

# Greenhouse Pests



UC Statewide IPM Project  
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UGA4387048



UGA0007017

**Dr. Vera Krischik, Department of Entomology, University of Minnesota**



# Green Peach Aphid

*Myzus persicae*

Order Hemiptera

Family Aphididae

**Description:** Light to dark green with a groove between the red eyes. Three dark lines run down the back. May be winged or wingless.



# Green Peach Aphid

**Hosts:** Over 100 hosts, including spinach, potato and peach.

**Life History:** Alternation between sexual and parthenogenetic generations. Females give birth to live young in greenhouses.



**Adult female and nymph**



**Winged adult**

# Green Peach Aphid

**Damage:** Yellowing and curling of leaves, honeydew, sooty mold. May transmit viruses.

**Monitoring:** Look for aphids and damage.

Green peach  
aphids on  
chrysanthemum



# Green Peach Aphid

**Cultural Control:** Fix cracks and holes in the greenhouse, remove heavily infested plants.

**Chemical Control:** Oils, soaps, etc. Use biorationals, such as Pymetrozine (Endeavor), to conserve beneficials.

**Biological Control:**  
Lady beetles, minute pirate bugs (*Orius* sp.), lacewing larvae, parasitic wasps, the midge *Aphidoletes aphidimyza*.



Robert M. McPherson  
University of Georgia  
[www.insectimages.org](http://www.insectimages.org)

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**Lady beetle: *Hippodamia convergens***

# Melon or Cotton Aphid

*Aphis gossypii*

Order Hemiptera

Family Aphididae

**Description:** Adults are 1.0 to 1.5 mm long and yellow to dark green with a black head and thorax.

Melon aphids and  
parasitized aphid  
mummy



Jack Kelly Clark  
University of California

# Melon or Cotton Aphid

**Hosts:** Many, including cotton, cucurbits, strawberry, bean, spinach, tomato, and begonia.

**Life History:** Alternation between sexual and parthenogenetic generations. Females give birth to live young in greenhouses.

Melon aphids on chrysanthemum



# Melon or Cotton Aphid

**Damage:** Distorted growth, decreased yield, honeydew, sooty mold. May transmit viruses.

**Monitoring:** Look for aphids and damage.

**Cultural Control:** Fix cracks and holes in greenhouse, remove heavily infested plants.

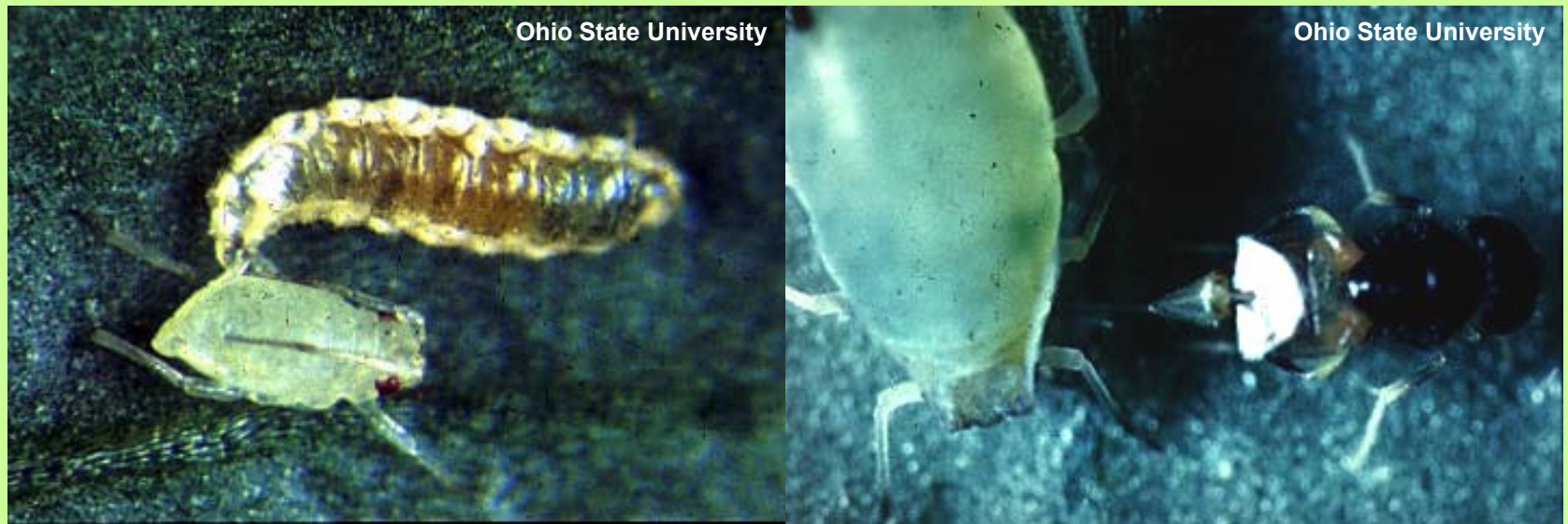




# Melon or Cotton Aphid

**Chemical Control:** Oils, soaps, etc. Use biorationals to conserve beneficials.

**Biological Control:** Lady beetles, minute pirate bugs (*Orius* sp.), lacewing larvae, parasitic wasps, *Aphidoletes aphidimyza*.



*Aphidoletes aphidimyza* larvae (left) and parasitoid (right) attacking melon aphids

# Citrus Mealybug

*Planococcus citri*

Order Hemiptera

Family Pseudococcidae

**Hosts:** Females grow to 3 mm long. White, waxy filaments protrude from the periphery. Males are small and winged. Crawlers are yellow.

