Insect Pests in Home Fruit Gardens: Basic Training for Master Gardeners

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January 2010
Common fruit pests

• **Generalists**
  – Japanese beetle
  – Slugs
  – Tarnished plant bug
  – Plum curculio

• **Specialists**
  – Codling moth (apple)
  – Apple maggot
  – Oriental fruit moth (peach)
  – Peachtree borer
  – San Jose scale
  – Cherry fruit fly
Japanese beetle

- Attacks many crops:
  - Grape
  - Raspberry
  - Blueberry
  - Plum
  - Peach

- Expect start in early July
Japanese beetle

• Traps
  – can bring in MORE beetles
  – Do not place close to crop

• Insecticides
  – Sevin (carbaryl)
  – pyrethrins + PBO
Results of insecticide tests in laboratory bioassays

Japanese Beetle

- rotenone
- esfenvalerate
- pyrethrins+PBO
- carbaryl
- lambda-cyhalothrin
- permethrin
- cyfluthrin
- bifenthrin
- malathion
- pyrethrins+soap
- pyrethrins+oil
- water
- azadirachtin
- spinosad
- capsaicin

Damage Rating

Grape leaf
6/28/07
P < 0.0001

% Mortality

C
C
C
Slugs

- Ragged holes & tunnels in berry surface
- Feed mostly at night
- Eggs laid in fall
- Favored by moisture, thick mulch
 Slug Control

• Cultural
  – Lower plant density
  – Delay fall mulching
  – Remove debris around field

• Mechanical
  – Board traps

• Control by abrasion
  – Diatomaceous earth

• Chemical baits
Slug Control

• Chemical baits
  – Metaldehyde (Bug-Geta, etc.)
    • Kill slugs by over stimulating mucous
    • Prevents damage
    • Toxic to dogs
    • Works best when temp. warm
  – Iron phosphate (Sluggo, Slug Magic, etc.)
    • Light brown; less visible to pickers
    • Safe to humans, animals, natural enemies
    • Less rapid toxic effect
    • Stop the slugs from feeding
    • Eventually leads to their death
Tarnished plant bug

• Causes fruit deformities:
  – Strawberry:
    • Apical seediness
    • Hollow seeds
  – Peaches:
    • ‘Catfacing’
Tarnished plant bug

- Adults feed in flower
- Nymphs feed on flower & fruit of strawberry
- Cultural control by weed management
  - Weeds are also host plants
  - Especially weeds that flower early (before strawberries bloom)
- Chemical control before & after bloom
Plum curculio

• External damage on apples from egg-laying

• Internal damage on plum, peach, cherry, blueberry from larvae tunneling
Plum curculio

- Mechanical control:
  - limb-jarring

- Chemical control:
  - permethrin at petal-fall
Codling Moth in Apples

- The key pest in apple fruit
- Young larva enters fruit, tunnels to seeds at core
Codling Moth
Life cycle

1\textsuperscript{st} generation
in May/June

2\textsuperscript{nd} generation
in July/August
Codling Moth in Apples

- Mechanical controls:
  - Trunk bands
  - Fruit bagging
Chemical control of codling moth

• **Timing:**
  – Use 2 sprays per generation
  – First spray when eggs begin to hatch
    • Memorial Day +/- 1 week
  – Second spray 14 days later

• **Insecticide**
  – spinosad or acetamiprid or malathion or multi-purpose fruit spray
Apple Maggot

- A key pest in northern USA
- Not a pest in southern USA
- Variable in Ohio
Apple Maggot

- Adult fly lays egg on fruit
- Larva tunnels through fruit
- Pupation in soil
Apple Maggot

- Adult female fly attracted to round red object
- Sticky ball trap for mechanical control: 1 trap per 100 real fruit
Apple Maggot

Chemical control:
• Sevin (carbaryl) or acetamiprid in July & August
Oriental fruit moth in Peaches
Oriental Fruit Moth in Peaches

Control Options:

• Prune flagged terminal shoots in spring

• Insecticide
  – permethrin, malathion, or Sevin
  – Most important to apply at petal-fall
  – Additional applications in all remaining cover sprays
Borers in peach trees

- **Peachtree borer**
  - Attack healthy tree at soil line
  - One generation per year

- **Lesser peachtree borer**
  - Attack injured scaffold branches
  - Two generations per year
Cultural control of borers

• Train trees to form wide angles
• Promote healthy trees
• Avoid practices that injure bark
  – Over load of fruit
  – Improper pruning
  – Mowing injury
  – Fertilizing
  – Damage during harvest
Mechanical control of borers

- ‘Worming’
- Effective
- Insert knife or wire into entry hole
- Smash the larvae!
- Do in early spring or late fall
- Practical in small plantings
Chemical control of borers

• Dip bare roots before planting new trees
• Insecticide drench (start year 2)
  – Permethrin or Thiodan
  – Preventive via residual action
  – Curative via fumigant action
• Target on tree:
  – Soil line for peachtree borer
  – Trunk & scaffolds for lesser PTB
San José Scale

- Sucking pest
- Injures fruit & bark
- Overwinters on bark
- Disperses to fruit in crawler stage (starts mid-June)
San José Scale
San José Scale

Insecticide spray options:

- **Dormant**
  - Oil
  - Lime sulfur

- **Post-bloom (crawlers)**
  - Malathion
  - Carbaryl (Sevin)
  - Insecticidal soap
San José Scale

When are crawlers crawling?

• Start about 4-6 weeks after bloom
• Usually in mid-June
• Emergence lasts several weeks
• Use black sticky tape (electrical tape)
  – Wrap sticky-side out around branch
  – Look for tiny bright yellow crawlers
Cherry Fruit Fly

- Similar to apple maggot
- Female fly lays eggs on fruit for 3-4 weeks in June and July
Cherry Fruit Fly

• **Mechanical control by traps**
  – Yellow sticky traps baited with ammonium

• **Chemical control**
  – Insecticide targets adult flies
  – carbaryl or spinosad or permethrin
  – Apply within 1 week of first fly emergence
  – Every 10 days from June to harvest
the end