

# Aphids, Scales, and Mealybugs, Oh My!

**Karey Windbiel-Rojas**

Associate Director for Urban & Community IPM and Area IPM Advisor  
UC Statewide IPM Program



**UNIVERSITY OF CALIFORNIA**  
Agriculture and Natural Resources

Statewide Integrated  
Pest Management Program

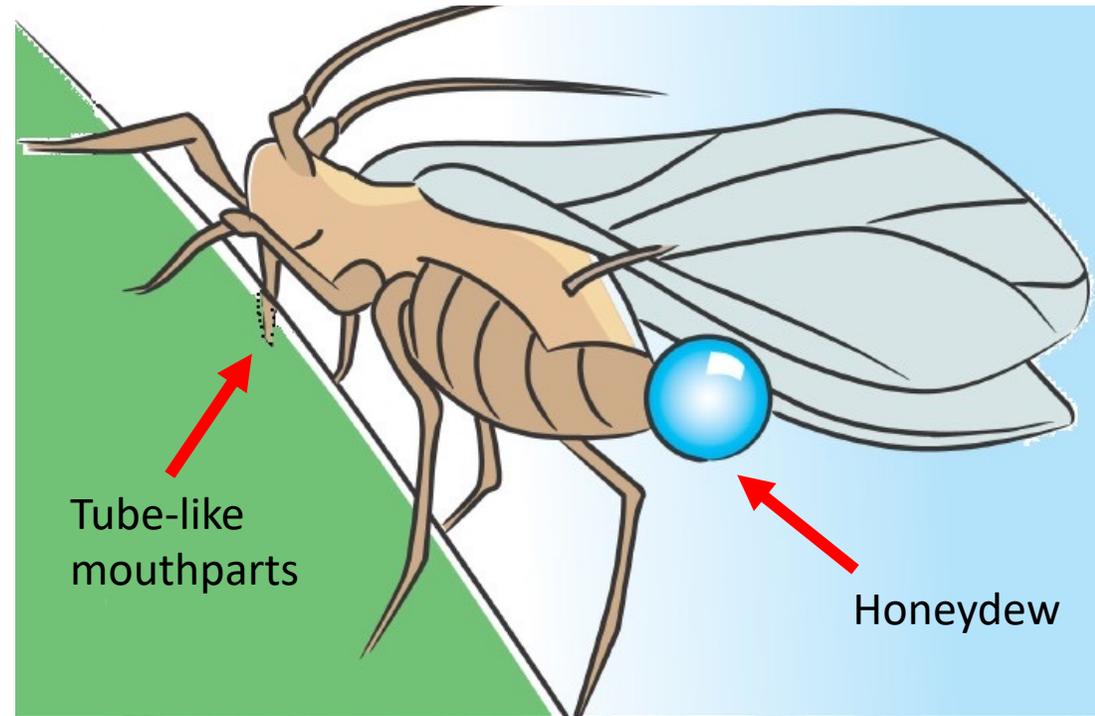
# In this presentation...

- Honeydew producers
  - Aphids
  - Soft scales
  - Mealybugs
  - Psyllids
  - Whiteflies
  - Leafhoppers
- Management
- Resources



# What are honeydew producers?

- Aphids, whiteflies, soft scales, psyllids, and mealybugs
- Suck plant sap with their tube-like mouthparts
- Excrete a sticky, sweet substance called honeydew



# Signs of honeydew producing insects

- Curled leaves
- Yellow leaves
- Stunted growth of plant
- Sticky, shiny, wet-looking leaves
- Black sooty mold
- Presence of ants
- Plant symptoms that look like viruses



# Ants and honeydew producers

**Large numbers of ants may indicate a honeydew-producing insect infestation.**

- Ants feed on honeydew produced by aphids, soft scales, mealybugs
- Ants protect this food source by keeping parasites and predators away
- Manage ants to prevent honeydew producers from building up