Adult female, nymph, and crawlers



# Citrus Mealybug

**Hosts:** Plants in 27 families, including begonia, coleus, amaryllis, cyclamen, and dahlia.

**Life History:** Females produce cottony ovisacs from which crawlers appear. Males are rarely seen.

Adult male



Lance S. Osborne  
University of Florida

# Citrus Mealybug

**Damage:** Distorted growth, leaf drop, honeydew, sooty mold, cottony wax.

**Monitoring:** Look for cottony wax, adult females, and crawlers.

**Cultural Control:**  
Remove infested plants.

**Mealybugs on coleus.**  
Note the white wax,  
yellow crawlers and  
pale pink females.



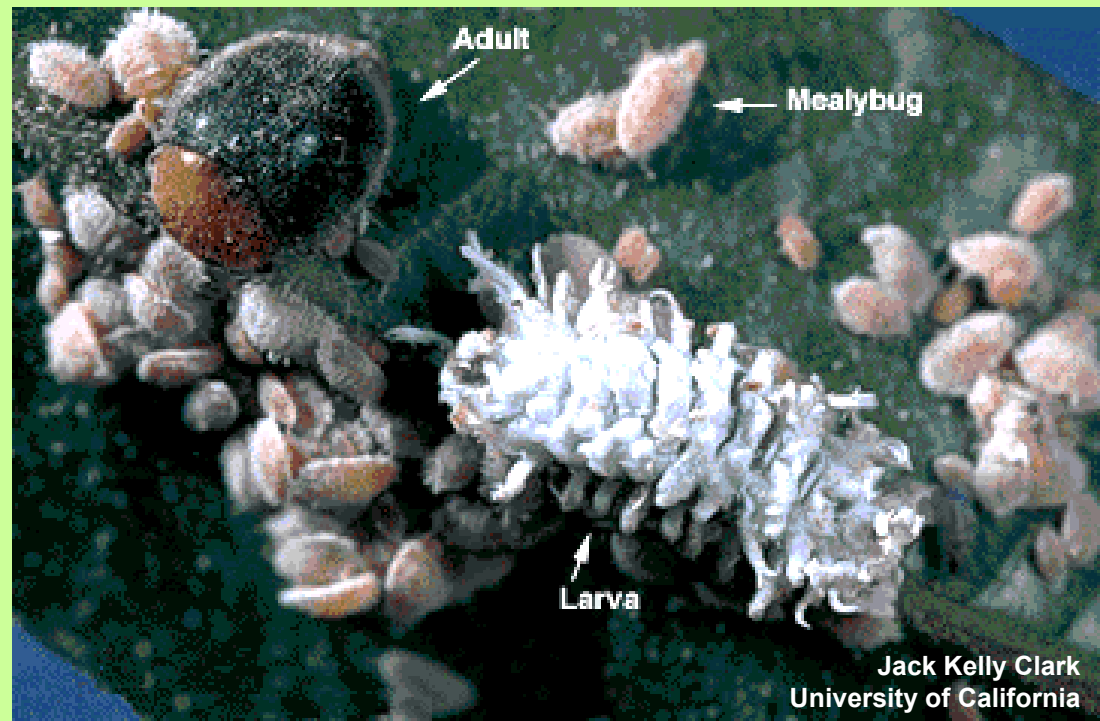
# Citrus Mealybug

**Chemical Control:** Oils, biorationals, and systemic insecticides such as imidacloprid.

**Biological Control:** The lady beetle *Cryptolaemus montrouzieri* and parasitic wasps

*Leptomastix dactylopii* and *Anagyrus pseudococci*.

*Cryptolaemus montrouzieri*. The larva mimics a mealybug.



# Longtailed Mealybug

*Pseudococcus longispinus*

Order Hemiptera

Family Pseudococcidae

**Description:** Adult females have 17 pairs of filaments and are 6 to 7 mm long including filaments. Males have wings.

Adult females (top and bottom)

