Biology and Management of Wooly Apple Aphid in Apples

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Overview

• Biology & Life cycle
• Monitoring and Management
Wooly apple aphid (*Eriosoma lanigerum*)

- **Native** to North America
  - First identified in 1842
  - Found in all apple growing regions
  - “American aphid”

- **A weird aphid**
  - Reddish brown-purple
  - Releases solid honeydew—white substance
WAA: what does it do?

- WAA attacks almost all parts of the apple – another "weird" trait
  - Roots
  - Woody aerial parts of the tree such as
    - Shoots
    - Pruning wounds
    - Can be present on fruit on stem or calyx

- Infestations can hurt tree physiology
  - **Aerial infestations** can kill nearby fruit and flower buds developing for next year → blind wood with no leaves or flowers/fruit
  - **Root feeding** → root galls → reduced water and nutrient uptake
WAA Lifecycle

Asexual lifecycle occurs on apple.

Allegedly—sexual lifecycle occurs on elm.
Understanding the WAA life cycle for management

• **Goal**: Prevent establishment WAA by catching and eliminating shoot feeding populations.

• **Important to catch populations on aerial shoots**
  - Physiological damage to the roots is a big concern
  - Infestation will migrate to the roots and cause more long term damage
Damage if left *untreated* with large populations
Monitoring for WAA

**Goal**: detection of aphids on shoots

**Scout**: areas with previous infestation; check perimeter trees; young trees
  - **Mild winter**: start looking before mid summer—late May/June
  - If many colonies are in fruiting zone—treatment needed
Biological control

- *Aphelinus mali* – parasitoid of aphids

- **Overwinters**: full grown larvae or pupa inside a dead WAA
  - *in diapause* from October to March

- **Monitoring**: Look for WAA aphid mummies with circular exit holes
Insecticide and other treatments

- **Loss of chlorpyrifos** --> no longer one very strong treatment for multiple pests
- **Spray coverage is key to management** with insecticide:
  - 2.5 mph or less
  - Water volume can depend on tree size and density
  - Proper canopy pruning essential on low density, large tree plantings
- **Biocontrol** can supplement chemical control but not effective enough on its own
Treatment options

• Soft insecticides for piercing-sucking insects:
  • Movento (Spirotetramat) – systemic for multiple piercing-sucking pests

  • AdmirePro & generics (imidacloprid) (locally systemic for foliar app/whole plant systemic for soil applied*) — soil applied is going to be best for large infestations -- *uptake of soil-applied imidacloprid can be interfered with by soil type

• Versys/Sefina (Afidopyropen) – Labeled for WAA Suppression in Pomme Fruits

• Diazinon – For large and established populations – organophosphate that can bet detrimental to beneficials; good material if also targeting San Jose Scale