Comparison between airblast and mistigation for SWD control in mature blueberries

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Compare Orchard Airblast vs Mistigation Efficacy

• Conduct bioassays on field-aged residues to determine SWD adult mortality to field rates of malathion, Mustang Maxx and Danitol applied from 0-7 DAT with airblast vs mistigation.

• Determine residues and decline curves for above chemistries on companion foliage (winter).

• Determine decline curves from marketable berries during the harvest period for the above chemistries.
• Canopy closes-up in mature fields at harvest.

• Fruit knock-down with ground sprayers.

• Short residual control with concentrate air applications.
Field sites: 8 year-old, 5 acres blocks of *Aurora* in mixed plantings of *Draper*, *Legacy*, *Elliott*, *Liberty* on PABG, Salem, OR, 2013
### Netafim™ Supernet Micro Sprinkler nozzle

<table>
<thead>
<tr>
<th>Nozzle Color/Size</th>
<th>Flow Rate</th>
<th>PSI</th>
<th>Wetted Diameter Long Range LR</th>
<th>Wetted Diameter Short Range SR</th>
<th>Alternate Row Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gray 061”</td>
<td>15.3 GPH</td>
<td>52</td>
<td>23.0’</td>
<td>14.8’</td>
<td>12.5’</td>
</tr>
</tbody>
</table>

Water sensitize paper
16 oz sentinel cage in canopy to assess contact activity at 3 positions.
• Netafim NMC Pro Irrigation Controller.
• High pressure injector pump, 50 hp well pump @ 65 psi (Yaskawa variable speed controller. Electric pressure valves in field set at 35 psi.
• Insecticide injected into system with a Milton Roy high pressure pump.
• 182 nozzles/ac, mist volume of 2,785 gal/hr.
• Output for each 3, 15 minute pulse is 696 gal/ac.
Lab bioassay method

- Composite field leaf samples were split for bioassay and residue evaluations from mistigation and airblast applications.
- Samples taken before (-1), and at 0, 1, 3, 5, 7 DAT.
- 20 of 30 leaves were randomized and placed 2 per Petri dish and replicated 10 times per application method.
- Mortality recorded at 24 hours posttreatment.
Malathion @ 1.25 pts/ac, 28 July 2013

% Mortality SWD

<table>
<thead>
<tr>
<th>Time</th>
<th>0 DAT</th>
<th>1 DAT</th>
<th>2 DAT</th>
<th>3 DAT</th>
<th>5 DAT</th>
<th>6 DAT</th>
<th>7 DAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>80</td>
<td>90</td>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>M</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>40</td>
<td>50</td>
<td>20</td>
<td>5</td>
</tr>
</tbody>
</table>

Legend:
- AB
- M
Mustang Maxx @ 4 fl oz/ac, 4 August 2013

% Mortality SWD

Time

0 DAT 1 DAT 3 DAT 5 DAT 6 DAT

AB M
Malathion @ 1.25 pts/ac, 4 August 2013

% Mortality SWD

Time

0 DAT 1 DAT 2 DAT 3 DAT 5 DAT 6 DAT 7 DAT

AB M
Mustang Maxx @ 4 fl oz/ac, 11 August 2013

% Mortality SWD

Time

0 DAT 1 DAT 3 DAT 5 DAT 6 DAT 7 DAT 14 DAT

AB M

DAT
Danitol 2.4EC @ 16 fl oz/ac, 1 September 2013

% Mortality SWD

Time

0 DAT 1 DAT 2 DAT 4 DAT 8 DAT 12 DAT 15 DAT
Observations

Though mortality rates for mistigation were ~ 1/3 that of the airblast applications, no infested berries were discovered in either plots during processing, suggesting efficacious field toxicity, measured by % mortality may not be as high as previously thought.

It is speculated that this may be due to cumulative exposure to sublethal residue layers from prior applications evidenced by increasing mortality rates observed as the season progressed. Literature indicates efficacy can be stimulated by cumulative sublethal layers.
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