Ontario Ministry of Agriculture, Food & Rural Affairs

Direct Insect Pests - *Early Season*

Kristy Grigg-McGuffin
Horticulture IPM Specialist

Ontario

Direct vs Indirect Pest

Depends upon which plant part is attacked

- **Direct**: insects that feed on **fruit**
- **Indirect**: insects that attack **leaves, trunk** and **other parts of the tree**

Major pests have the potential to cause major economic loss

- Most **direct** pests are also considered **major** pests
- Although **indirect** pests may limit fruit yield, they are usually considered **minor** pests

Direct Insect Pests
EARLY SEASON

- Spring feeding caterpillars
- Mullein bug
- Tarnished plant bug
- Plum curculio
- (European apple sawfly)

Spring Feeding Caterpillars


Obliquebanded leafroller


BC Tree Fruit Production Guide

Eye spotted bud moth


Green fruitworm


Spongy moth


Science Photo Library

Green pug moth


heung


Spring Feeding Caterpillars


Spring Feeding Caterpillars

- Active early season, **½" green to mid-June** but can be found up to harvest depending on species

Monitoring

- Tight cluster to petal fall:

  5 terminal & 5 fruit buds / tree, 10 trees
- After petal fall:

  10 terminals / tree, 10 trees

Thresholds

- **OBLR: 1-2 % infested terminals**
- **Other SFC: 10-15% infested terminals**

Cultural control

- Prune out infested branches, larvae and egg masses

Biological control

- Natural enemies such as birds, ground beetles, stink bugs, assassin bugs, spiders, parasitic wasps
- Fungal and viral diseases, esp during warm, wet springs
- Do not provide effective economic control alone

Chemical control

- Only if threshold reached to preserve natural enemies
- Prebloom or petal fall depending on temperature

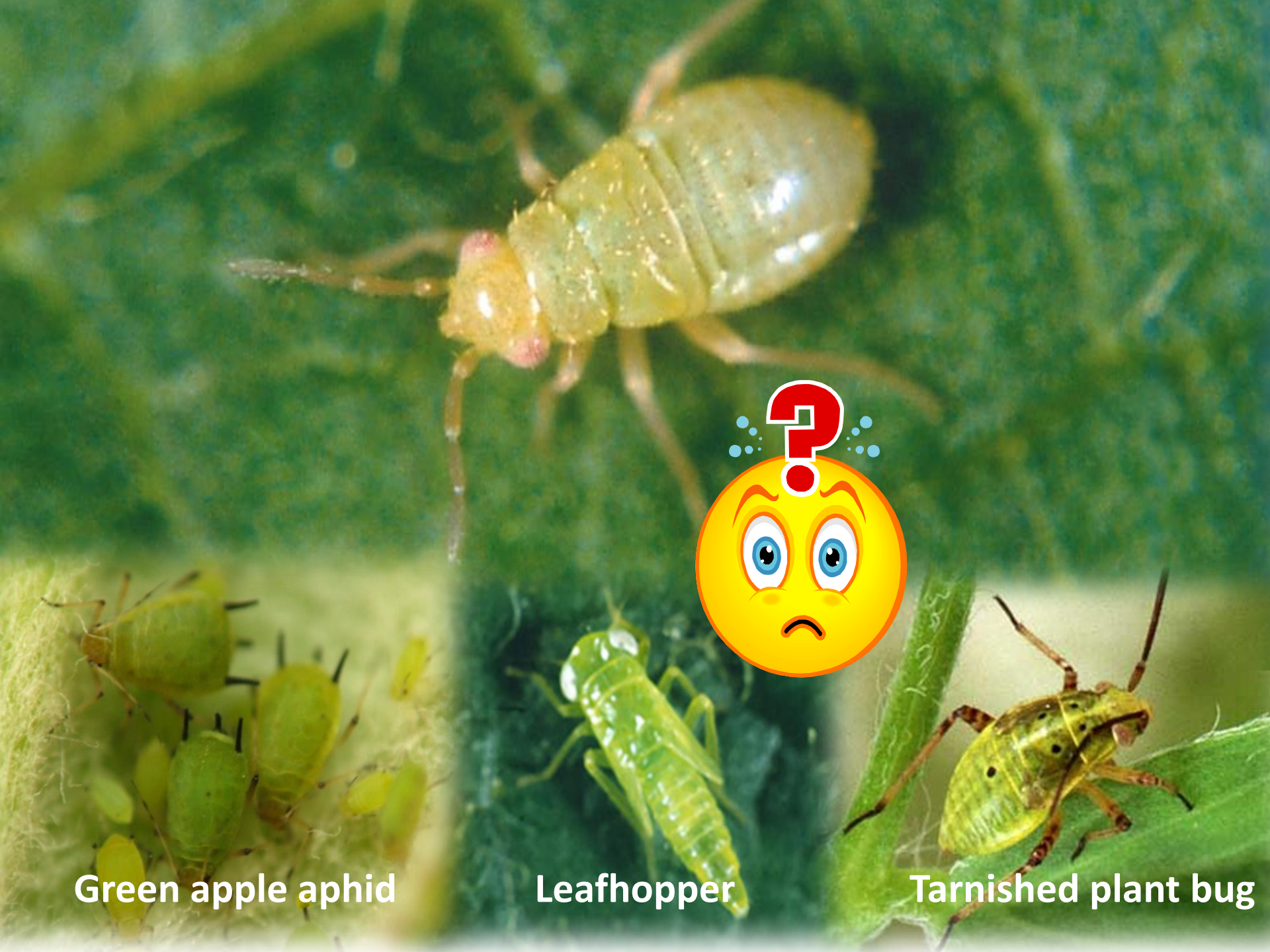
Mullein bug, *Campylomma verbasci* (Meyer)