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University of Florida



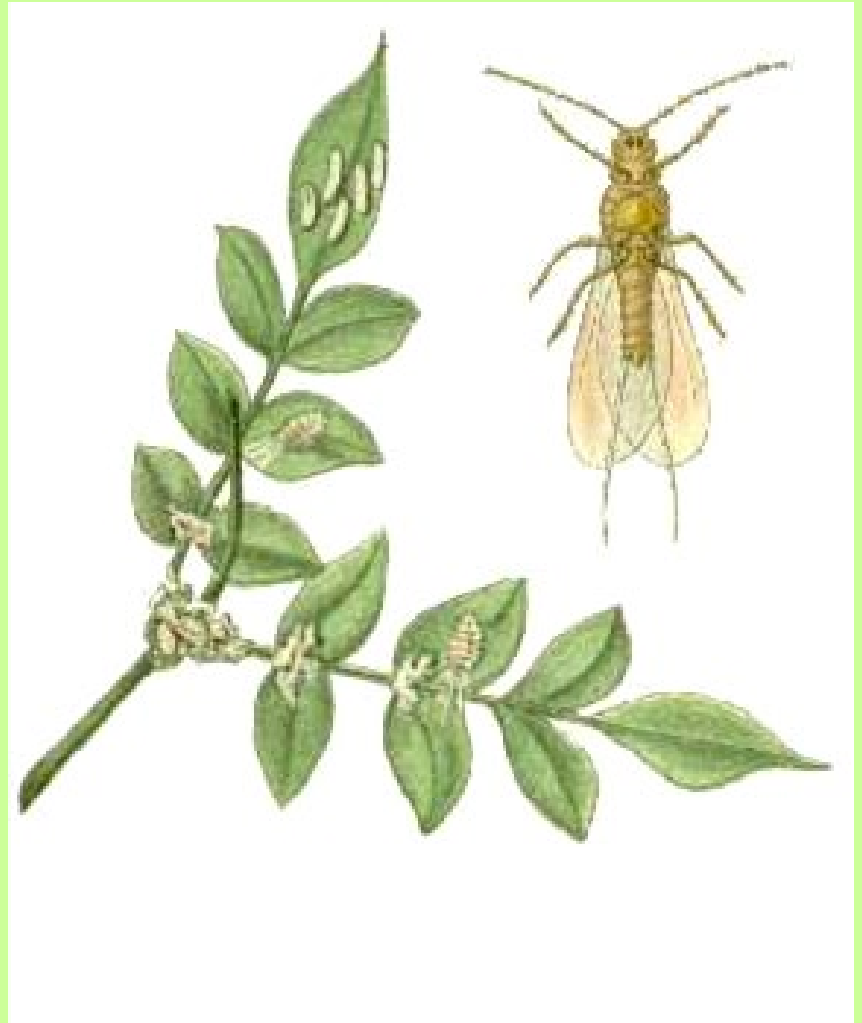
# Longtailed Mealybug

**Hosts:** Many plants.  
Dracaena is a favorite.

**Life History:** Females  
give birth to live young  
on fluffy wax.

**Damage:** Distorted  
growth, honeydew,  
sooty mold, fluffy wax.

**Monitoring:** Look for  
cottony wax, adult  
females, and crawlers.



# Longtailed Mealybug

**Cultural Control:** Remove infested plants.

**Chemical Control:** Oils, biorationals, and systemic insecticides such as imidacloprid. Chemical control is difficult.

**Biological Control:** *Cryptolaemus montrouzieri*, lacewing larvae, and the parasitic wasp *Anagyrus nigricornis*.

**Adult male**



<http://www.hortnet.co.nz/>



# Root Mealybugs

*Rhizoecus* spp.  
Order Hemiptera  
Family Pseudococcidae

**Description:** White  
and 1.6 to 3.9 mm long  
(depending on species).  
Some have waxy  
filaments that form a netting.

**Hosts:** Many plants, including chrysanthemum,  
anemone, gladiolus, iris, African violet,  
*Achillea*, *Arctostaphylos*, *Geum*, and *Polygala*.



Jack Kelly Clark  
University of California

Nymphs

# Root Mealybugs

**Life History:** Eggs are laid in a loose ovisac. All stages can be found on roots and potting mix of African violets.

**Damage:** Devitalization, foliage deterioration, death.

**Monitoring:** Examine plant root balls. The presence of ants can indicate mealybugs.

**Cultural Control:** Remove infested plants, control ants.

**Chemical Control:** Systemic insecticides, such as imidacloprid, are the most effective.

# Brown Soft Scale

*Coccus hesperidum*

Order Hemiptera

Family Coccidae

**Description:** Females are 2.5 to 4 mm long, yellowish to brown, often mottled. Crawlers and nymphs are yellow. Males are winged.

**Hosts:** Hundreds of plants, especially perennials and ferns.



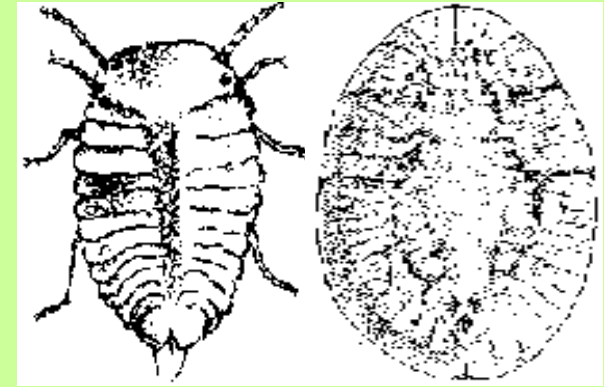
L.M. Vasvary, Rutgers Univ.

Crawlers and females

# Brown Soft Scale

**Life History:** Crawlers are born under female covers.

**Damage:** Stunted growth, wilting, leaf drop, honeydew, sooty mold.



**Crawler (L) and  
adult female**

**Brown soft  
scale on *Ficus*.  
Note the shiny  
honeydew  
secretions.**



Whitney Cranshaw  
Colorado State University  
[www.insectimages.org](http://www.insectimages.org)

# Brown Soft Scale

**Monitoring:** Look for insects and damage.

**Cultural Control:** Remove infested plants.

**Chemical Control:** Oils or systemic insecticides such as imidacloprid. Control is difficult because waxy coverings protect the insects.

**Brown soft scale  
and scale cover with  
parasitoid exit hole**



Jack Kelly Clark  
University of California

# Brown Soft Scale

**Biological Control:** Lady beetles *Rhyzobius lophanthae*, *Chilocorus orbis*, and *C. cacti* and parasitic wasps *Metaphycus helvolus* and *M. luteolus*.



*Chilocorus orbis*



*Rhyzobius lophanthae*

# Hemispherical Scale

<http://www.landcareresearch.co.nz/research/biodiversity/invertebratesprog/softscales/fauna/coffeeae.asp>

***Saissetia coffeae***

**Order Hemiptera**

**Family Coccidae**

**Description:** Females are 2 to 4.5 mm long; hemispherical, brown, s

Young females may have ridges in the form of the letter “H.” Crawlers are pinkish beige.

**Hosts:** Many plants, including bamboo, croton, camellia, crape myrtle, chrysanthemum, fern, fig, gardenia, honeysuckle, lily, orchid, zamia.



# Hemispherical Scale

**Life History:** Parthenogenic. Eggs hatch under female covers. Females die after laying eggs.

**Damage:** Honeydew, sooty mold.

**Monitoring:** Look for insects and damage.



L.M. Vasvary



John A. Weidhass  
Virginia Tech  
[www.insectimages.org](http://www.insectimages.org)



# Hemispherical Scale

**Cultural Control:** Remove infested plants.

**Chemical Control:** Oils, biorationals, and systemic insecticides such as imidacloprid. Chemical control is difficult because scale coverings protect the insects.

**Biological Control:** *Rhyzobius lophanthae* and *Metaphycus helvolus*.



Top and side views of hemispherical scale



# Boisduval Scale

*Diaspis boisduvali*  
Order Hemiptera  
Family Diaspididae

**Description:** Adult females are 1.2 to 2.25 mm in diameter, circular or oval, flat, white to light yellow, and semitransparent. Males are somewhat rectangular, elongate, about 1 mm in length, and white with three ridges down the back.

