Ontario Ministry of Agriculture, Food & Rural Affairs

Indirect Insect Pests - *Trunk*

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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

Indirect Insect Pests

- Dogwood borer
- Ambrosia beetle
- Scale

Dogwood Borer, *Synanthedon scitula*

Larva

- Dirty white grub
- Reddish-brown head and thoracic shield

Adult

- Clearwing moth
- Black body, yellow bands / legs
- Abdomen tip is rounded tuft

- Bore into burr knots just below graft union
- Reddish-brown frass, pupal cases from burr knot
- Discoloration of cambium layer
- Sloughing-off bark, crown die-back and general tree decline
- Infested trees susceptible to attack by other insects or opportunistic pathogens

Dogwood borer

- OW as larvae within feeding galleries in trunk
- Emergence begins in June, continues through Aug and early Sept (**peak flight usually mid-July**)
- One generation per year

- Not monitored in all orchards
- **Pheromone traps in early to mid-June**, lower canopy
- Visually examine base of tree for **tunnels, presence of pupal cases and/or frass**

Dogwood borer

Management strategies for dogwood borer

Cultural controls

- Select rootstocks with lower tendency for burr knot formation
- Susceptible rootstock include M9, M26, Mark
- Thinning product NAA increases development of burr knots
- Remove adjacent wild hosts

Physical controls

- Use wire mesh mouse guards rather than solid guards
- Apply latex paint to lower trunk

Behavioural controls

- Mating disruption

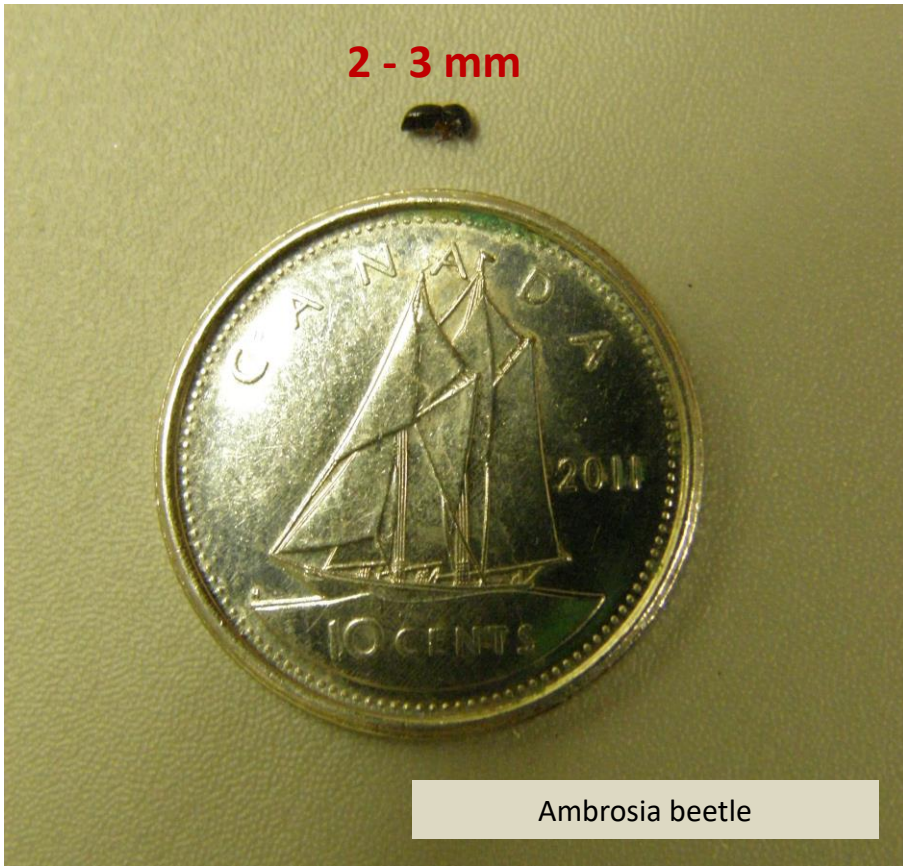
Chemical controls

- Apply insecticides at peak pheromone trap catch

Ambrosia beetle, various species

Group of wood-boring insects including:

- Black stem borer (*Xylosandrus germanus*)
- Granulate ambrosia beetle (*Xylosandrus crassiusculus*)



Ambrosia beetle

- Often attack trees under physiological stress and young plantings
- Females bore into trunk or branches to create galleries for developing brood
- Do not digest wood tissue
  - Obligate mutualistic relationship with ectosymbiotic fungi called ambrosia (hence name)
  - Food source for female and brood
  - Fungi disrupts nutrient and water flow in tree
- Wilting, low vigor and eventual tree death
- Introduction of secondary infection

Ambrosia beetle

Greatest risk - trees near perimeter of orchards, especially near woodlots

Monitor in orchards with known pressure

Signs to look for:

- 1 mm diameter entry holes, often without oozing sap, discoloured or blistering bark

- Sawdust “toothpicks” may protrude from holes

- Spontaneous tree collapse

Ambrosia beetle

Management strategies for ambrosia beetle

Cultural controls

- Remove dead branches and dying trees
- Prevent tree stress by
  - Irrigating
  - Applying sun protectants or using shade netting
  - Selecting sites with good drainage
  - Maintaining good disease control

Physical controls

- Tunnels can occur throughout tree so use of tree guards or latex paint may not be effective