# Honeydew Producing Insects



**UNIVERSITY OF CALIFORNIA**  
Agriculture and Natural Resources

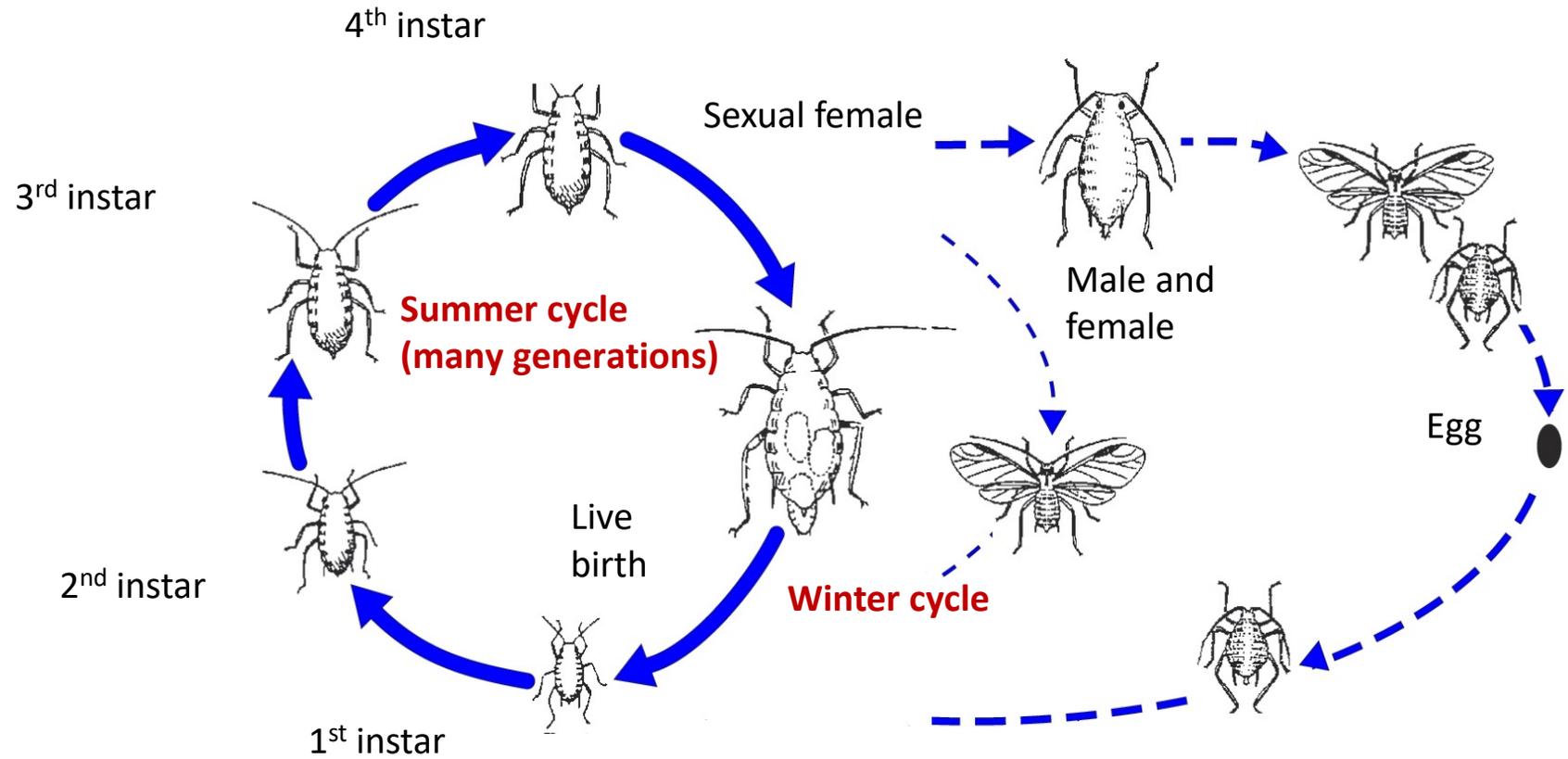
Statewide Integrated  
Pest Management Program

# Identify the pest: Aphids

- Small, pear-shaped insects
- Feed on underside of leaves, blossoms, new growth, galls
- Many different species and colors
- Don't move quickly
- Usually occur in dense groups



# Aphid lifecycle



# Aphid plant hosts

- Some species can transmit viruses to vegetables and ornamentals
  - Squash, cucumber, pumpkin, melon, bean, potato, lettuce, beet, chard, and bok choy
- Most are very host specific and may alternate between several hosts throughout the year
  - Woolly apply aphids, lettuce root aphids, ash leaf curl aphids



# Identify the pest: Soft scales

- Scales are insects; there are many different species
- Females are hump shaped, wingless, and legless in the adult stage
- Usually feed in same place for entire life
- Have piercing and sucking mouthparts and feed on stems, branches, and leaves
- Vary from armored and other scales which don't produce honeydew

