California’s worst garden insect pests and how to manage them

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Who Voted?

- Yvonne Rasmussen—Napa
- Marian Stevens---Butte
- Janet Cangemi—Fresno
- Jill Fugaro--Marin
- Wendy Roberts—Mendocino
- Gabriele O’Neill--Lake
- Yvonne Savio—LA
- Stephanie Pocock—Riverside
- Emma Connery—Contra Costa
- Gerry Hernandez—Colusa
The winners

votes

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Honorable mention

Insects
- Bee removal
- Budworm
- Cabbage worm
- Codling moth
- Earwigs
- Grubs in lawns & vegetables
- Spotted wing Drosophila

Non-Insects
- Snails and clugs
- Spider mites
- Tropical rat mites
- Deer, gophers & other vertebrate pests
Aphids and why we don’t like them

• Many species—on many plants—often in high numbers
• Honeydew and sooty mold
• Leaf curling or distortion
• Gall formations for a few species
General Life Cycle of Aphids

- First instar
- Second instar
- Third instar
- Fourth instar

Summer Cycle (many generations):
- Live birth
- Summer migrant

Winter Cycle (one generation):
- Egg
- Fundatrix
- Fall sexual reproductive (female)

(male and female)
General Management Considerations for Aphids

- Don’t kill most plants; often short term problems
- Most species (especially on woody ornamentals) are host specific: choose plants without problems
- Love lush vegetation: over fertilization, irrigation, pruning
- Natural enemies are abundant and often effective.
Management Tools for Aphids

• Cultural practices
• Natural enemy release
• Water sprays
• Insecticidal oils/soaps
• Imidacloprid soil drenches—rare situations--toxic to bees and parasites
• Other insecticides not recommended
Ant management can improve biological control of aphids
Parasitic wasps that attack aphids are common.
Convergent ladybeetle
Harmonia--Asian multicolored lady beetle
Green lacewings
Syrphid flies
Soldier beetle (Cantharidae)
Green peach aphid
*Myzus persicae*

- Many vegetables, flowers and tree species including flowering plum
- Distinct tubercles, long cornicles
Melon or cotton aphid
*Aphis gossypii*

- Many vegetables, flowers and tree species including apple, camellia, crape myrtle, *Prunus*, willow
- Tubercles indistinct, cornicles dark and shorter
- Different color forms
Host-specific aphids

Rose aphid, *Macrosiphum rosae*

Fungus-killed & healthy
Host specific aphids

Tuliptree aphid
*Illinoia lirodendri*

Birch aphids
*Callipterenella calliptera*
Poplar gall/Lettuce root aphids

_Pemphigus spp._

Overwinter in galls on poplar

Lettuce roots during summer
Manzanita gall aphid
Tamalia coweni

Not significantly damaging to plant
Woolly Apple aphid

*Eriosoma lanigerum*

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Apple, elm, hawthorne, cottoneaster, pyracantha

The parasite *Aphelinus malis* plus predators can control aerial colonies

Parasitized aphids turn black
Asian Woolly Hackberry Aphid

*Shivaphis celti*

- Honeydew
- Black sooty mold
- Leaves may yellow
- Aphids covered with wax
- May be a problem from late spring to fall
- Natural enemies often not effective
- Imidacloprid soil treatments

A real pest!
Scale Insects

Pests of woody plants primarily
Soft scales

• Honeydew
• Bulbous
• Cap not removed easily

Kuno scale

Citricola scale

Brown soft scale

Black scale

European fruit lecanium scale
Armored scales

- Smaller, flatter
- No honeydew
- Scale cover can be removed
- Can be more damaging to wood
- May occur on fruit

California red scale

Oystershell scale

Lantania scale
Armored scale: San Jose Scale

Haloes caused by nymphs on twig

Dormant bud timing best for management. Treatment not needed if less than 20% of sampled twigs have live (not parasitized) scales.

