EXPERIMENTAL PROTOCOL

TITLE: Efficacy of Imidan 70 wp for control of 1st GenerationCodling Moth.

INVESTIGATOR: G. Steven Sibbett, University of California Cooperative Extension Service Farm Advisor - Tulare Co.

YEAR: 1996

CROP/VARIETY: English walnut; Ashley cultivar (mature)

LOCATION OF TEST: Visalia, California

PEST(S) COMMON NAME: Codling Moth, Walnut Aphid

PEST(S) SCIENTIFIC NAME: Cydia pomonella, Chromaphis juglandicola

TREATMENTS: 1) Control (non-treated)
2) Imidan 70 wp @ 6lb/ac @ 1/2" nut size (300 day degrees) - 1a peak
3) Lorsban 4E @ 4 pts/ac @ 1/2" nut size (300 day degrees) - 1a peak
4) T2 + Lorsban 4E @ 4 pts/ac @ 600 day degrees (1b peak)
5) T3 + Imidan 70 wp @ 6 lb/ac @ 600 day degrees (1b peak)
6) Guthion 50 wp @ 3 lb/ac @ 1/2" nut size (1a peak)

ADDITIVES: Imidan treatments buffered to pH 6.4 with Knapp non-ionic buffer

APPLICATION DATES: 300 day degree treatments applied against 1a peak applied 18 April
600 day degree treatments applied against 1b peak applied 1 May

APPLICATION EQUIPMENT: John Bean high pressure hand gun sprayer

SPRAY VOLUME: 400 Gallons/acre (approx. 7 gallons of solution/tree)

PLOT SIZE: Single trees

DESIGN: Randomized complete blocks

REPLICATES: Four

DATA TAKEN: Infested dropped nut counts, twice/week 9 - 28 May
On-tree 4 minute infested nut search, 1 June
Walnut aphid counts; 5 leaflets/tree twice/week beginning 9 May and ending 11 June

RESULTS: See attached
RESULTS

Most nuts infested from first generation codling moth larvae drop from the tree in May. Effect of treatment on number of dropped nuts per tree is presented numerically in Table 1 and graphically in Figure 1. Nuts infested by larvae of late emerging adults of the first flight remain in the trees. These latter data are presented in Table 2.

Walnut aphid populations can be aggravated by codling moth treatment, especially organophosphate insecticides that reduce populations of *Trioxys pallidus* the walnut aphid parasite. In these tests, only very low populations of walnut aphid developed and little difference was observed between treatment (data not included). In many cases where single tree plots are used, the walnut aphid parasite can migrate in and mitigate developing populations of this pest.
Table 1. Effect of Insecticide on 1st Generation Codling Moth Control
Ashley Walnut, Visalia, Ca - 1996

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Rep</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Total</th>
<th>Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control - Untreated</td>
<td></td>
<td>27</td>
<td>6</td>
<td>42</td>
<td>40</td>
<td>115</td>
<td>29</td>
</tr>
<tr>
<td>Imidan 70wp @ 6lb/ac @ 1/2&quot; Nut size</td>
<td></td>
<td>8</td>
<td>7</td>
<td>9</td>
<td>25</td>
<td>49</td>
<td>12</td>
</tr>
<tr>
<td>Lorsban 4E @ 4pts/ac @ 1/2&quot; Nut size</td>
<td></td>
<td>17</td>
<td>53</td>
<td>29</td>
<td>38</td>
<td>137</td>
<td>34</td>
</tr>
<tr>
<td>Imidan 70wp @ 6lb/ac @ 1/2&quot; Nut + Lorsban 4E @ 4 pts/ac @ 600 Dº</td>
<td></td>
<td>6</td>
<td>3</td>
<td>8</td>
<td>11</td>
<td>28</td>
<td>7</td>
</tr>
<tr>
<td>Lorsban 4E @ 4pts/ac @ 1/2&quot; Nut + Imidan 70 wp @ 6 lb/ac @ 600 Dº</td>
<td></td>
<td>11</td>
<td>15</td>
<td>9</td>
<td>66</td>
<td>101</td>
<td>25</td>
</tr>
<tr>
<td>Guthion 50wp @ 3 lb/ac @ 1/2&quot; Nut size</td>
<td></td>
<td>3</td>
<td>9</td>
<td>13</td>
<td>11</td>
<td>36</td>
<td>9</td>
</tr>
</tbody>
</table>

LSD = 20.2 P=.05
Table 2. Effect of Insecticide on 1st Generation Codling Moth Control  
Ashley Walnut, Visalia, Ca - 1996

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Rep 1</th>
<th>Rep 2</th>
<th>Rep 3</th>
<th>Rep 4</th>
<th>Total</th>
<th>Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control - Untreated</td>
<td>8</td>
<td>3</td>
<td>7</td>
<td>3</td>
<td>21</td>
<td>5   a</td>
</tr>
<tr>
<td>Imidan 70wp @ 6lb/ac @ 1/2&quot; Nut size</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1   b</td>
</tr>
<tr>
<td>Lorsban 4E @ 4pts/ac @ 1/2&quot; Nut size</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>9</td>
<td>2   b</td>
</tr>
<tr>
<td>Imidan 70wp @ 6lb/ac @ 1/2&quot; Nut + Lorsban 4E @ 4 pts/ac @ 600 D⁰</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0   b</td>
</tr>
<tr>
<td>Lorsban 4E @ 4pts/ac @ 1/2&quot; Nut + Imidan 70 wp @ 6 lb/ac @ 600 D⁰</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>1   b</td>
</tr>
<tr>
<td>Guthion 50wp @ 3 lb/ac @ 1/2&quot; Nut size</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>1   b</td>
</tr>
</tbody>
</table>

1/ per 4 minute search/tree 6/1

LSD = 2.17, P=.05
Efficacy of Insecticides for Control of 1st Generation Codling Moth on Walnuts - 1996
Ashley var., Visalia, CA.

![Bar graph showing the efficacy of different insecticides on walnuts]

- IMIDAN 70-WP @ 6.0-lb/A @ ½" nut size.
- LORSBAN 4-E @ 4.0-pt/A @ ½" nut size.
- IMIDAN 70-WP @ 6.0-lb/A @ ½" nut size + Lorsban 4-E @ 4.0-pt/A @ 600-DD.
- Lorsban 4-E @ 4.0-pt/A @ ½" nut size + IMIDAN 70-WP @ 6.0-lb/A @ 600-DD.
- Guthion 50-WP @ 3.0-lb/a @ ½" nut size.
- UTC

Nut counts: 2X/week, 5-9 to 5-28-96

Will Crites 11-96