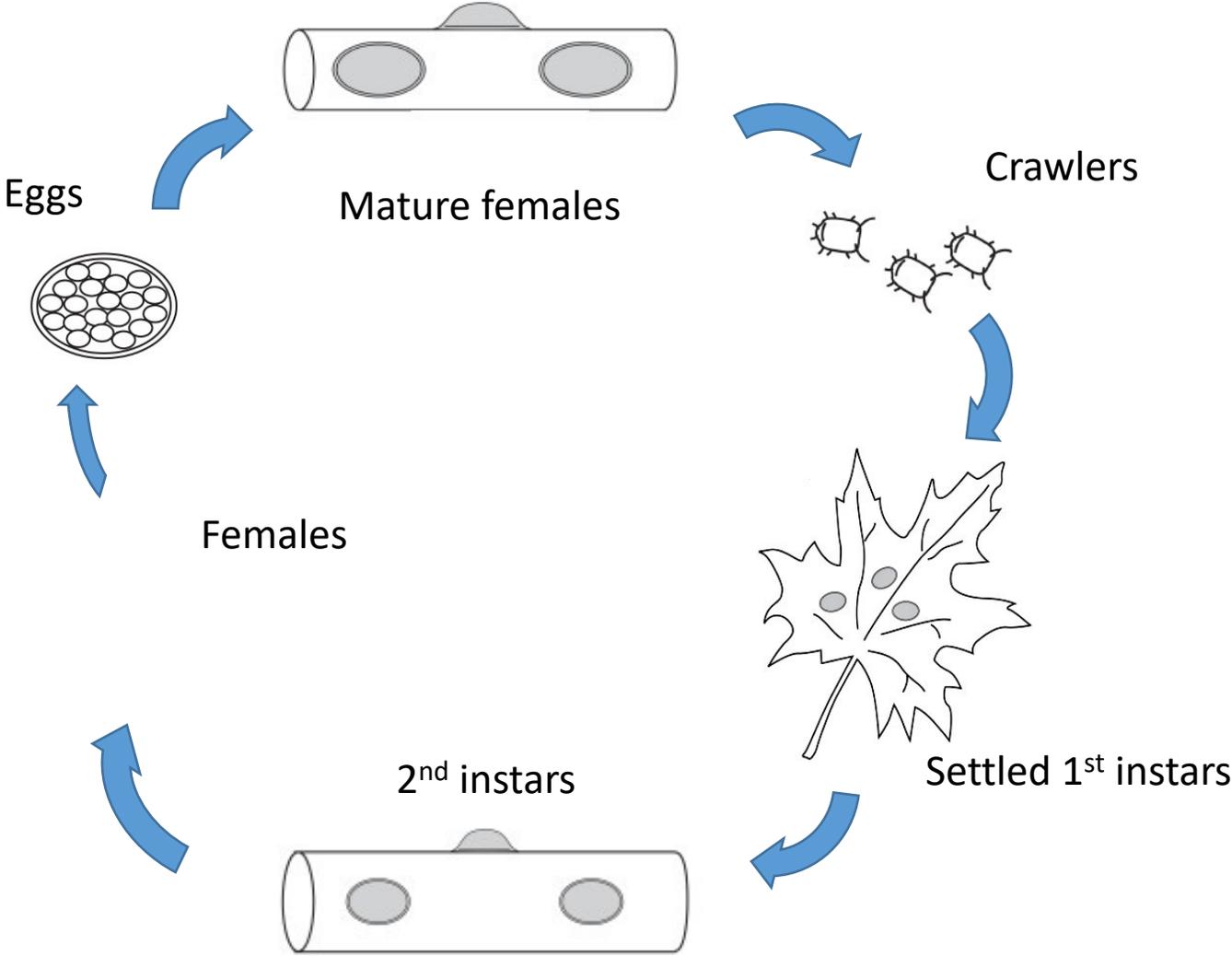


Black scale



European fruit lecanium

# Soft scale lifecycle



# Soft scale hosts

- Can be pests of outdoor and indoor plants
- Feed on foliage as nymphs (crawlers) then move to bark in fall before leaf drop
- Many species are host specific
- Not all scale species are damaging to plants



# Identify the pest: Mealybugs

- White, round wax-covered insects
- Feed in protected, hidden areas
- Can be pests of outdoor and indoor plants



# Mealybug lifecycle

- Females are wingless but males have two wings and two long tail filaments
- Newly hatched mealybug nymphs (called crawlers) are yellow to orangish or pink
- Nymphs are mobile, while adults are not
- May overwinter on or under bark



Grape mealybug nymphs (above) and egg mass (below)



# Mealybug hosts

- **Obscure mealybug:** many outdoor plants are hosts
- **Vine mealybug:** grapes are main host, but other fruits and ornamentals too
- **Citrus mealybug:** citrus and landscape shrubs, many indoor plants



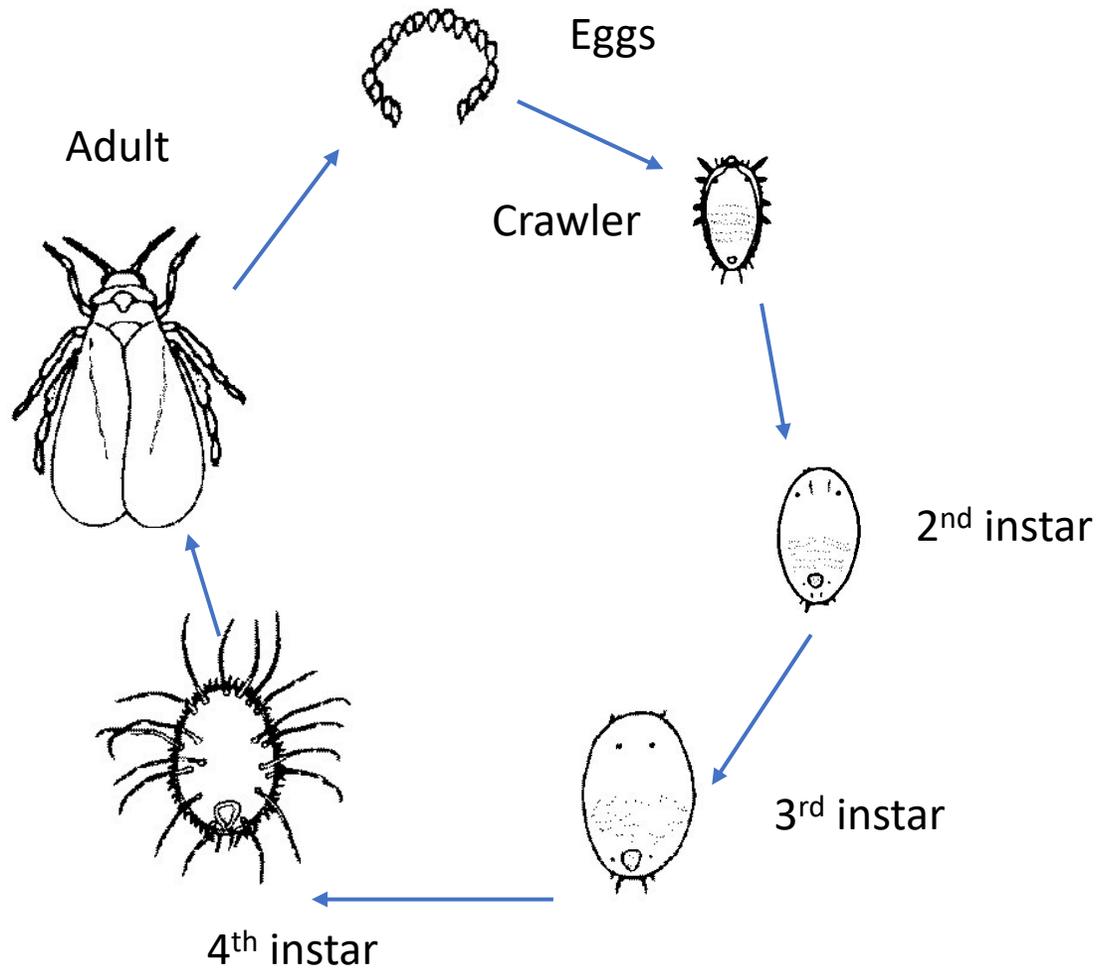
Citrus mealybug on creton

# Identify the pest: Whiteflies

- Tiny insects with yellow bodies and white wings
- Prefer to feed on the undersides of leaves
- Fly readily when disturbed



# Whitefly lifecycle



Adult and nymphs of bandedwinged whitefly.