Nymph

- lime to yellow color
- red eyes
- clubbed antennae

Adult

- oval
- green to tan color
- black spotted, spiny hind legs


Green apple aphid
Leafhopper
Tarnished plant bug

Susceptible cultivars

Red Delicious, Spartan, Spy, Empire, Cortland, Ambrosia, Gala, Jonagold and Golden Delicious

Mullein bug

- Overwinter as eggs in bark, nymphs emerge from **bloom to petal fall**
- 2-3 generations per year

- Monitor frequently, hatch usually synchronous and threshold can be missed
- **Tap 25 trees / block, 1 limb / tree**
  - Tap each limb 2-3x
  - Limbs with fruit clusters

- Threshold:
  - **7-10 nymphs / 25 taps**

Mullein bug

During the summer (2-3 weeks after PF), mullein bug are important orchard predators of mites, aphids, scale crawlers and midges.

- Include in beneficial counts during summer
- Red bellies of nymphs indicate feeding

Mullein bug

- Damage is affected by availability of food such as pollen, nectar, plant nitrogen or animal prey
  - As a result, high populations may not cause significant fruit damage
- Do not count on prebloom control, esp during prolonged bloom
- Chemical control may be needed at PF if threshold reached
- Not an issue after fruit dime- to quarter-sized

Mullein bug

Tarnished Plant Bug, *Lygus lineolaris* (Palisot de Beauvois)

