

# CITRUS PEST MANAGEMENT

From UC IPM Guidelines, [www.ipm.ucdavis.edu](http://www.ipm.ucdavis.edu)

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Publication  
Number  
31-13C  
(updated Oct. 2017)

## CITRICOLA SCALE

### MANAGEMENT

**Insecticides:** Time oil sprays after nymph hatch is complete.

**Cultural Control:** Pruning to increase sunlight and air movement in the canopy dramatically reduces populations.

**Biological Control:** Naturalized and indigenous parasitic wasps. Control ants to improve biological control.

**MATERIALS** (O) = acceptable for organic production

- Narrow range oils (O)
- Buprofezin (Centaur WDG)
- Acetamiprid (Assail 70 WP)



*Citricola scale adult female*



*Citricola scale nymph—after settles down*



*Damage from heavy Citricola scale*

## COTTONY CUSHION SCALE

### MANAGEMENT

#### Biological Control

- Vedalia beetles are the most effective management method. Collect Vedalia beetles from an existing citrus orchard and release in spring.
- Avoid Insect Growth Regulators (IGRs) and neonicotinoids such as imidacloprid because they are toxic to Vedalia beetles.
- Control ants.



*Newly hatched nymphs*



*Cottony cushion scale with Vedalia beetle*



*Female Cottony cushion scale*

## CALIFORNIA RED SCALE

### MANAGEMENT

#### Biological Control

- *Aphytis melinus* wasp releases starting late February/early March. Wasp releases are effective only if broad spectrum pesticides are not used in spring.
- Control ants

**Insecticides** Time sprays to crawler development.

#### MATERIALS

- Narrow range oils (O)
- Buprofezin (Centaur WDG)
- Pyriproxyfen (Esteem 0.86 EC)
- Spirotetramat (Movento)



*CA red scale adult male*



*CA red scale males (right); Females (left): round with nipple in center*



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## CITRUS THRIPS

### MANAGEMENT

**Insecticides** Monitor to determine need for treatment. Treat only if fruit damage is occurring. Avoid broad spectrum pesticides such as organophosphate, carbamate, pyrethroid, and neonicotinoid materials as they reduce natural enemies and may stimulate thrips reproduction.

**Biological Control** Natural enemies include the predaceous mite *Euseius tularensis*, spiders, lacewings, dustywings, and minute pirate bugs.

**Cultural Control** Mow cover crop well before or well after bloom.

**Organic Methods** Biological controls, Entrust (spinosad) with an organic oil.

### MATERIALS

- Narrow Range Oils (O)
- Oils plus Spinosad (Entrust, Success), Abamectin (Agri-Mek), or Spinetoram (Delegate)



*Adult female citrus thrips*



*First and second instar larvae*

## ASIAN CITRUS PSYLLID

**This insect has recently been found in Northern California.** It is a tiny (1/8 inch) mottled brown insect about the size of an aphid. It attacks new growth and causes the new leaf tips to twist or burn. It carries Huanglongbing, the deadly citrus disease. **Monitor for the psyllid at spring growth flush. If you find an insect that looks like it, bring it in a Ziploc bag to your county Ag Department or UC Cooperative Extension.**



*Asian citrus psyllid adult and juveniles.*

## BACTERIAL BLAST

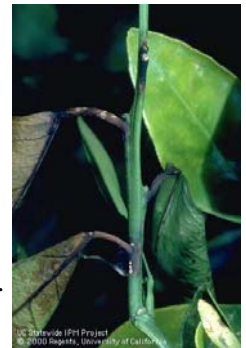
### MANAGEMENT

#### Cultural Control

- Prune out dead or diseased twigs in spring after the rains. This reduces disease spread and prevents canker formation.
- Planting windbreaks helps prevent wind injury.
- Plan fertilizer program to apply nitrogen between March and June. End fertilization in August.
- Excess N or late fertilizer applications promote cold sensitive fall growth.

#### Chemical Control

Spraying for bacterial blast is not cost effective unless sprays for brown rot are also needed.



*Starts as black lesions at petiole base*

## BROWN ROT

### MANAGEMENT

#### Cultural Controls

- Prune tree skirts 2 feet or more above the ground

#### Chemical Control

- One spray of copper fungicide after the crop is harvested, including the ground beneath the trees helps reduce inoculum for the following year.
- Use Bordeaux mix if your farm has a history of copper use.
- Wet years may require a repeat application in January or February.

### MATERIALS

- Zinc sulfate/Copper sulfate/Hydrated lime
- Bordeaux mix (O)
- Fosetyl-Al (Aliette WDG)



*Water-soaked appearance*



*Early stage of brown-rot lesions*