Sweetpotato whitefly adults and nymphs.



# Whitefly hosts

- **Greenhouse whitefly, giant whitefly, sweetpotato whitefly:** vegetables, landscape plants, and houseplants
- **Crown whitefly:** oak and chestnut
- **Citrus whitefly:** citrus, ash, ficus, pomegranate



# Identify the pest: Psyllids

- Resemble cicadas but much smaller
- Hold wings rooflike over bodies and similar size to winged aphids
- Jump when disturbed
- Most species are native and rarely cause harm
  - 18 of 140 psyllid species in CA are introduced



# Psyllid lifecycle

- Develop through about five instars (nymphal growth stages) before maturing into winged adults
- Nymphs are flattened and less active than adults
- Some produce waxy filaments or lerps (covers)
- Most abundant in spring
- 3-5 generations per year



Asian citrus psyllid nymphs



Acacia psyllid nymph



Redgum lerp psyllid covers

# Psyllid hosts

- Can transmit viruses and diseases to plants
- **Asian citrus psyllid (ACP):** citrus and relatives
  - Carry bacterium that causes Huanglongbing disease
- **Redgum lerp psyllid:** river red gum, forest red gum (Eucalyptus)
- **Eugenia psyllid:** eugenia



ACP adult feeding



# Management

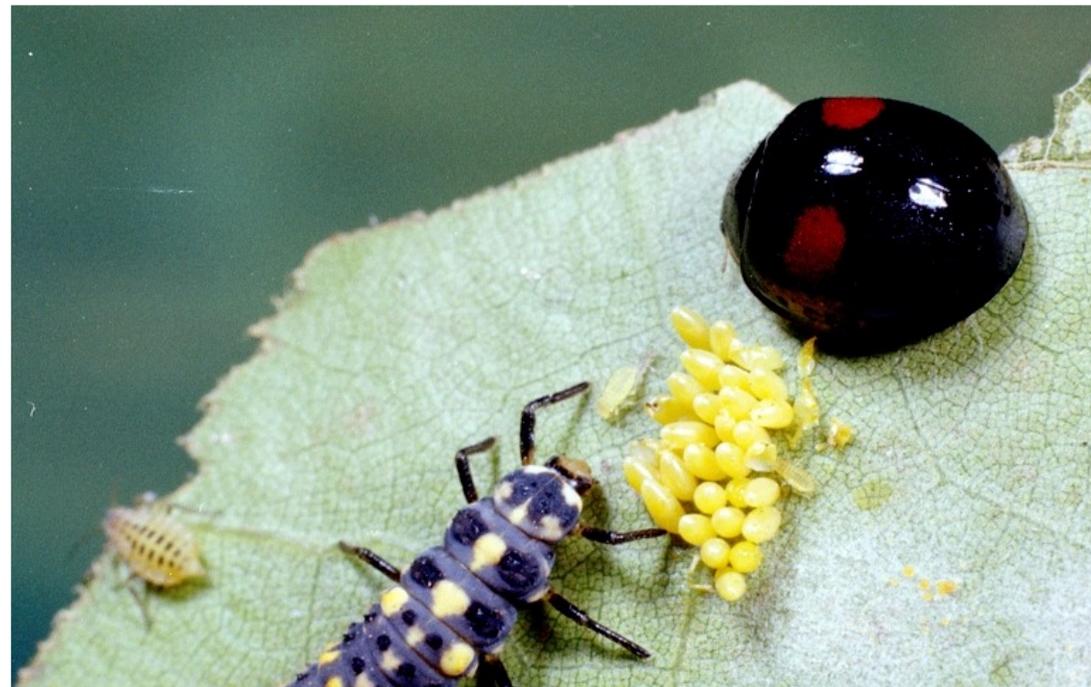


**UNIVERSITY OF CALIFORNIA**  
Agriculture and Natural Resources

Statewide Integrated  
Pest Management Program

# Combines control methods (IPM)

- IPM: a way to manage pests while minimizing risks to humans and the environment
- Relies on multiple approaches to a pest problem
  - Biological, cultural, mechanical controls
- Focuses on pest prevention for long-term control
- Pesticides used when necessary



# Monitor

- Inspect plants
- Check often in spring, when new growth is abundant
- Look for ants crawling up trees and follow trails to their source
- Look for honeydew or sooty mold