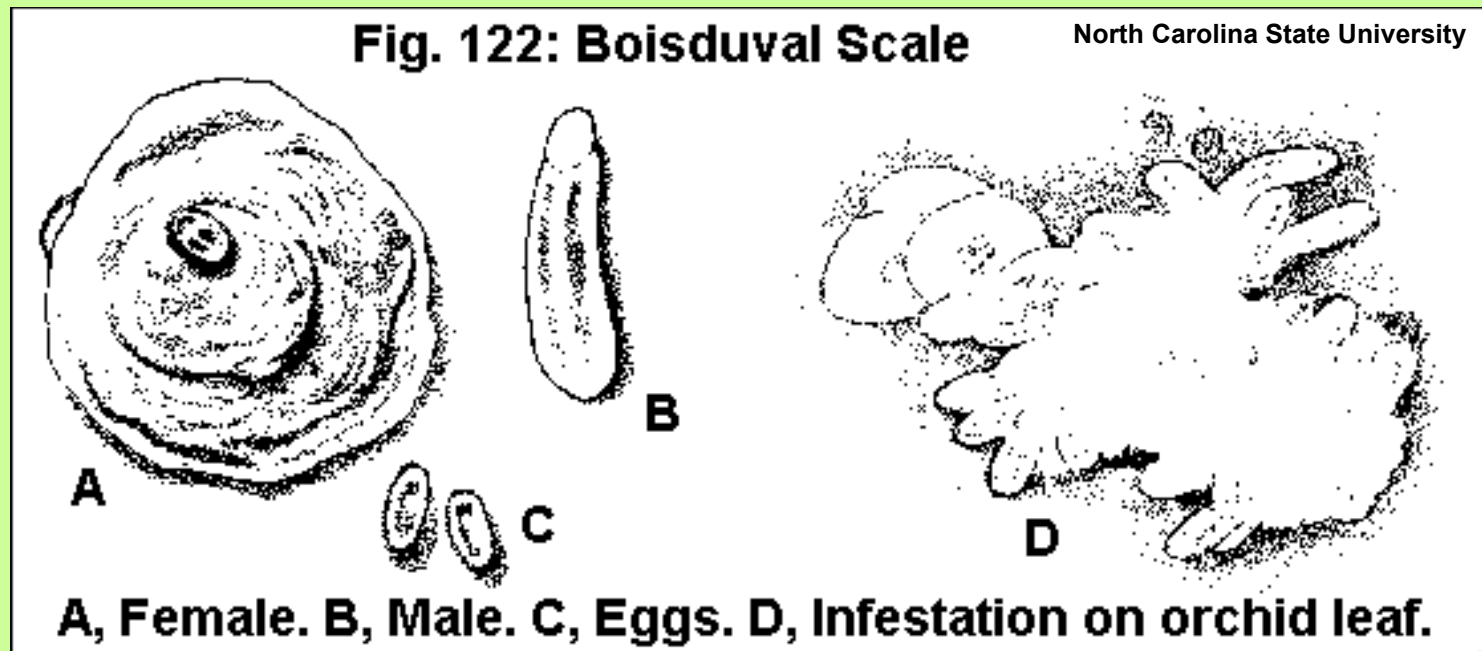


# Boisduval Scale

**Hosts:** Orchids, palms, banana, and cactus.

**Life History:** In the greenhouse this scale can complete its life cycle in about 50 days.

Females may produce up to 200 eggs in a lifetime. Generations overlap.



# Boisduval Scale

**Damage:** Chlorotic spots and death of leaves.

**Monitoring:** Look for adults, crawlers, damage.

**Cultural Control:** Try to purchase plants from a supplier who does not have a scale infestation.

**Chemical Control:** Oils and other insecticides. Chemical control is difficult because waxy scale coverings protect the insects.



North Carolina State University

# Fern Scale

*Pinnaspis aspidistrae*

Order Hemiptera

Family Diaspididae

**Description:** Adult females are pear or oystershell shaped, flat, light brown, and 1.5 to 2.5 mm long. Immature males are white felted and three-ridged. Adult males are tiny and winged. Crawlers are yellow.



University of Florida

**Hosts:** Fern, lirioppe, citrus, and others.

# Fern Scale

**Life History:** Females lay eggs under armor, then die. First instar crawlers are active. Males emerge from second instar armor and crawl or fly to female scales to mate.

**Damage:** Yellow spots and reduced vigor.

**Monitoring:** Look for adults, crawlers, damage.



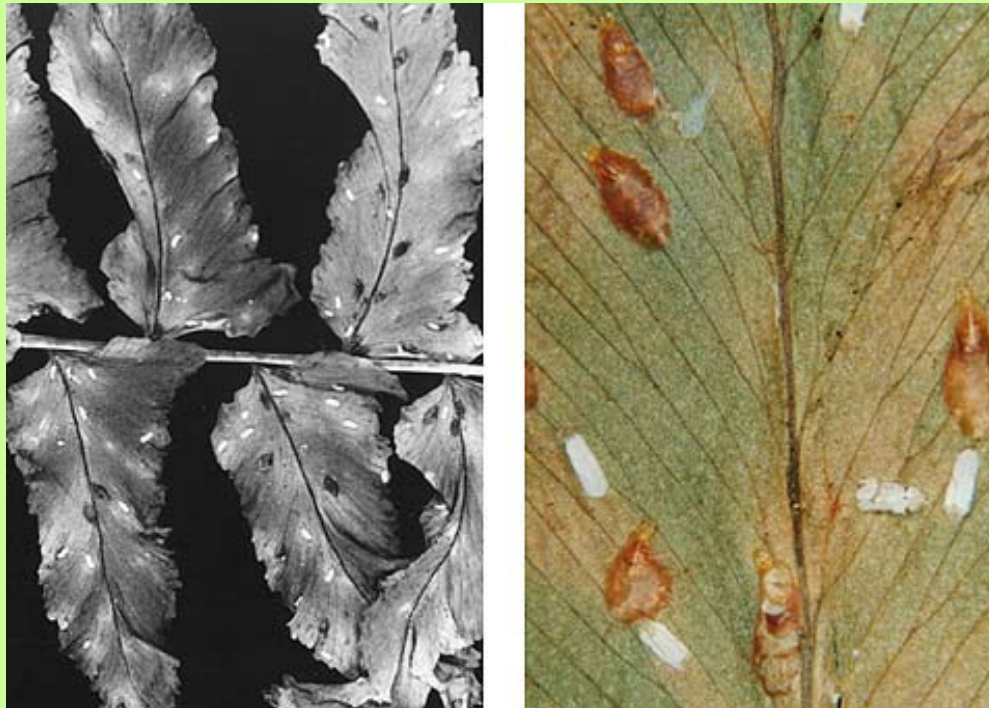
Lance S. Osborne  
University of Florida