Nymph

- green with black spots
- wingpads on older instars

Photo: University of Florida

Adult

- oval
- brown-yellow with yellow "Y" on scutellum

Photo: University of Florida

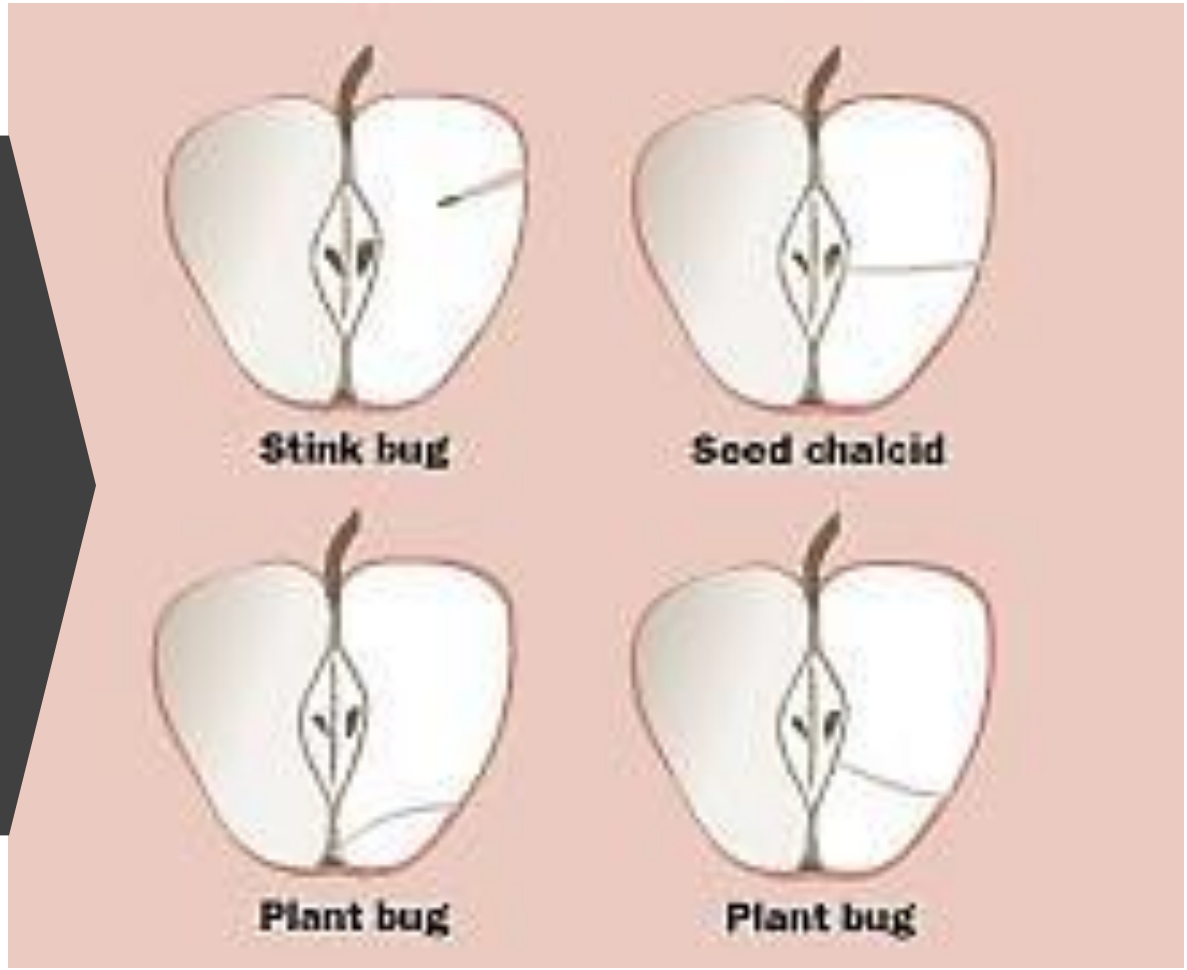
Damaged buds exude clear liquid ooze, turns amber

Dimple or sunken conical area on fruit

Tarnished plant bug

Tarnished plant bug

Feeding damage by stinging insects



Tarnished plant bug

Apple Red Bug

Green Apple Bug (aka pear plant bug)

Tarnished plant bug

- OW as adults in leaf debris, bark or weed litter
- Attack buds **before green tissue present**
- Move to weeds and vegetable May to early June
- 2 generations per year

Monitoring

- **Early spring, ooze near or on flower buds**
- Keep an eye out for nymphs when tapping

Thresholds

- **No threshold exists**

Tarnished plant bug

Cultural control

- Sod and headland management – reduce or eliminate alternate weed hosts such as chickweed, dandelion, clover, pigweed and lamb's-quarters
- Avoid mowing from bloom to PF to prevent adults flying into trees
- Avoid planting adjacent to alfalfa, strawberry or other susceptible crops

Chemical control

- Targeted control typically not economical, unless perennial problem in orchard
- Insecticides targeted at other early season pests may suppress plant bug

Tarnished plant bug

Plum Curculio, *Conotrachelus nenuphar* (Herbst)

