## Cool Tools to Control Garden Pests



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## What is a Pest?



### Pests are...

Organisms that are annoying us or damaging our plants, structures, or person.

Personal. A pest to one person may not be pest to someone else.



Consider the level of pests present: A few aphids do little damage to trees and shrubs. Do they need to be controlled?

### Manage Pests with Integrated Pest Management (IPM)



- Ecosystem-based strategy
- Long-term prevention of pests or their damage
- Monitoring of pests and the ecosystem
- Uses a combination of complimentary, environmentally sound techniques



### Why choose IPM?

- Provide long-term solutions
- Manage potential problems before they get out of hand
- Gives you choices that often don't require pesticides
- Eliminate unnecessary pesticide use
- Good for health and the environment







# Damage in the landscape can have many causes

- Living Pests
  - Insects and other invertebrates
  - Rodents and other vertebrates
  - Disease-causing microbes
  - Weeds
- Nonliving Abiotic factors
  - Over- or under-watering
  - Nutrient deficiencies
  - Mineral toxicities
  - Fertilizer damage
  - Herbicide damage
  - Mechanical injury



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## IPM- Combine practices for long-term management

- Step 1: Pest Identification and knowledge
- Step 2: Monitoring to detect and assess problems

Step 3: Do I need to take action? If yes,

✓ Prevention



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### **Cultural controls**

Habitat modification– remove sources of food, water, and hiding places

- Plant and site selection
- Pest resistant plants
- •Sanitation: remove clutter, backyard debris, fallen fruit
- •Pruning
- •Water management
- Proper fertilizing







### **Physical/Mechanical Controls**

- Cultivation
- Mowing
- Flaming
- Mulches
- Traps
- Screens
- Barriers



### **Biological control**

- Any activity of one species that reduces the adverse effects of another
- Living "natural enemies" are the agents of biological control





### **Biological Control and Natural Enemies**



Live and

feed in a

larger host

Identifying and knowing the beneficials is also important!

#### **Predators**

**Parasites** 

Attack, kill, and feed on other prey



#### Pathogens

**Cause disease** 





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attacking aphid

**Parasites** 

### Familiar predators

- Lady beetles
- Lacewings
- Praying mantids





### Convergent lady beetle



## Harmonia-- Asian multicolored lady beetle



### Syrphid flies





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### Green lacewings



# Less well-appreciated predators

- Spiders
- Earwigs
- Centipedes
- Soldier beetles





### **Parasites (parasitoids)**

- Adults lay eggs in host
- Immatures develop within host
- Kill host just before pupating
- Immatures kill only one host





### **Parasitic wasps that attack** aphids are common





Parasitoid exit hole

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## *Hyposoter exigua*: a parasite of many garden caterpillars



### **Enhancing biological control**

- Provide water, nectar, shelter or alternative food sources
- Control ants
- Most important: Avoid using pesticides that kill natural enemies





### Ants Tend Honeydew-Producing Insects and Feed on the Sugary Liquid





# Pesticides in the Garden & Landscape

- Only use when nonchemical controls are ineffective and pests are reaching intolerable levels.
- Use pesticides in combination with other methods.
- Choose pesticides carefully. Use the least toxic, yet effective material. Apply in ways that reduce exposure.
- Follow directions, wear protective equipment, and dispose of properly.
- Rely on written University of California science-based publications for advice on when needed and what to use.



## IPM for slugs & snails

- Recognize habitat that favors slugs and snails
- Remove shelter, consider drip irrigation
- Choose snail proof plants
- Handpicking
- Traps: boards or beer
- Copper bands
- Fowl: geese, ducks, chix
- Baits:

- least toxic: iron phosphate
- more toxic: metaldehyde
- New product: sodium ferric EDTA





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### **IPM for Weeds**

#### Preplant weed prevention

- Site preparation
- Avoid introduction of weeds
- Design competitive plantings
- Use mulches
- Water management (drip)
- Encourage rapid establishment of desired plants





#### For established perennial landscapes

- Prevent introductions
- 🕷 Maintain mulches
- Hoeing, flaming, mowing, handpulling
- Glyphosate for difficult to control invaders
- Other herbicides are generally not necessary

### **IPM for Vertebrates**

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- Remove or limit food, water and shelter
- Traps
- Screens
- Barriers



### www.ipm.ucanr.edu



### **Use University of California Resources to Help Solve Problems**

Abiotic Disorders of Landscape Plants A Diagnostic Guide

Laurence R. Costello

Edward Neida P

J. Mich

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Publication 7433

Statewide Integrated Pest Management Program Agriculture and Natural Resources

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### Thank you!



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