**Brown female and  
white male covers**

# Fern Scale

**Cultural Control:** Purchase from a supplier who doesn't have scales.

**Chemical Control:** Use carefully; ferns are sensitive to chemicals.



# Greenhouse Whitefly

*Trialeurodes  
vaporariorum*

Order Hemiptera

Family Aleyrodidae

**Description:** Adults are 1.5 mm long and white. First instar nymphs are mobile and resemble scale crawlers. Later nymphal stages are immobile and yellowish with red eyes. Pupae are oval with a fringe of glassy setae.



Jack Kelly Clark  
University of California



# Greenhouse Whitefly

**Hosts:** Vegetables, herbaceous ornamentals.

**Life History:** A bizarre pupal stage occurs between the nymphal and adult stages. This does not occur in the other Homoptera.



# Greenhouse Whitefly

**Damage:** Chlorosis, honeydew, sooty mold.

**Monitoring:** Look for damage, look under leaves for insects, use yellow sticky cards.

**Cultural Control:** Fix cracks and holes in the greenhouse, remove heavily infested plants.



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University of California

**Left to right:**  
empty pupal case,  
parasitized pupa,  
pupa

# Greenhouse Whitefly

**Chemical Control:** Oils, soaps, and systemic insecticides such as imidacloprid.

**Biological Control:** The parasitic wasps *Encarsia formosa* and *Eretmocerus californicus* and lady beetle *Delphastus pusillus*.



Jack Kelly Clark  
University of California



Jack Kelly Clark  
University of California

Left: *Encarsia formosa*

Right: *Encarsia* being released in the greenhouse

# Silverleaf Whitefly

***Bemisia argentifolii***

**Order Hemiptera**

**Family Aleyrodidae**

**Description:** Adults

are 0.82 to 0.96 mm long and slightly yellowish. Wings are held roof-like at about a 45° angle. Nymphs are flat, glassy to opaque yellowish and may or may not have spines. Pupae (fourth instar nymphs) are 0.36 to 0.8 mm long, beigeish-yellow and opaque.. Dorsal spines are present when the host leaf is hairy and absent when the host leaf is smooth.



# Silverleaf Whitefly

**Hosts:** Many plants, including alfalfa, broccoli, cotton, lettuce, melon, sweet potato, poinsettia.

## **Life History:**

A bizarre pupal stage occurs between the nymphal and adult stages.

**Whiteflies are often found on undersides of leaves**



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# Silverleaf Whitefly

**Damage:** Chlorosis, honeydew, sooty mold. May transmit viruses.

**Monitoring:** Look for damage and insects, use yellow sticky cards.

**Cultural Control:** Fix cracks and holes in the greenhouse, remove heavily infested plants.



# Silverleaf Whitefly

**Chemical Control:** Oils, soaps, and systemic insecticides such as imidacloprid.

**Biological Control:** The parasitic wasp *Eretmocerus californicus* and the lady beetle *Delphastus pusillus*.



*Delphastus pusillus* attacking whitefly nymph

# Greenhouse Thrips

*Heliethrips haemorrhoidalis*

Order Thysanoptera

Family Thripidae

## Description:

Adults are 1.3 to 1.8 mm long with dark bodies and yellow legs.

Immatures are yellowish with red eyes.