# Keep pests off young plants

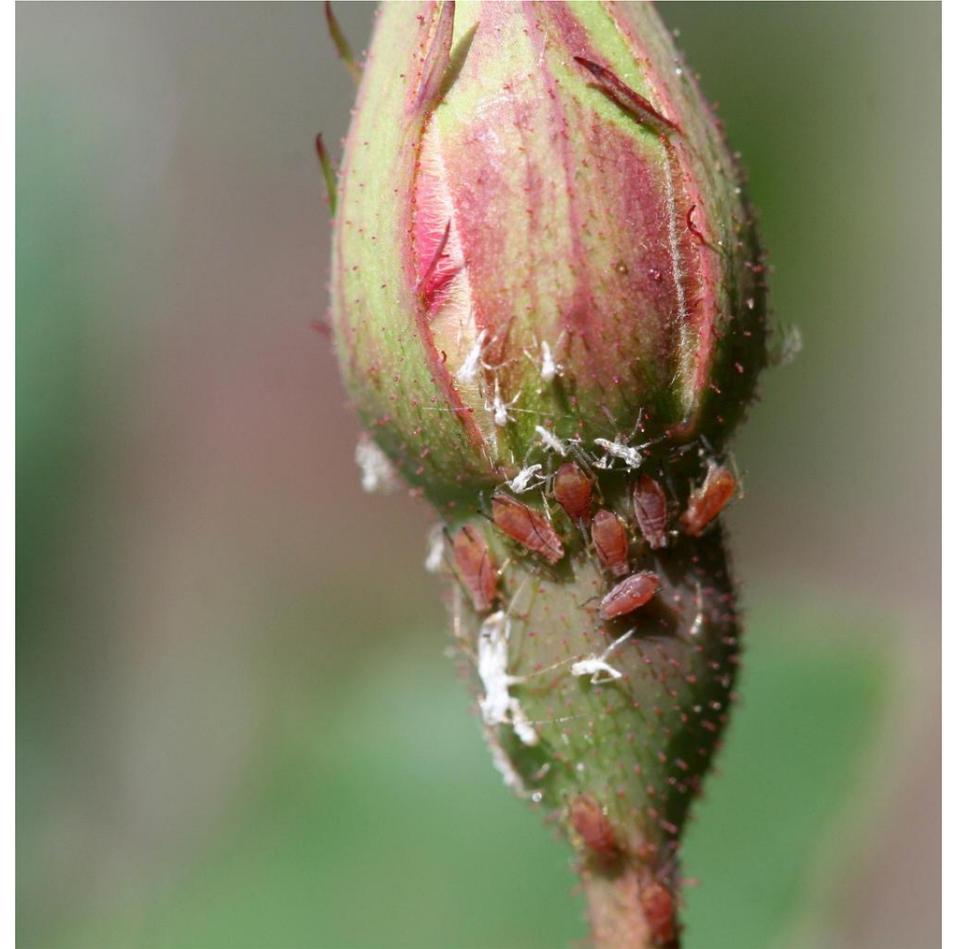
- Remove weeds before planting
- Check transplants for pests
- Grow seedlings under protective covers
- Use sticky traps to catch pests
- Consider aluminum foil (reflective) mulches to repel flying pests



# Choose non-host plants

## Avoid susceptible plants

- Plants native to California may be able to better tolerate native honeydew producers
- Choose species or cultivars that are less favorable for honeydew producers



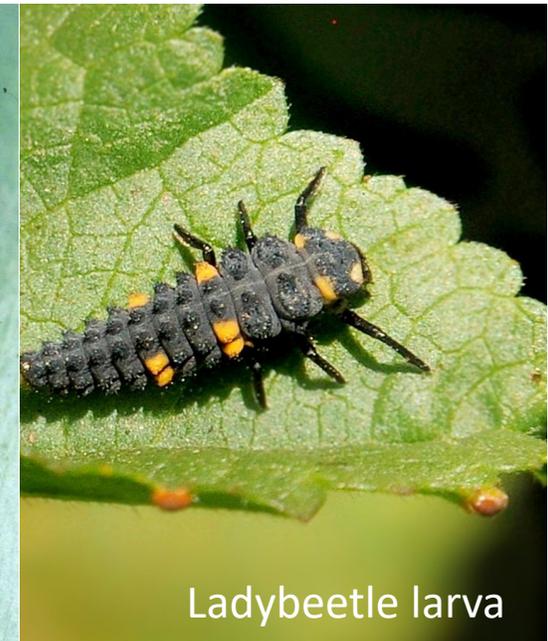
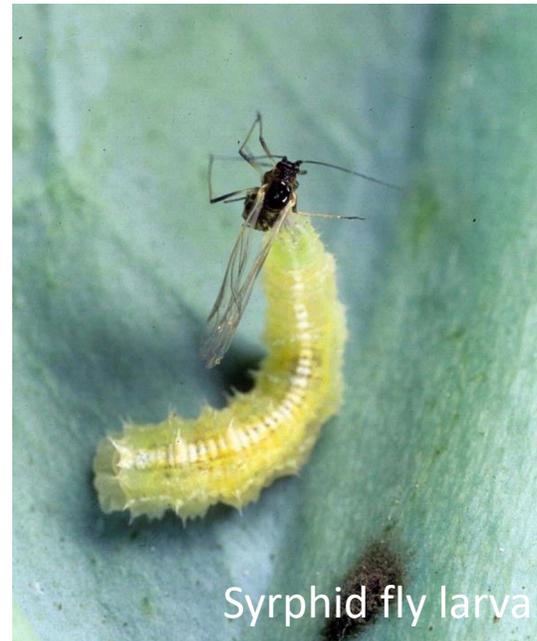
# Provide proper plant care

- Make sure plants are getting enough but not too much water
- Don't overfertilize
- Prune out pests on shoots, leaves, twigs
- Consider replacing problem plants



