Olive Knot

_Pseudomonas syringae pv. savastoni_
Life Cycle

• Bacteria survive in galls
• Spread by wind and rain
• Infect openings in tree
  – Leaf scars, pruning wounds, freeze cracks
• Infection-fall, winter, spring
• Symptoms-late spring, summer
Freeze Injury
Hail Damage
Average Rainfall by Month for Orland, California

Rainfall (mm)

JAN.  MAR.  MAY  JULY  SEPT.  NOV.
Wounding Study
1991-1993
Olive Knot Wound Study

4 Wounds/tree
11 replicates 2-15-91 to 6-30-92
10 replicates 3-29-93 to 11-24-93
Olive Knot Pruning Wound Study
Manzanillo Variety
Pruning Dates: 5-8-92 to 5-20-92
Inoculated 5-22-92

Date / Days From Pruning to Inoculation
3.175 mm rain
Effect of Copper Sprays Defoliation and Rainfall on Incidence of Olive Knot Disease
Teviotdale and Krueger 1997-2000

- Shoots defoliated monthly
- Disease development tracked
- Spray timings compared
Results

• More disease development from spring defoliations
• Positively correlated to rain spring (Mar through June
• Not correlated to winter rain (December through February
• More sprays = better control
  – Best treatment was 3 sprays – 1 fall and two spring
Control

• Variety susceptibility in order-Manzanillo, Sevillano, Ascolano, Mission, oil varieties?
• Prune out during dry period (late spring)
  – Reduces risk of freeze injury
  – Allows wounds to heal before infection period
Control-Continued

- Similar to Peacock Spot
  - Copper Sprays
- Timing-preventative
- More sprays are better
  - 3 sprays, one fall and two spring worked best
- Central Valley recommendation- 2 sprays, fall and spring.
- Spring spray is the most important
Available since the 1950s
Use Limited By:

• Inconsistency of response
  – Over or under thinning
• Cost
• Variety response
Fruit Size Method – 1/8 to 3/16 inch
1999 Olive Thinning Dollars per Acre minus harvest costs

- Control
- 36 oz
- 72 oz + CS7
- 108 oz
- 144 oz - dilute
- 72 oz
- 54 oz + 54 oz
- 72 oz + Oil
- 72 oz + 90 oz
- 144 oz - dilute
- 108 oz

Dollars per Acre: $0 - $2,000
1999 Results

- All treatments thinned fruit and improved value/ac minus harvest cost
- Less than 72 oz. per acre had significantly lower value/ac minus harvest cost than higher treatments
- Sequential sprays (3 days after the first) resulted in additional thinning
<table>
<thead>
<tr>
<th>Treatment Timing (days after full bloom)</th>
<th>Set / 10 Nodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1.3 A</td>
</tr>
<tr>
<td>4</td>
<td>2.5 A</td>
</tr>
<tr>
<td>8</td>
<td>1.9 A</td>
</tr>
<tr>
<td>11</td>
<td>2.5 A</td>
</tr>
<tr>
<td>Control</td>
<td>3.1 B</td>
</tr>
</tbody>
</table>
1999 Sevillano NAA Thinning Trial
Average Fruit And Shotberry Set Per 10 Nodes

<table>
<thead>
<tr>
<th>Treatment Timing</th>
<th>Fruit Set Per 10 Nodes</th>
<th>Shotberry Set Per 10 Nodes</th>
<th>Total Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Bloom + 6 days</td>
<td>1.3</td>
<td>A</td>
<td>4.5</td>
</tr>
<tr>
<td>Full Bloom + 13 days</td>
<td>2.5</td>
<td>AB</td>
<td>3.1</td>
</tr>
<tr>
<td>Full Bloom + 16 days</td>
<td>1.9</td>
<td>AB</td>
<td>1.5</td>
</tr>
<tr>
<td>Full Bloom + 20 Days</td>
<td>2.5</td>
<td>AB</td>
<td>1.3</td>
</tr>
<tr>
<td>Control</td>
<td>3.1</td>
<td>B</td>
<td>1.2</td>
</tr>
<tr>
<td>LSD.05</td>
<td>1.22</td>
<td>2.75</td>
<td>NS</td>
</tr>
</tbody>
</table>

*Treatment = 150 ppm NAA
Summary of Four Years of Chemical Thinning With Sevillano

- Fruit set can be reduced with post bloom application of NAA
- Thinning response is correlated to post application temperatures (two to three days)
Thinning Response Correlated To:

- Post bloom temperatures (3-4 days)
- Timing- DAFB
- Allow prediction of response within 3-4 days of application
- Adjust application timing based on predicted weather
Recommendations

• Use a minimum of 72 ounces of Liqui-Stik Concentrate (200 grams a.i. per gallon) per acre
• Watch weather forecast and adjust application timing accordingly