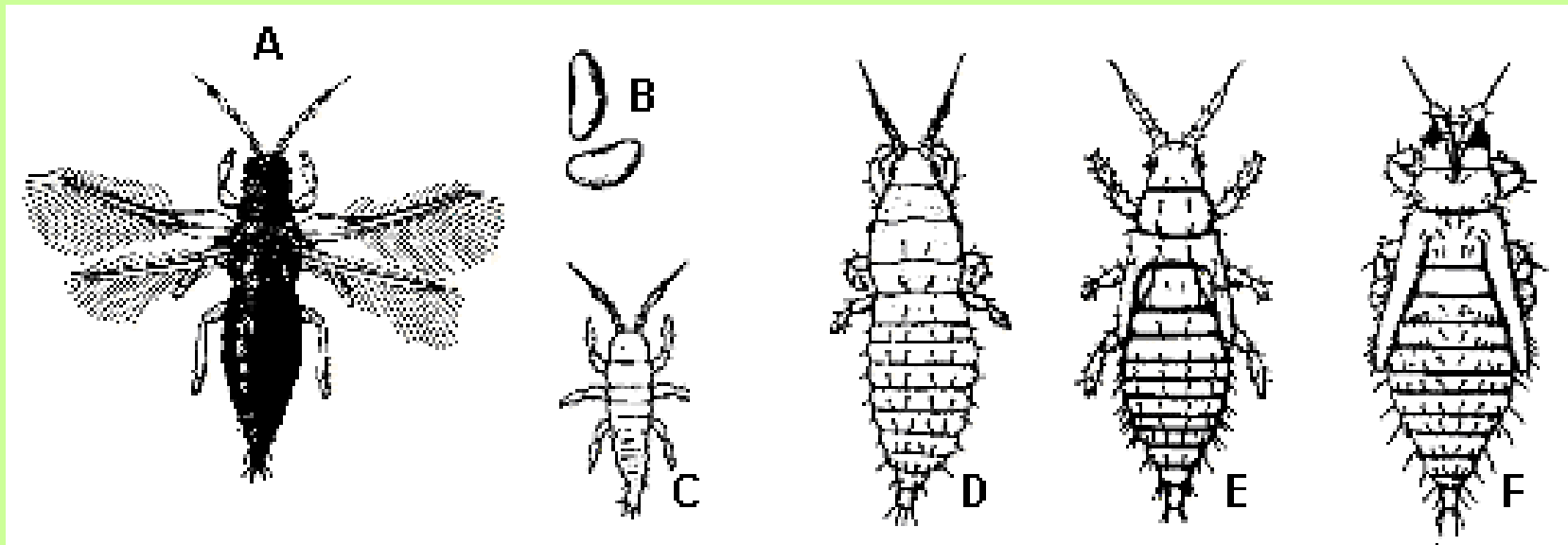
Black adult and yellow nymphs



# Greenhouse Thrips

**Hosts:** Azalea, begonia, croton, cyclamen, fern, fuchsia, grape, orchid, palm, rose, many others.

**Life History:** Parthenogenetic or sexual reproduction. Females lay eggs in slits. Rapid reproduction and many generations can occur.



A. Adult B. Egg C-D. Nymphs E. Prepupa F. Pupa

# Greenhouse Thrips

**Damage:** Stippling, yellowing, leaf drop, black spots of excrement.

**Monitoring:** Inspect plants carefully for insects and damage.

**White feeding scars and black excrement**



# Greenhouse Thrips

**Cultural Control:** Fix cracks and holes in the greenhouse, remove heavily infested plants.

**Chemical Control:** Oils, soaps, other insecticides. Chemical control is difficult because thrips hide in crevices on host plants.



Thrips  
parasitoid  
*Thripobius  
semiluteus*

Jack Kelly Clark  
University of California

# Greenhouse Thrips

**Biological Control:** *Parasitoides Thripobius semiluteus* and *Megaphragma mymaripenne*, *Orius* spp., lacewing larvae, predatory thrips, and predatory mite *Amblyseius cucumeris*.



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**Predatory thrips *Franklinothrips vespiformis* (left) and *Leptothrips mali***

# Western Flower Thrips

*Frankliniella  
occidentalis*

Order Thysanoptera  
Family Thripidae

**Description:** Adults  
are 1 mm long and  
yellow to dark  
brown. Immatures  
are yellowish.

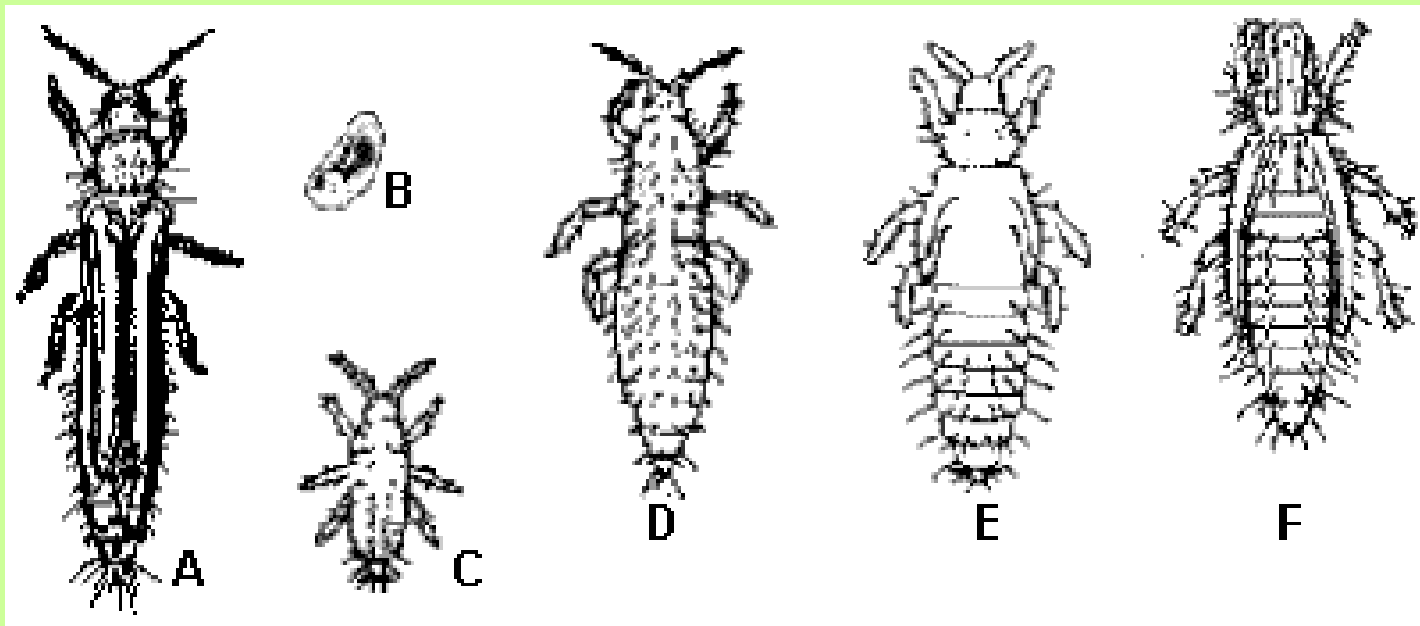
Adult western flower thrips



# Western Flower Thrips

**Hosts:** Carnation, chrysanthemum, gerbera, geranium, marigold, pansy, rose, many others.

**Life History:** Females lay eggs in plant tissue. Rapid reproduction; many generations occur.



A. Adult B. Egg C-D. Nymphs E. Prepupa F. Pupa

# Western Flower Thrips

**Damage:** Spotting, streaking, distortion, black spots of excrement. May transmit viruses.

**Monitoring:** Inspect plants carefully for insects and damage. Use blue or yellow sticky cards.



Thrips damage  
on petals

# Western Flower Thrips

**Cultural Control:** Fix cracks and holes in the greenhouse, remove heavily infested plants.

**Chemical Control:** Oils, soaps, other insecticides. Chemical control is difficult because thrips hide in crevices on host plants.