# Check for Natural Enemies

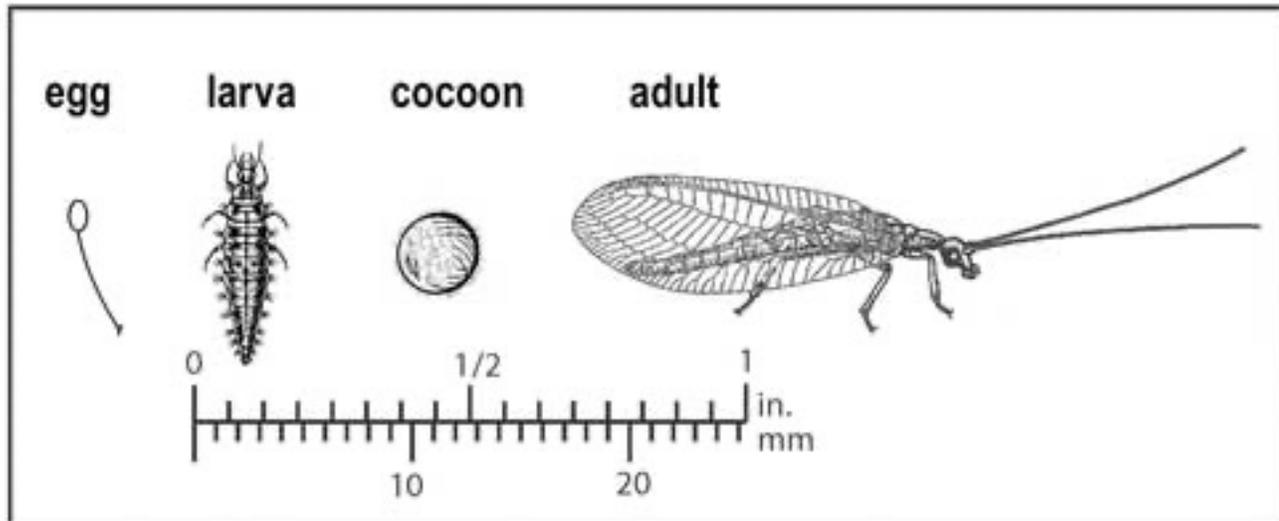
- Feed on or parasitize honeydew producers and other pests
- Essential to IPM
- Reduce need for pesticides
- Look for eggs, adults, larvae, or signs or parasitization



# Lacewings

- Predators that feed on aphids, mealybugs, psyllids, scales, and others

Green lacewing



# Lady beetles

- Predators of aphids, scales, psyllids, mealybugs, whiteflies and more
- Some are specialized and feed primarily on one pest
  - Scale predatory lady beetle
  - Mealybug destroyer



Lady beetle pupa



Lady beetle larva



Lady beetle eggs

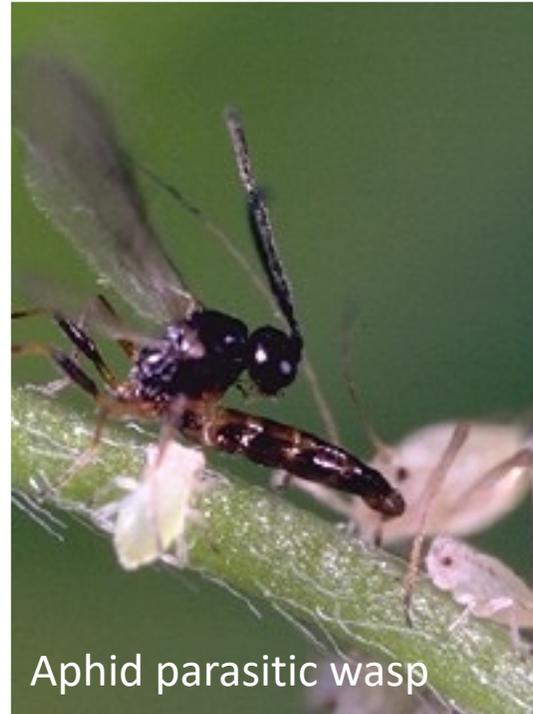
# Syrphid flies

- Adults are flies that resemble bees
- Feed on slow moving insects like aphids and mealybugs



# Parasitic wasps

- Parasitic wasps feed on aphids, scales, mealybugs, psyllids, whiteflies and many other pests
- Lay egg inside of prey, where it feeds and develops and later emerges from the prey
- Parasitized prey may change colors or bloat



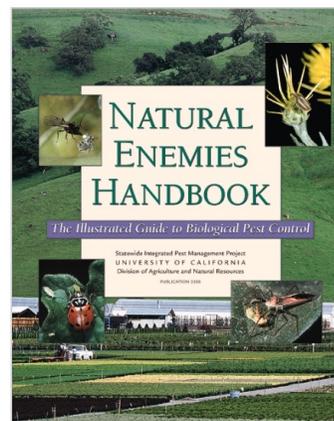
# Encourage natural enemies

- Avoid broad-spectrum pesticides that kill natural enemies
  - Carbaryl, malathion, pyrethroids, permethrin
- Consider plants that provide nectar, pollen, shelter
- Keep ants under control

## [Natural enemies gallery](#)

### Natural enemies gallery

#### LISTED BY PEST



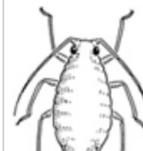
Natural enemies are organisms that kill, decrease the reproductive potential of, or otherwise reduce the numbers of another organism. Natural enemies that limit pests are key components of integrated pest management programs. Important natural enemies of insect and mite pests include predators, parasitoids (parasites), and pathogens.

The UC IPM Natural Enemies Gallery includes natural enemy species commonly found on California farms and in landscapes. Additional species will be added over time.

For more information about natural enemies, purchase the [Natural Enemies Handbook](#) also available as an [ePub](#).

