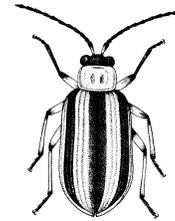


# Cucurbit Pest Identification & Management

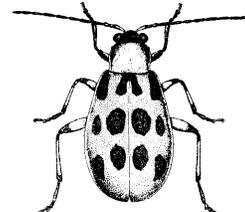
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## 1. Cucumber beetles

- a. I.D.: Striped and spotted cucumber beetle  
vs western and northern corn rootworm beetles  
vs pale-striped flea beetle
- b. Damage
  - Direct: defoliation of seedlings, gouging fruit surface
  - Vectoring bacterial wilt
- c. Biocontrol
  - Conserve parasitoid flies: *Celatoria setosa*
  - Refuge border plantings of flowers
- d. Cultural tactics
  - Late planting date
  - Avoid straw or other organic mulches
  - Perimeter trap cropping with buttercup squash
- e. Mechanical tactics
  - Row covers until flowering or extended 10 days
  - Mass trapping along border using kairomone bait (trial)
- f. Thresholds
  - Cotyledon & 1-leaf: 0.5 beetle/plant
  - 2-leaf to 4-leaf: 1 beetle/plant
  - >4-leaf: 3 beetles/plant
  - Fruit: 20% of fruit with scars (tentative)
- g. Chemical tactics
  - Conventional:
    - Insecticide seed treatment with thiamethoxam (FarMore FI400)
    - At-planting soil insecticide treatment with imidacloprid (Admire Pro)
    - Pre-transplant plug drench (Admire Pro)
    - Foliar sprays of carbaryl (Sevin) or pyrethroids
  - Organic: Foliar sprays of kaolin (Surround), or spinosad (Entrust) + cucurbitacin (CideTrak D)
  - Almost organic: pyrethrins + PBO (EverGreen Pro 60-6)



striped cucumber beetle (*Acalymma vittatum*)



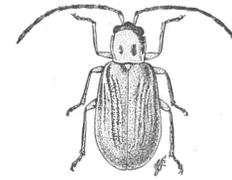
spotted cucumber beetle (*Diabrotica undecimpunctata howardi*)



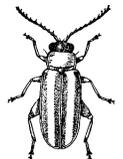
larva of cucumber beetle



western corn rootworm beetle (*Diabrotica virgifera virgifera*)



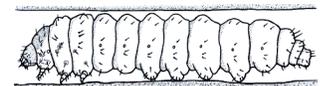
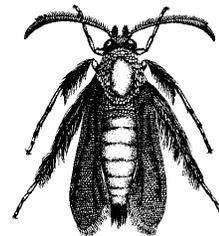
northern corn rootworm beetle (*Diabrotica barberi*)



pale-striped flea beetle (*Systema blanda*)

## 2. Squash vine borer (*Melittia cucurbitae*)

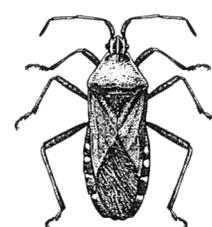
- a. Life cycle: 1 generation per year
- b. Monitor with pheromone trap
- c. Cultural tactics
  - Delayed planting
  - Trap crop with border row of unharvested zucchini (trial)
- d. Mechanical tactics: row covers
- e. Chemical tactics: 2 to 4 sprays, weekly, mid-June to late July
  - Conventional: pyrethroids
  - Almost organic: pyrethrins + PBO (EverGreen Pro 60-6)



squash vine borer: adult (left), larva (right)

## 3. Squash bug (*Anasa tristis*)

- a. Life cycle: 1 generation per year
- b. Damage: suck sap from stems and leaves, can kill plant
- c. Biocontrol
  - Conserve parasitoids: feather-legged fly (*Trichopoda pennipes*)
  - Egg parasitoids
- d. Cultural tactics: destroy crop remnants after harvest
- e. Mechanical tactics: board traps checked daily; hand smash eggs
- f. Chemical tactics: spinosad (Entrust) toxic to nymphs, not adults
- g. Vector of yellow vine disease (*Serratia marcescens*)



squash bug: adult (left), older nymph (center), younger nymph (right)

4. Squash beetle (*Epilachna borealis*)

a. Identification:

- Adult is plant-feeding lady beetle, orange with large black spots
- Larva is yellow, covered with black branched spines

b. Damage symptoms: skeletonized leaves

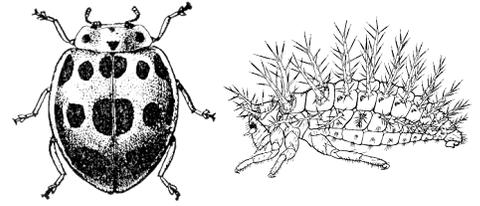
c. More common in southern Ohio than northern Ohio

d. Cultural tactics: destroy crop remnants after harvest

e. Mechanical tactics: row covers, hand picking

f. Chemical tactics:

- Conventional: carbaryl (Sevin) or pyrethroids
- Organic: suppression of larvae by azadirachtin or spinosad



squash beetle: adult (left), larva (right)

5. Two-spotted spider mite (*Tetranychus urticae*)

a. Identification: tiny, white body with two large dark spots, 8 legs, no wings

b. Need magnifier to see

c. Damage symptoms: white stippling or yellow blotches on leaves

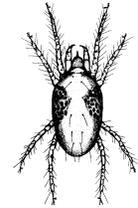
d. Diagnosis: webbing on leaf undersides; tap leaf over paper, look for moving specks

e. Biocontrol: encourage predatory arthropods

f. Cultural tactic: overhead irrigation

g. Chemical tactics:

- Conventional: abamectin (Agri-Mek), bifenazate (Acramite), spiromesifen (Oberon)
- Organic: insecticidal soap



two-spotted spider mite

6. Melon aphid (*Aphis gossypii*)

a. Watermelon mosaic virus & other non-persistent viruses

b. Biocontrol: encourage predatory insects

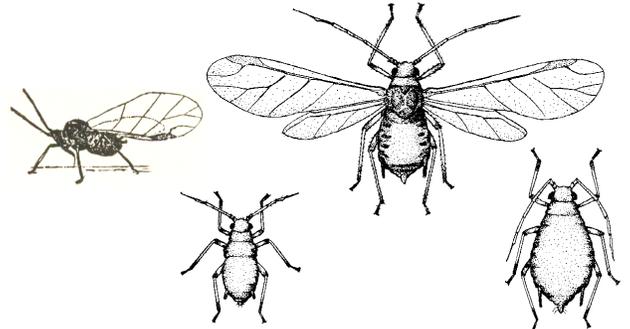
c. Cultural tactic: Plant early; reflective mulch

d. Mechanical tactics: Row covers

e. Chemical tactics:

- Conventional:
  - Soil-applied systemic insecticides
  - Foliar insecticides: Assail, Admire
- Organic: JMS Stylet Oil; insecticidal soap

f. Need for varieties resistant to viruses



melon aphid: adult winged female, wings in resting position (above left) and wings spread (above right); immature female (lower left), adult wingless female (lower right)

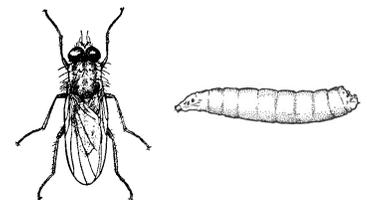
7. Seedcorn maggot (*Delia platura*)

a. Attack direct seeded crops in spring, especially in cool wet weather

b. Adult flies attracted to fields with decaying organic matter

c. Cultural tactic: Delay planting for 3 weeks after incorporating organic matter

d. Chemical tactics, conventional: imidacloprid (Admire Pro) in-furrow



seedcorn maggot: adult (left), larva (right)

8. Silverleaf whitefly (*Bemisia argentifolii*)

a. Adults: tiny, bright white wings

b. Nymphs: sedentary pale yellow scales on leaf undersides; need magnifier to see

c. Damage: suck sap from leaves, secrete honeydew, leads to sooty mold growth

d. Chemical tactics:

- Conventional: acetamiprid (Assail)
- Organic: insecticidal soap or azadirachtin



silverleaf whitefly: adult (left), nymph (right)

9. Garden springtail (*Bourletiella hortensis*)

a. Small, soft, round, dark purple; size and shape similar to aphids

b. Jumps like flea beetles

c. Occasional pest in early summer

d. Damage: chew seedlings; can kill seedlings

e. Cultural tactic: Cultivate soil to destroy eggs

f. Mechanical tactic: Remove adults by aspirator



garden springtail: side view (left), bottom view (right)