Logistics of SWD management: a field perspective

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Monitoring for SWD 2011-2013

Representative sites across Ont.

Apple cider vinegar baited traps…
not always consistent from year to year or site to site
When to start spraying?
when flies are present and crop is susceptible

Average SWD Trap Catches (2011 - 2013)
When to start spraying?
when flies are present and crop is susceptible
Do trap catches relate to fruit infestation?

Salt water test.
- Immediate results
- But hard to see small larvae
- Not all larvae are SWD

Incubate @ 50 fruit (depends) for 2-3 weeks, collect, and count emerging flies 2-3 times per week.
- Takes time.
First SWD reared from fruit, southwestern Ont. 2013

<table>
<thead>
<tr>
<th>Date collected</th>
<th>Type of fruit collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1</td>
<td>Wild raspberries</td>
</tr>
<tr>
<td>July 2</td>
<td>Unsprayed saskatoons</td>
</tr>
<tr>
<td>July 9</td>
<td>Sweet cherries</td>
</tr>
<tr>
<td>July 18</td>
<td>Summer-bearing red raspberries</td>
</tr>
<tr>
<td>July 19</td>
<td>Wild mulberry</td>
</tr>
<tr>
<td>July 29</td>
<td>Fall bearing raspberry</td>
</tr>
<tr>
<td>August 7</td>
<td>Blueberry</td>
</tr>
</tbody>
</table>

First trap captures week of July 6 - July 12 in southwestern Ontario
## Salt test vs rearing SWD flies (site #22)

**sample size 50 fruit**

<table>
<thead>
<tr>
<th>Date collected</th>
<th>Crop</th>
<th># larvae in salt test</th>
<th># SWD flies emerged</th>
</tr>
</thead>
<tbody>
<tr>
<td>02-Jul</td>
<td>Summer Raspberry</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>08-Jul</td>
<td>Summer Raspberry</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15-Jul</td>
<td>Summer Raspberry</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>29-Jul</td>
<td>Summer Raspberry</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>29-Jul</td>
<td>Fall Raspberry</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>06-Aug</td>
<td>Summer Raspberry</td>
<td>0</td>
<td>261</td>
</tr>
<tr>
<td>12-Aug</td>
<td>Summer Raspberry</td>
<td>10</td>
<td>91</td>
</tr>
<tr>
<td>Date collected</td>
<td>Crop</td>
<td># larvae in salt test</td>
<td># SWD flies emerged</td>
</tr>
<tr>
<td>----------------</td>
<td>----------</td>
<td>-----------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>10-Jul</td>
<td>Blueberry</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>17-Jul</td>
<td>Blueberry</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>24-Jul</td>
<td>Blueberry</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>24-Jul</td>
<td>Blueberry</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>30-Jul</td>
<td>Blueberry</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>07-Aug</td>
<td>Blueberry</td>
<td>8</td>
<td>135</td>
</tr>
<tr>
<td>13-Aug</td>
<td>Blueberry</td>
<td>10</td>
<td>33</td>
</tr>
<tr>
<td>20-Aug</td>
<td>Blueberry</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>20-Aug</td>
<td>Blueberry</td>
<td>5</td>
<td>27</td>
</tr>
<tr>
<td>20-Aug</td>
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<td>0</td>
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<tr>
<td>27-Aug</td>
<td>Blueberry</td>
<td>1</td>
<td>80</td>
</tr>
<tr>
<td>27-Aug</td>
<td>Blueberry</td>
<td>1</td>
<td>8</td>
</tr>
</tbody>
</table>
Trap Catches Vs Rearing Results - Site 25
# flies / positive trap vs # flies reared/50 fruit SUMMER RASPBERRIES

No. SWD

Collection Period


Traps vs Rearing Results

- Site 25

# flies / positive trap vs # flies reared/50 fruit SUMMER RASPBERRIES
How do SWD trap captures relate to fruit infestation?

Trap Catches Vs Rearing Results - Site 22

# flies/positive trap vs # flies reared/50 fruit  RASPBERRIES

Collection Period

Number of SWD

- traps
- rearing


0.1 0.1 0.1 4 11 372 113

0.1 1 10 100 1000 10000
Trap Catches Vs. Rearing Results - Site 14

# flies / positive trap vs # flies reared/50 fruit RASPBERRIES

Traps
Rearing

Collection Period

No. SWD Per Positive Trap

No. SWD Per 50 Fruit
Insecticide options for SWD in Ontario 2013

<table>
<thead>
<tr>
<th>Product</th>
<th>Pre-harvest interval</th>
<th>Max # applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ripcord</td>
<td>2 days</td>
<td>2</td>
</tr>
<tr>
<td>Malathion 85E</td>
<td>1 day raspberries</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3 days strawberries</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3 days blueberries</td>
<td>3</td>
</tr>
<tr>
<td>Delegate WG</td>
<td>1 day raspberries</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>1 days strawberries</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3 days blueberries</td>
<td>3</td>
</tr>
<tr>
<td>Entrust SC</td>
<td>1 day raspberries</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>1 days strawberries</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3 days blueberries</td>
<td>3</td>
</tr>
</tbody>
</table>
Growers comments

• “Spraying puts us behind on harvesting due to phi…. = more over-ripe fruit”

• “Shutting down for 3 days after a each weekly spray application (due to pre-harvest interval) means having to harvest everything in ½ the time.”

• “I need to buy an extra sprayer dedicated to my berry crops…….”
Adapting to life with SWD

more comments from growers.....

• change harvest schedules: daily or every 2nd day (works for raspberries and strawberries, not blueberries)

• removing some crop rows for better sprayer access

• planning block size and location... for better drift control

• reduce acreage of berry crops

• alternate year production in raspberries

• end harvest early (blueberries.... two-three weeks earlier)

• avoid planting late varieties
Conclusions

• SWD is well established in Ontario
• Regional monitoring with traps and fruit sampling can help identify key periods for control
• Current strategies for control are not sustainable, practical or effective.
Acknowledgements

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