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 zonetreatment 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