**Biological Control:** *Orius* spp., lacewing larvae, predatory mites (*Hypoaspis miles*, *Amblyseius cucumeris*), and nematodes (*Heterohabditis bacteriophora*, *Steinernema* spp).



*Orius tristicolor*



# Darkwinged Fungus Gnats

*Bradysia* and *Lycoriella* sp.

Order Diptera, Family Sciaridae

**Description:** Adults are 2.5 mm long, dark, with long legs and antennae. Larvae grow to 5.5 mm and have black head capsules and white bodies.

**Hosts:** Many plants, including alfalfa, geranium, pepper, poinsettia, soybean, and wheat.

Darkwinged fungus gnat  
(L) and shorefly



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University of California

# Darkwinged Fungus Gnats

**Hosts:** Alfalfa, geranium, pepper, poinsettia, soybean, wheat, many others.

**Life History:** Eggs are laid on top of soil. Larvae feed on roots and organic material. Broods may be all one sex.

**Larva (top) and adult darkwinged fungus gnat**



# Darkwinged Fungus Gnats

**Damage:** Wilting. May transmit pathogens.

**Monitoring:** Use yellow sticky cards to detect adults and potato slices on soil for larvae.

**Cultural Control:**  
Remove weeds, algae, and dead material. Avoid overwatering.

Adult darkwinged  
fungus gnat on  
sticky trap



# Darkwinged Fungus Gnats

**Chemical Control:** Use sprays or aerosols for adults and soil applications for larvae.

**Biological Control:** Nematodes (*Steinernema* sp.) and *Hypoaspis miles*.



**Predatory mite**  
*Hypoaspis miles*

# Shore Fly

*Scatella stagnalis*

Order Diptera

Family Ephydriidae

**Description:** Adults are 2 mm long, black with red eyes and short antennae. Larvae grow to 2.9 mm long and have two posterior spiracles.

**Hosts:** Algae and other small organisms.



**Top:** Adult shore fly  
**Right:** Pupa (left) and larva of shore fly

# Shore Fly

**Life History:** Shore flies breed in algae growing on potting mix, pots, benches and floors.

**Damage:** May spread fungal pathogens.

**Monitoring:** Yellow sticky cards.

**Cultural Control:**  
Control algae, avoid overwatering.

**Chemical Control:**  
May be difficult and unnecessary.



# Twospotted Spider Mite

*Tetranychus urticae*

Class Arachnida

Order Acari

Family Tetranychidae

**Description:** Adults are 0.4 mm long and pale green or yellowish with two (sometimes four) black spots.

**Hosts:** Over 300 hosts; annuals, perennials, and woody plants.



# Twospotted Spider Mite

**Life History:** Many generations can occur in the greenhouse. Early instars have 6 legs.

**Damage:** Stippling, yellowing, leaf drop, and profuse webbing.



Stippling caused by spider mites



# Twospotted Spider Mite

**Monitoring:** Look for damage and webbing.

**Cultural Control:** Remove weeds and infested plants. Spray with water to remove mites.

**Chemical Control:** Oils, soaps, miticides.

Spider mite colony



# Twospotted Spider Mite

**Biological Control:** Predatory mites *Neoseiulus californicus* and *Phytoseiulus persimilis*, the lady beetle *Stethorus punctum*, *Orius* sp., lacewing larvae.

*Neoseiulus californicus*  
attacking  
mite egg



# Broad Mite

*Polyhagotarsonemus latus*

Class Arachnida

Order Acari

Family Tarsonemidae

**Description:** Less than 0.2 mm long, clear to pale

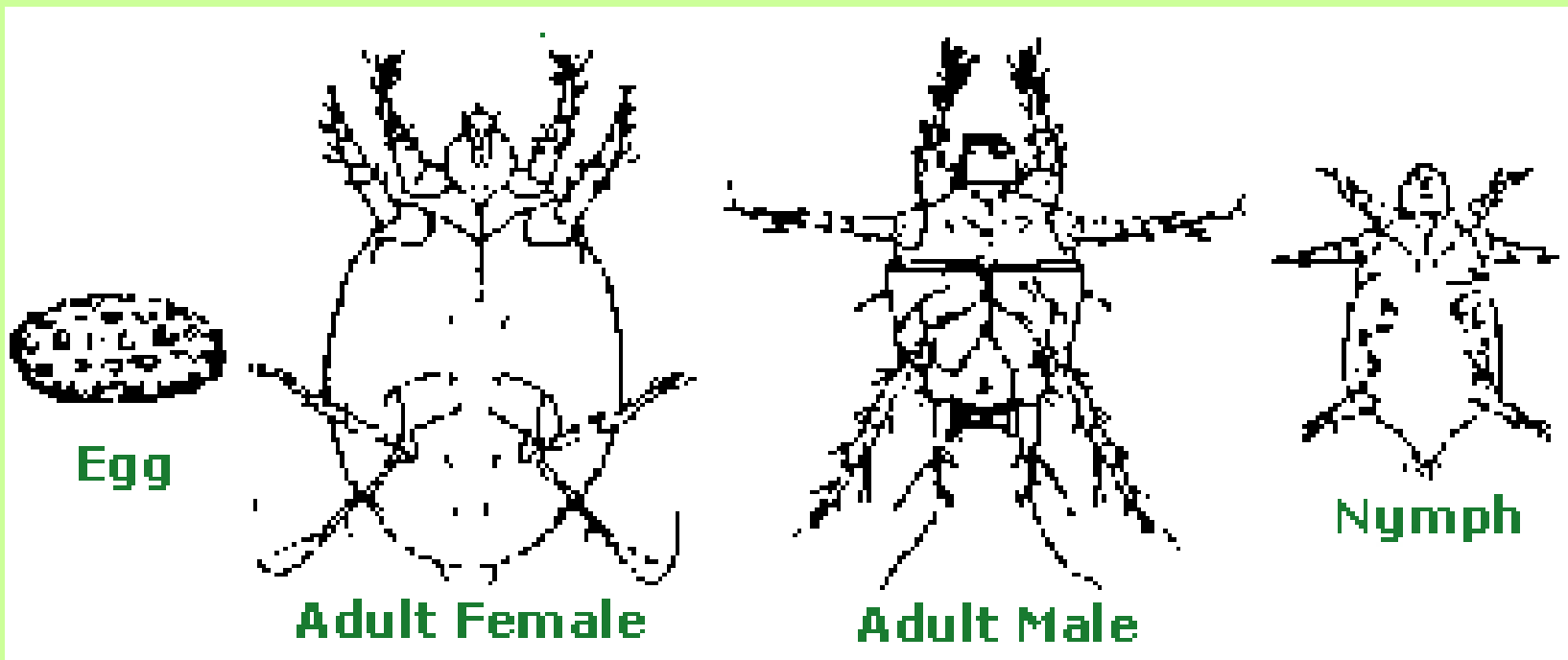
brown with eight legs; the last pair ends in a hair (female) or claw (male). Young have six legs.