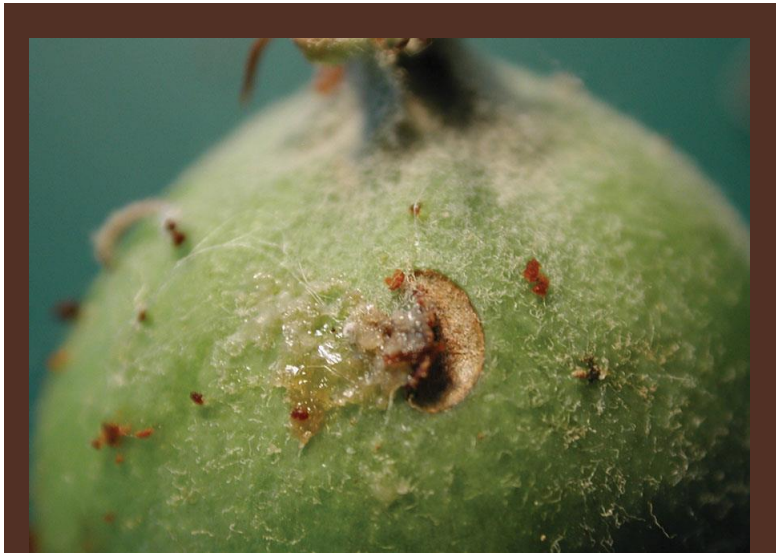
Larva

- white, legless grubs
- brown head capsule

Adult

- Brown / grey snout beetle
- 4 humps on wing covers

Photo: bugguide.net



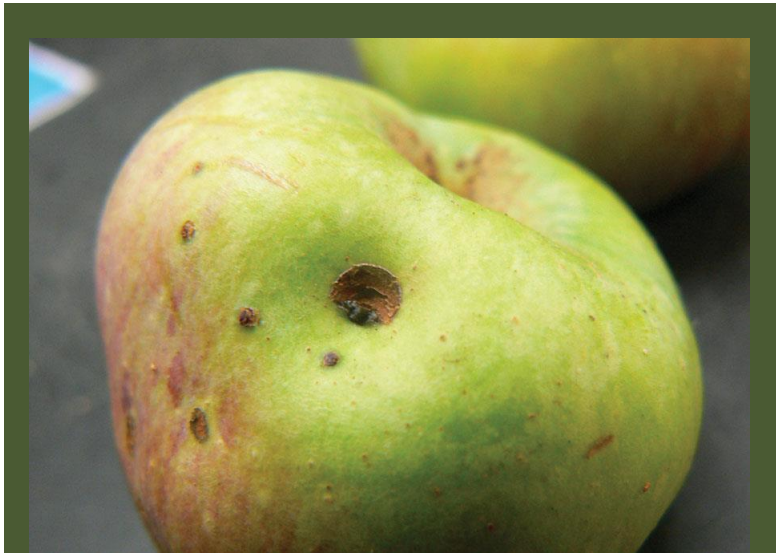
Adults damage fruit in two ways:

1. Crescent-shaped oviposition scars

Plum curculio

Plum curculio

Plum curculio



Adults damage fruit in two ways:

1. Crescent-shaped oviposition scars

2. Round cavities from summer feeding, entry site for decay organisms

Plum curculio


Bernard Drouin


Michigan State University

- OW as adults in leaf litter or adjacent to orchard
- Adults active between **pink to petal fall**
- Triggered by warm, humid weather when fruit >6mm (¼ in)
- 1 generation per year

Monitoring

- Wild fruit trees adjacent to orchard
- **Most damage occurs in border rows**

Threshold

- **Fresh injury**

Plum curculio

Management strategies for plum curculio

Cultural control

- Regular winter pruning to open canopy improves spray coverage
- May be attracted to fresh pruning cuts

Physical control

- Odour traps, bait trees to lure pest to particular area
- Kaolin clay creates unappealing surface

Chemical control

- Perimeter sprays may be effective depending on product
- Emergence and damage affected by spring weather; models can predict extended activity or oviposition to time sprays accordingly
- e.g., 40% of oviposition complete at 154 DDC (base temp 10^{o}C) after petal fall. Reapply spray if more than 10-14 d after previous application.

Thank You!

kristy.grigg-mcguffin@ontario.ca
519-420-9422
@AppleOfMyIPM