Insect Management in Melons
A Research Update

Oberon®
A new IGR like compound from Bayer Crop Sciences.
Inhibits lipid biosynthesis.
Foliar contact activity against whiteflies and mites.
Highly effective on nymphs and pupal stage.
Harmless to pollinators.
Excellent IRM tool.
Reduced-risk status pending

Oberon - Residual Efficacy

• Oberon (7.0 and 8.5 oz)
• Courier (Applaud)
• Danitol/Thiodan
• 2 sprays vs 1 spray

Oberon - Residual Efficacy

SLWF Large Nymph Densities
Spring 2002

Oberon - Residual Efficacy

SLWF Closed Pupae Densities
Spring 2002
Oberon Efficacy Against WF

- Oberon, a new novel IGR, provided good residual control of whiteflies – both alone and in combination with Admire – comparable to Courier (Applaud®) in spring melons.

- New Mode of Action may provide growers with:
  - alternative to Admire
  - rotational partner for:
    - Courier
    - Capture or Danitol + endosulfan

IGR - Courier® (Applaud®)

- Chitin synthesis inhibitor
- Vapor and Contact activity
- Only effective against nymphs
- Spray Timing is critical
- 21-28 day residual efficacy

Action Threshold: 1 visible nymph per leaf disc

Cabbage Looper Control

- A single application on Sep 11
- Whole plant samples 10 plants / Rep
- 3 and 8 DAT

Sampling

<table>
<thead>
<tr>
<th>No Admire Applied:</th>
<th>Post-Admire:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early season on crown</td>
<td>on mid vine/terminal</td>
</tr>
<tr>
<td>Pre-harvest near mid vine</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Early-mid season Pre-Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crown</td>
</tr>
</tbody>
</table>

SLWF Eclosed Pupae Densities

<table>
<thead>
<tr>
<th>May 2</th>
<th>May 14</th>
<th>May 27</th>
<th>June 12</th>
<th>June 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>0.5</td>
<td>1.0</td>
<td>1.5</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Mean eclosed pupae / cm²/leaf

- Admire 16 oz
- Admire 8 oz + Courier
- Admire 8 oz + Oberon
- Courier (May 10th), Calypso (May 30th)
- Untreated

Chitin synthesis inhibitor
Vapor and Contact activity
Only effective against nymphs
Spray Timing is critical
21-28 day residual efficacy

Buprofezin Efficacy

Action Threshold:
1 visible nymph per leaf disc

Buprofezin Efficacy

- Early season on crown
- Pre-harvest near mid vine
- on mid vine/terminal

A single application on Sep 11
Whole plant samples
10 plants / Rep
3 and 8 DAT
Direct Measurement of Admire and Platinum in Melons

- No guesswork involved in determining whether compound was applied properly.
- Assay permits extremely sensitive detection of either compound—as low as 0.2 ppb.
- Increased confidence in evaluating efficacy of treatments by relating whitefly densities to concentration of material in leaves.
- Early warning system for resistance—high whitefly densities in leaves with normally lethal concentration of compound could spell trouble.
**ELISA—Enzyme-Linked Immuno-Sorbent Assay**

- Microtiter plate assay
  - 12-well strips
  - 8 strips per plate (96 samples)
- 3-step procedure (with wash steps in between)
  - Add samples to pre-coated wells
  - Add conjugated antibody into wells with sample; incubate 1 h
  - Add substrate; incubate ½ h
- Quantifiable based on color intensity of enzyme/substrate reaction (read with spectrophotometer)

**Measurement of Admire and Platinum in Melons**

- Temporal (Residual) - 15 d intervals following planting and side dress applications
- Spatial (Within-plant Distribution)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>At plant (rate/acre)</th>
<th>Side-dress (rate/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admire</td>
<td>16 oz</td>
<td>--</td>
</tr>
<tr>
<td>Admire</td>
<td>8 oz</td>
<td>--</td>
</tr>
<tr>
<td>Admire</td>
<td>8 oz</td>
<td>8 oz</td>
</tr>
<tr>
<td>Admire</td>
<td>--</td>
<td>16 oz</td>
</tr>
<tr>
<td>Platinum</td>
<td>8 oz</td>
<td>--</td>
</tr>
<tr>
<td>Platinum</td>
<td>4 oz</td>
<td>--</td>
</tr>
<tr>
<td>Platinum</td>
<td>4 oz</td>
<td>4 oz</td>
</tr>
<tr>
<td>Platinum</td>
<td>--</td>
<td>4 oz</td>
</tr>
<tr>
<td>Platinum</td>
<td>--</td>
<td>8 oz</td>
</tr>
</tbody>
</table>

**Mean Titers of Admire in Melon Leaves October 15, 2002**

- N = 8

**Palumbo, John C. 06/04/03. The 9th Annual Melon Field Day, Maricopa Agricultural Center, Maricopa, AZ**
Acknowledgements

• California Melon Research Board
• Gowan Seed Company
• Bayer Crop Protection
• Syngenta Crop Protection
• Dow AgriSciences
• DuPont Agricultural Products
• Valent USA Corporation
• FMC Corporation
• Nichino America Inc

Arizona Crop Information Site

http://ag.arizona.edu/crops