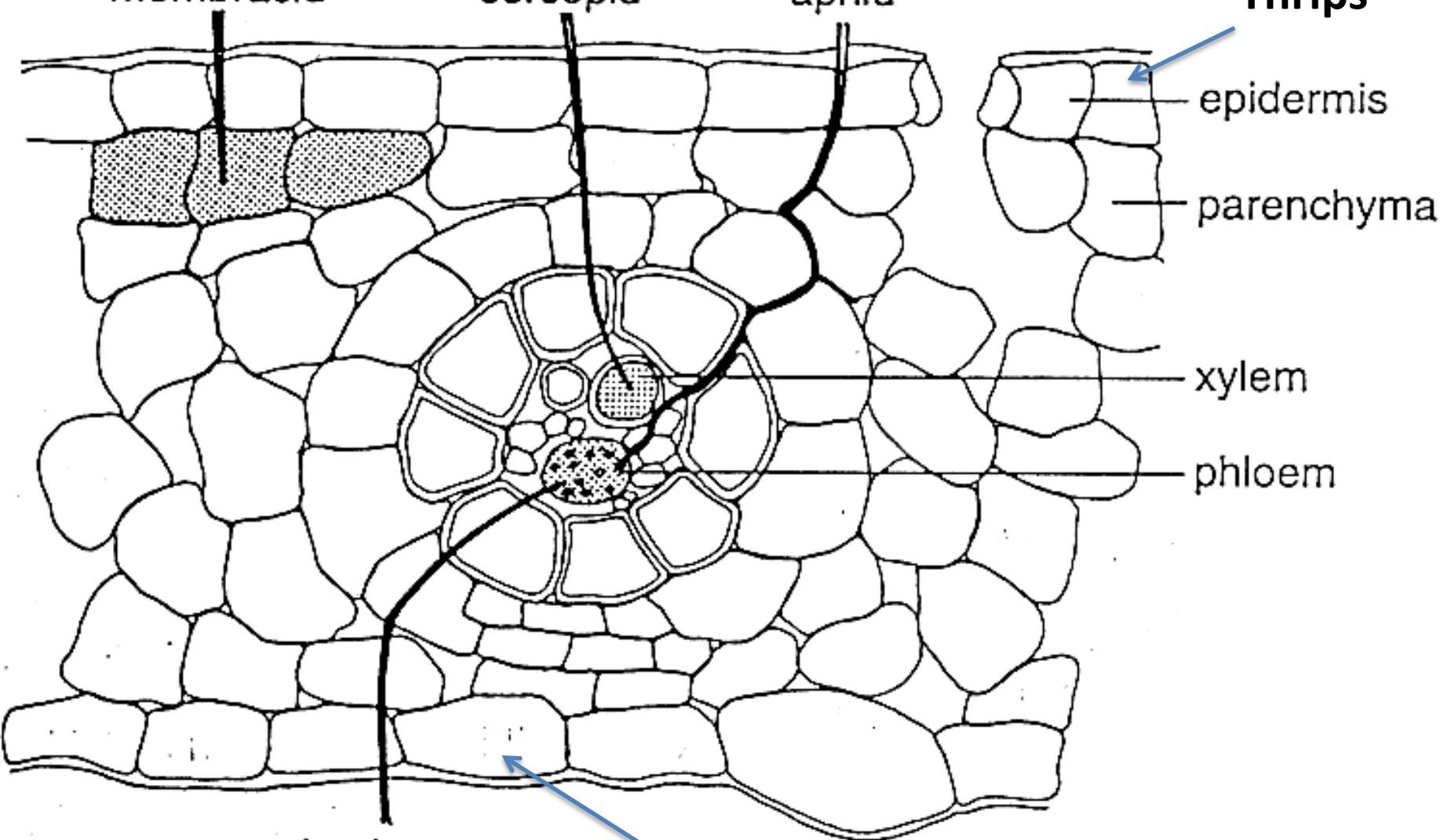
parenchyma

xylem

phloem

planthopper

**Spider mites**



# Psyllid Control

Most psyllids are under natural control, especially native psyllids

Most invasives need additional control measures until they are under some form of natural control - lady bugs, lacewings, parasitoids (Tamarixia)

# Control of Piercing Sucking Insects

# Labels

Make sure the label allows application to the correct site (i.e. Citrus, non-bearing, landscape)

## Application Methods

Foliar

Drench

Soil injection

Trunk injection

Basal bark application

# Abamectin

- **Group 6 - Glycosides**
- Cellular feeders such as thrips and mites, whiteflies

# TetraSan

- **Group 10B - (Translaminar)**
- Mites (undersides of the leaves)

# Kontos

- **Group 23 – Spirotetramat, Systemic**
- Whiteflies, Aphids, Leafhoppers, Mealybugs, Psyllids, etc.

# Mainspring

- **Group 28 – Systemic, Translaminar**
- Aphids, Whitefly, Scale, Leafminer, Mites (undersides of the leaves)

# Selective Feeding Blockers

- **Group 9 - Rycar (pyrifluquinazon), Endeavor (pymetrozine); Group 29 Aria**
- Whiteflies, Leaf hoppers, Aphids

## Neonicotinoids

- **Group 4 - Marathon, Safari, Flagship, Tristar**
- Aphids, Mealybugs, Soft scale, Whiteflies, Adelgids, True bugs, etc.

# Control Options

## Organophosphate

Orthene (systemic)

Malathion (malathion)

## Carbamate

Sevin (carbaryl)

# Control Options

## Pyrethroids

Astro (permethrin)

DeltaGard T&O (deltamethrin)

Mavrik Aquaflo (tau-fluvalenate)

Scimitar (lambda-cyhalothrin)

Talstar (bifenthrin)

Tempo (cyfluthrin)

# Control Options

Azadirachtin (neem based products)

Insect growth Regulators

Distance (pyriproxyfen)

Talus (buprofezin)

Dormant oils, Ultrafine oils

Insecticidal Soap

Pyrethrins

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