**Hosts:** African violet, ageratum, azalea, begonia, cyclamen, dahlia, gerbera, gloxinia, ivy, jasmine, impatiens, lantana, marigold, peperomia, snapdragon, verbena, zinnia, and many others.



# Broad Mite

**Life History:** Unmated females can lay male eggs. Mated females lay four female eggs to every male egg. Young have only six legs.



# Broad Mite

**Damage:** Leaf curl, distortion, discoloration, stunted growth, shorter internodes, leaf and flower death.

**Monitoring:** Look for damage.

**Cultural Control:** Remove weeds, immerse plants in hot water.



# Broad Mite

**Chemical Control:** Oils, soaps, and miticides.

**Biological Control:** *Neoseiulus californicus*.



**Tarsonemid mites**

# Cyclamen Mite

*Stenotarsonemus pallidus*

Class Arachnida

Order Acari

Family Tarsonemidae

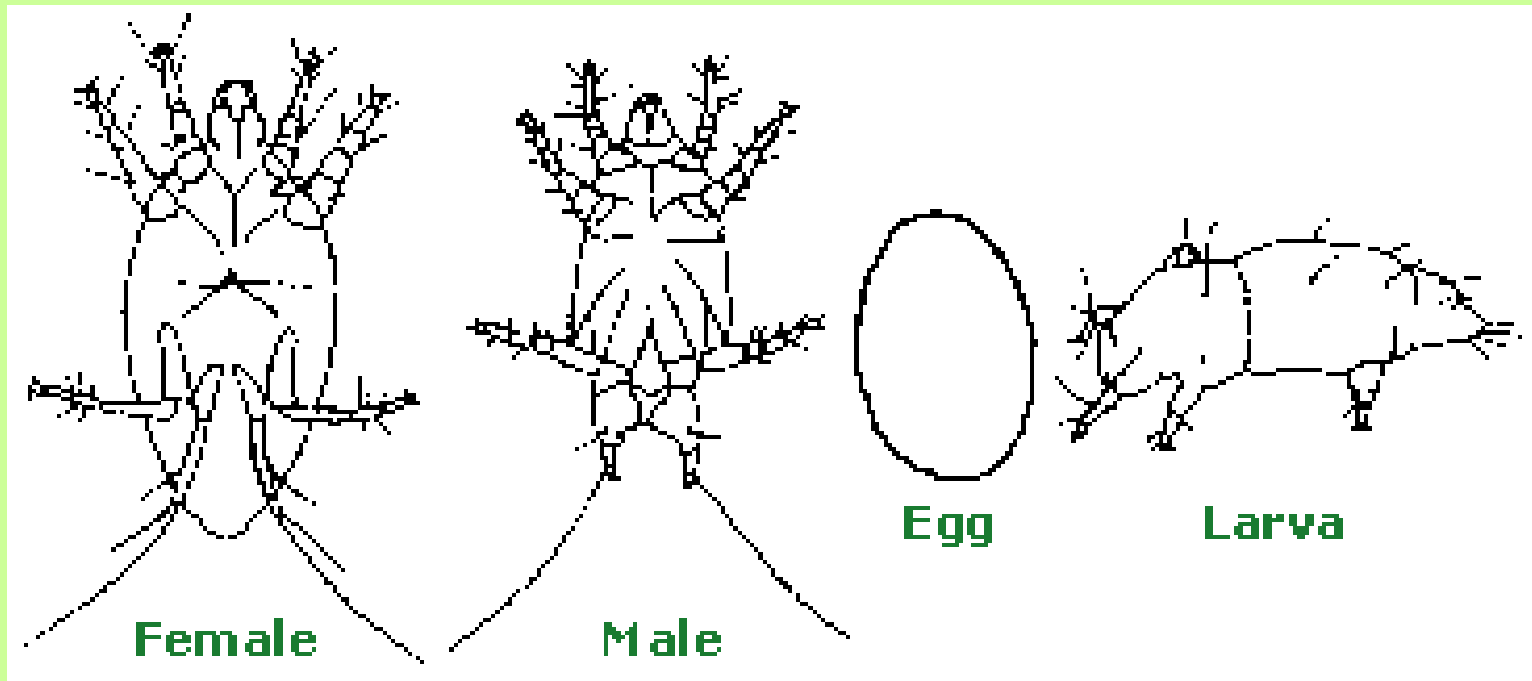
**Description:** Less than 0.3 mm long, clear or brown tinted and waxy looking with eight legs; the last pair ends in a hair (female) or claw (male). Young have six legs.



# Cyclamen Mite

**Hosts:** African violet, ivy, snapdragon, daisy, chrysanthemum, cyclamen, delphinium, azalea, larkspur, geranium, fuchsia, begonia, petunia.

**Life History:** Young have 6 legs and molt once.





# Cyclamen Mite

**Damage:** Puckering, crinkling, and curling of leaves, brittle leaves, distorted flowers.

**Monitoring:** Look for damage.



# Cyclamen Mite

**Cultural Control:** Remove weeds, immerse plants in hot water.

**Chemical Control:** Oils, soaps, and miticides.

**Biological Control:** *Neoseiulus californicus*.