[List by common name](#) | [List by order and family name](#) | [List by scientific name](#)

Pest name	Natural enemy
Adelgids	<a href="#">Aphid flies</a>
	<a href="#">Multicolored Asian lady beetle</a> (ladybug)
	<a href="#">Twospotted lady beetle</a> (ladybug)
Aphids	<a href="#">Anystis spp. whirligig mites</a> , predatory mites
	<a href="#">Aphid flies</a>
	<a href="#">Aphid midge</a>
	<a href="#">Aphidius spp.</a> , parasitic wasps
	<a href="#">Ashy gray lady beetle</a> (ladybug)



# Manage ants

- Keep ants off plants so natural enemies can do their job
  - Ants protect honeydew producers from natural enemies
- Prune branches that provide a bridge to the ground or other plants or buildings



Ant stake



Refillable  
bait station



Sticky material

# Nonchemical control

- Low numbers of pests can be tolerated
- Hose off pests
- Prune out infestations
- Handpick



# Use less toxic pesticides

- When infestations require chemical control, use less toxic products
  - Fewer risks to natural enemies, people, and the environment
- Most pesticides won't kill pests in curled leaves; prune by hand
- Avoid using pesticides when plants are flowering



# Soaps and oils

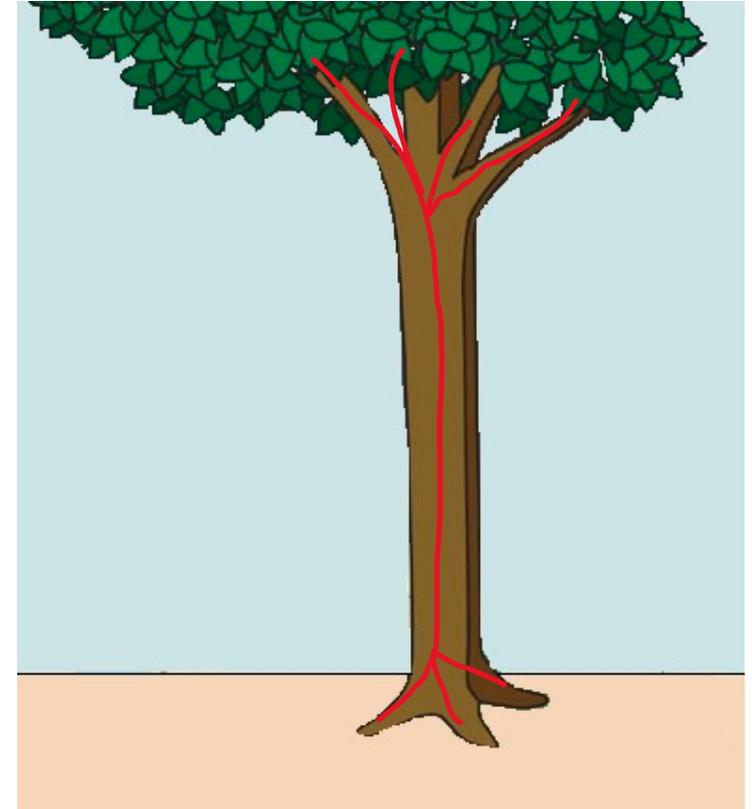
- Insecticidal soaps
  - Potassium salts of fatty acids
- Insecticidal oils
  - Neem or horticultural oil
- Work by smothering or suffocating the pest
- Spray both sides of leaves; require contact with the pest to be effective—timing is important
- Don't use on stressed plants or when temps are higher than 90F



Double-sided sticky tape on branch to detect scale crawlers

# Systemic insecticides

- May be needed if severe infestation, damaging invasive species, or large plant
- Systemics are absorbed by the roots and move to growing points
- Plants need adequate water to help move the product throughout
- May take several weeks to see effect but one application is usually good all season



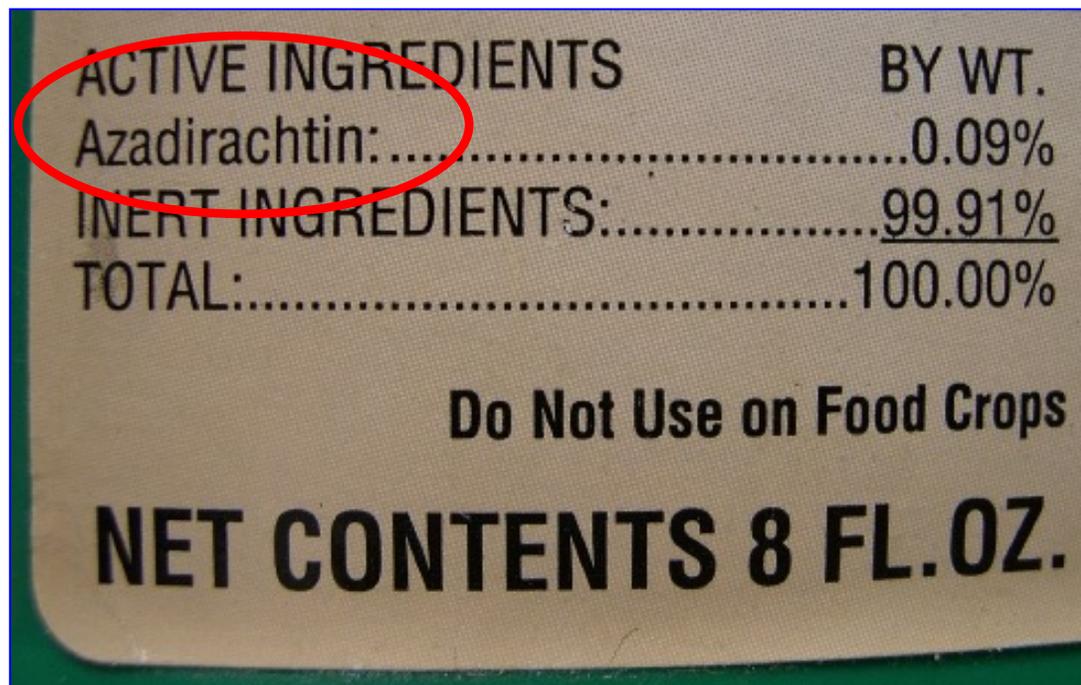
# Systemic insecticides

- Products with the active ingredients imidacloprid, acetamiprid, dinotefuran, and thiamethoxam available for use in gardens and landscapes
- Systemic insecticides are in the neonicotinoid group (“neonics”)
- Applied as a soil drench or foliar
- Can disrupt activity by beneficial insects
- Broad spectrum so use only when infestation is severe



