Scouting Apples for Insect & Mite Pests

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Key Practices for Apple Pest Management

• Scout for foliar pests
• Trap for direct fruit pests
• Avoid killing beneficial arthropods by using selective pesticides
Apple pest monitoring

- **Trapping**
  - Codling moth
  - Apple maggot
  - San José scale

- **Scouting**
  - Rosy apple aphid
  - Spotted tentiform leafminer
  - White apple leafhopper
  - European red mite
  - Green apple aphid
<table>
<thead>
<tr>
<th>Time</th>
<th>Target pest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early pink</td>
<td>rosy apple aphid</td>
</tr>
<tr>
<td>Early petalfall</td>
<td>leafminer</td>
</tr>
<tr>
<td>Early petalfall</td>
<td>leafhopper</td>
</tr>
<tr>
<td>All season</td>
<td>mites</td>
</tr>
<tr>
<td>June</td>
<td>green apple aphid</td>
</tr>
</tbody>
</table>
Rosy apple aphid

- Scout at early pink
- Choose:
  - 10 trees per block
  - 10 fruit clusters per tree
  - Best from inner canopy
- Look for curled, distorted leaves
- If ANY rosies found, then use aphicide at pink
Spotted tentiform leafminer

- Scout at early petal-fall
- Randomly choose:
  - 5 trees per block
  - 3 fruit clusters per tree
  - Examine 2nd, 3rd, & 4th leaves from base
- Look for early mines
  - Underside of leaf
  - Pale-green blisters
- Treat if > 4 mines per cluster
- Sequential sampling graphs available for more precise sampling
White Apple Leafhopper

- Scout at petal-fall
- Randomly choose:
  - 10 trees per block
  - 5 fruit clusters per tree
  - 3 mid-cluster leaves per cluster
- Look for young nymphs
  - Underside of leaf
- Threshold at petal-fall:
  > 0.5 nymphs per leaf (revised from 1)
Green apple aphid

• Scout weekly
  – from petal-fall (mid-May)
  – until new shoots harden off (early July)
• Randomly choose:
  – 10 trees per block
  – 5 terminal shoots per tree
• Count the number of leaves infested
  – infestation starts on endmost leaf
  – also note presence of predators
• Treat if > 3 infested leaves per terminal, & predators absent
Scout for European Red Mite

- **Goal:** make a decision
  - ‘Treat’
  - ‘Do not treat’

- **Use presence/absence sampling**

- **Sample size:**
  - minimum = 20 leaves
  - maximum = 100 leaves

- **Based on thresholds**
  - Early summer: fewer mites tolerated
  - Late summer: more mites tolerated
Scout for European Red Mite

<table>
<thead>
<tr>
<th>Time</th>
<th>Threshold (average number of mites per leaf)</th>
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<tbody>
<tr>
<td>Mid-May to mid-June</td>
<td>2.5</td>
</tr>
<tr>
<td>Mid-June to mid-July</td>
<td>5.0</td>
</tr>
<tr>
<td>Mid-July to mid-Aug.</td>
<td>7.5</td>
</tr>
</tbody>
</table>
Scout for European Red Mite

Steps:
1) take 4 leaves from each of 5 trees
2) rate each as **infested** or **not**
3) get **total** number infested leaves (of 20)
4) **plot** the number infested on chart
5) see which decision zone the point is in:
   – ‘**Treat**’
   – ‘**Do not treat; resample in 7 days**’
   – ‘**Do not treat; resample in 14 days**’
   – ‘**Continue sampling**’
example:
In first 20 leaves, 3 are infested
Scout for European Red Mite

- If you need to **continue** sampling:
  - take 10 more leaves
  - rate each
  - get new total
  - plot new point
  - check decision

- If you **still** need to continue:
  take 10 more leaves at a time, add to total, plot, until decision reached
Mite Scouting - early summer

example:
In next 10 leaves, 1 is infested.

3 + 1 = 4

Decision: do not treat; resample in 14 days
Scout for European Red Mite

Early summer (mid-May to mid-June)
Threshold = 2.5 mites/leaf

Mid-summer (mid-June to mid-July)
Threshold = 5.0 mites/leaf

Late summer (mid-July to mid-Aug.)
Threshold = 7.5 mites/leaf

Source: Cornell University