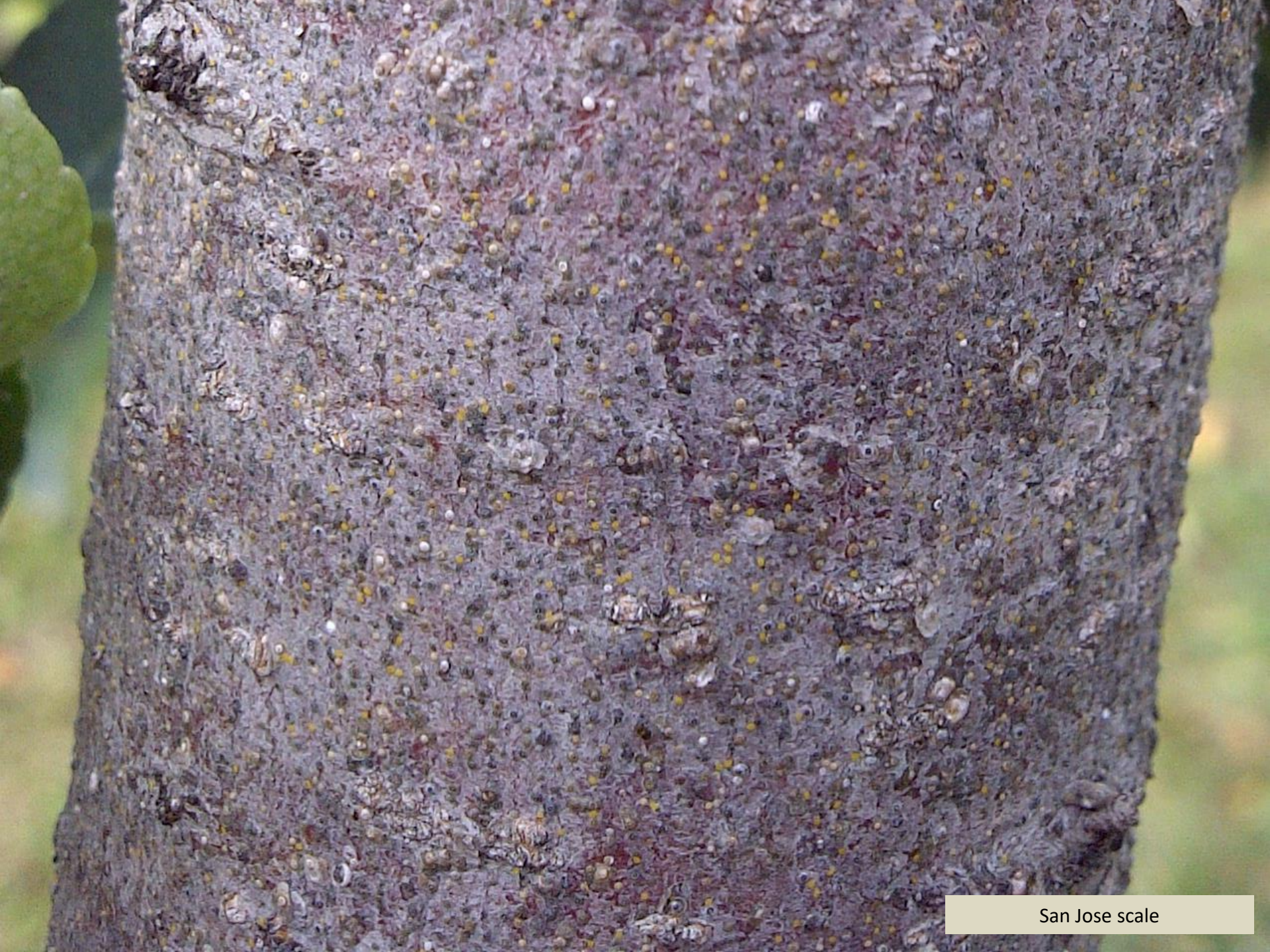
Chemical controls

- Trunk sprays have limited effectiveness due to lifecycle occurring inside tree
- Repellent applications may deter or kill females prior to boring
- Regular monitoring required to determine activity periods which may be difficult if several species present

San Jose Scale,

Quadraspidiotus perniciosus

- Most serious and common scale pest
- Crawlers: orange-yellow, oval-shaped
- Female (adult): round covering with raised center
- Male (adult): golden brown with dark band, winged


San Jose scale

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San Jose scale

Reddish discolouration of cambium

Heavy infestations can reduce tree vigour, growth and productivity

San Jose scale

- OW as immature scales on bark (“black caps”)
- Adults emerge from **bloom through petal fall**, crawlers **4-6 weeks after** bloom
- Females can produce live young at rate of 9-10 / day
- 2 generations per year

- **Pheromone trap**, pink
- **Tape (electrical, carpet)**, crawlers at petal fall

- Threshold: **None**
- But, fruit injury at harvest warrants corrective measures the following spring

San Jose scale

Management strategies for San Jose scale

Cultural controls

- Prevention – examine all nursery trees prior to planting
- Plant new orchards away from hardwood stands and older plantings with history of scale problems
- Prune out infested branches

Biological controls

- Natural enemies including twice-stabbed lady beetle and parasitic wasp, *Encarsia formosa* can suppress

Chemical controls

- Dormant oil application to target OW immature scale with thin wax coating
- Summer insecticides timed at crawlers

Thank You!

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