Black cap stage is stage treated during dormancy
Natural enemies of scales

Lady beetle larva and adult

Aphytis parasite laying egg

Parasites developing in soft scale

Parasite exit holes in brown soft scale

Manage Ants to protect natural enemies !!!!
If necessary, control scales with oils

- Apply during dormant season for deciduous trees and shrubs
- For evergreens, make applications just as eggs hatch in the crawler stage. Timing is critical!!
- Good coverage of tree required
- Don’t apply to water-stressed trees or when temperatures are hot
- Treatments not required every year—only apply when required—monitor for scales and signs of parasitization—exit holes
- Imidacloroprid controls soft scales—not armored but has negative impacts
Thysanoptera: Thrips

Intermediate metamorphosis
Sucking mouthparts

Western flower thrips

Greenhouse thrips
Damage

Black fecal spots and scarring

Silvering of leaves

Leaf distortion - Myoporum thrips

Scarring of rose sepals
Natural enemies of thrips

Minute pirate bug

Banded thrips

lacewings

Greenhouse thrips parasite--*Thripobius*

Control dust and avoid broad-spectrum insecticides to encourage natural enemies.
Management

• Row covers/reflective mulch for vegetables
• Prune out some species
• Excessive nitrogen may increase some species
• For most plants, insecticides not necessary or use soaps or oils.
• Spinosad can be effective
• Pyrethrin + PBO for greenhouse thrips
Myoporum thrips

- Almost impossible to manage without regular insecticide treatments
- Replant with more pest resistant species
Giant Whitefly

- Arrived in San Diego in 1992
- Wide spread in S. CA and sporadically in other areas including SF Bay Area
- Many hosts. Tropical plants such as hibiscus, bird of paradise but also citrus, mulberry.
Management

• Biological control agents introduced
• Look for signs of parasitism
• Remove infested plants or leaves
• Syringing
• Soap or oil sprays

For whitefly spp. on veges—all of the above plus avoid dry dusty conditions
Argentine Ant, *Linepithema humile*

- Most common pest entering homes in CA
- Native to S. America, entered California in early 1900’s
- Displaced many native species
- Difficult to manage
Life Cycle

Nest in shallow mounds in soil

Move into houses with change of weather
A realistic goal for an ant management program is to keep ants out of homes or buildings.
Prevention is key

- Understand food and nesting requirements of ants and remove them.
- Seal up entryways
- Remove limbs and travelways into home
- Remove shrubbery and nesting substrates around foundation
- Don’t allow sprinklers to water areas next to foundations
- Fix leaky faucets.

Remove access to food sources including garbage, pet dishes, hummingbird feeders, recycling bins, sweet liquids and food.
Management tools required depend on severity of the problem

- **Low levels** of ants can be managed with preventive methods—sealing up homes, removal of food and nesting sources.
- **Moderate levels** may require baits as well as preventive methods.
- **Serious problems** may require application of pesticide sprays as well as all the above.
- **Pesticides alone will not** provide long term control of ants. The conditions that favor ant entry into homes must be correct.
Liquids, solids, and gels

- Prepackaged baits are available at nurseries and other stores
- Use outdoors and indoors, when needed
- Reusable stations are available commercially and online—these are best for Argentine ants which consumes huge amounts of liquid
KM AntPro bait station is an ideal dispenser for liquid baits for Argentine Ant
Placement of bait stations

- Outside in shade
- Convergence of 2 walls
- Near water sources like air conditioner units
Get the most out of your bait

- Remove food sources such as sugary foods, pet food, and water sources
- Don’t spray pesticides around bait stations or on ant trails

Remember, if colonies are large, it may take one to two weeks to see a significant reduction in ants, even when baits are working well.

- Use baits primarily outdoors, near known entryways to houses
Insecticide sprays

• Not generally used inside for ants
• Professionals use pyrethroids (bifenthrin, cyfluthrin, cyhalothrin) and fipronil
• Require less maintenance than bait stations—but negative environmental impacts and repeat applications required.
• Homeowners should rely on baits.
UC resources to help identify & manage problems

- Diagnostic tables in UCIPM books
- Abiotic Disorders of Landscape Plants
- Pest Notes at http://www.ipm.ucdavis.edu
- UC Cooperative Extension offices

Ant management videos at www.ipm.ucdavis.edu/ANTS