# Read the label

- Pesticides can damage people, plants, and the environment when use incorrectly
- Read and follow the label
- Wear protective clothing (PPE)



# Recap

- Monitor
- Look for natural enemies
- Tolerate low to moderate populations
- Use nonchemical controls
- Apply less toxic pesticide if necessary



# Where can you get more

- UC IPM website [ipm.ucanr.edu](http://ipm.ucanr.edu)
- Help from your local UC Master Gardener [mg.ucanr.edu/F](http://mg.ucanr.edu/F)



UNIVERSITY OF CALIFORNIA  
**UC**  
 Statewide Integrated Pest Management Program

What is IPM? Identify

HOME

ON THIS SITE

- What is IPM?
- Home & landscape pests
- Agricultural pests
- Natural environment pests
- Exotic & invasive pests
- Weed gallery
- Natural enemies gallery
- Weather, models & degree-days
- Pesticide information
- Research
- Publications
- Events & workshops
- Online training
- Links
- About us
- Contact us

MAKE A GIFT

Twitter Facebook Instagram YouTube

UC IPM Home > Homes, Gardens, Landscapes, and Turf > Mealybugs

## How to Manage Pests

### Pests of Homes, Structures, People, and Pets

#### Mealybugs

Published 3/16

Download PDF

Quick Tip

In this Guideline:

- Identification and life cycle
- About Pest Notes
- Damage
- Publication
- Management
- Glossary

Mealybugs are soft, oval, wax-covered insects found in outdoor landscape, and indoor settings. Usually found on plants, they are closely related to soft scales but can produce abundant honeydew and a waxy covering. Mealybugs are favored by warm weather and are common on indoor plants.

#### IDENTIFICATION AND LIFE CYCLE

Mealybugs are in the insect family Pseudococcidae, which also includes armored scales.

Mealybug bodies are distinctly segmented. Some individuals may have wax filaments and others may not. The filaments are longer in the rear and shorter in the front.

Mealybugs are usually found feeding in clusters on stems, leaves, or between the stem and leaf. They can also feed on roots.

While adult females are wingless and some are covered in wax filaments, mealybugs, which are rarely seen, are found in clusters. Many mealybug species can reproduce asexually.

Life cycles vary somewhat by species. Most species lay 100-200 or more eggs in cottony egg masses. The eggs may be attached to crowns, leaves, bare stems, or longtailed mealybug, which produces a long tail. The eggs hatch.

Newly hatched mealybug nymphs (called crawlers) lack wax, and are quite mobile, but they become sedentary after settling down to feed. Although they can move, they don't move very far or very often.

#### Quick Tips



### Aphids

Almost every plant has one or more aphid species that occasionally feed on it, but low to moderate numbers of aphids usually aren't damaging to gardens or landscape trees.



Rose aphids on young blossom.



The fuzzy-orange aphids were killed by a fungus.

Although aphids can curl leaves and produce sticky honeydew, they rarely kill plants, and can usually be washed off with water. When aphid numbers are high, natural enemies often feed on them, eliminating the need for pesticides. When pesticides are necessary, use less-toxic products such as insecticidal soaps and oils.

#### Aphids are common in gardens.

- Aphids like lush, new growth. Don't over fertilize; use organic or slow-release products.
- Aphids build up on flowering plums, roses, tulip trees, crape myrtles, apples, and many vegetables. Expect aphids when you grow these plants.
- Ants protect aphids from their natural enemies. Keep ants off plants to help these beneficial insects do their job.

#### How can I reduce aphids?

- Prune infested leaves and stems.
- Knock aphid populations off plants by shaking the plant or spraying it with a strong stream of water.
- Protect seedlings with covers or aluminum foil mulches.
- Wait for hot weather; some aphids are heat-intolerant and will be gone by mid-summer.

#### Are there any good bugs that will eat aphids?

Beneficial insects such as lady beetles and lacewings will visit plants naturally when aphids are abundant. Protect these natural enemies by avoiding the use of insecticides that can be toxic to them. Common natural enemies of aphids include:

- Lady beetles (ladybugs), both adults and larvae
- Lacewings
- Syrphid fly larvae
- Soldier beetles
- Tiny parasitic wasps that turn aphids into crusty "mummies"



Lady beetle larva eating an aphid.

#### What about pesticides?

- Use nonchemical methods first to manage aphid populations.
- If insecticides seem necessary, choose the safest products, such as insecticidal oils and soaps. When properly used, these materials solve most aphid problems.
- Oils and soaps work by smothering aphids, so apply these products thoroughly. Don't apply them to drought-stressed plants or when it is very hot. Some plants are sensitive to these products.
- Apply insecticidal soaps, soap-pyrethrum mixtures, or neem oils on vegetables or small bushes such as roses.
- Narrow range horticultural oils—such as supreme or superior oils—are appropriate for larger trees.
- Oils and soaps don't kill aphids hidden within curled leaves. Prune these out. Systemic insecticides can kill hidden aphids, but they are much more toxic and might kill bees and other beneficial insects on flowering plants.

#### What you do in your home and landscape affects our water and health.

- Minimize the use of pesticides that pollute our waterways and harm human health.
- Use nonchemical alternatives or less toxic pesticide products whenever possible.
- Read product labels carefully and follow instructions on proper use, storage, and disposal.

For more information about managing pests, visit [ipm.ucanr.edu](http://ipm.ucanr.edu) or your local University of California Cooperative Extension office.