Thiamethoxam Resistance and Management of Thrips

Louisiana Agricultural Technology & Management Conference
February 11-13, 2015, Marksville, LA

David Kerns, Sebe Brown, Scott Stewart, Gus Lorenz, Fred Musser, Angus Catchot, Jeff Gore & Don Cook

LSU AgCenter
Macon Ridge Research Station
Winnsboro, LA
Mid-South Thrips Control Issues

- Species encountered
- Prophylactic treatment efficacy
  - Seed treatments
  - Pre-emergence herbicides
  - In-furrow treatments
  - Resistance
- Augmenting with foliar sprays
- Foliar treatment timing
Thrips Species Composition

Across 10 locations Mid-South

Frankliniella fusca
Tobacco Thrips

Frankliniella occidentalis
Western Flower Thrips
Winnsboro, LA – 2013 (21 DAP)

Thrips per 5 plants

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Adults</th>
<th>Immatures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Untreated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gaucho 0.5 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cruiser 0.5 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aeris 0.89 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avicta 0.66 mg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

> 95% Tobacco thrips
Cruiser - Improperly Treated or Poor Performance?

2011

Stoneville (Aeris)

Phytogen (Cruiser)

Courtesy of Scott Stewart
Herbicide Injury Interaction

PHY375 WRF / Cruiser
- Roundup WM (24 oz) +
- Dual Magnum (16 oz)

PHY375 WRF / Cruiser
- Roundup WM (24 oz) +
- Dual Magnum (16 oz) +
- Liberty (32 oz)

Courtesy of Scott Stewart
Status of cruiser as an effective seed treatment for thrips management in Louisiana

Frankliniella fusca  
Tobacco Thrips

Frankliniella occidentalis  
Western Flower Thrips
Winnsboro LA 2014

Thrips injury (1-5 scale)

- Untreated
- Cruiser
- Gaucho
- Orthene 6.4 oz
- Orthene 24 oz
- Aeris
- Avicta Duo
- Cruiser + Orthene 6.4
- Cruiser + Orthene 24 oz

Legend:
- 28 DAP

Categories with the same letter(s) are not significantly different at the 0.05 level.
Tobacco thrips resistance monitoring 2014

FP Soy NT
FP Soy Cru
FP Cot Aer
CN Cot Aer
CT Cot Gau

% survival
0
20
40
60
80
100
120
0 ug
100 ug
360 ug

Tobacco thrips resistance monitoring 2014

FP Soy NT
FP Soy Cru
FP Cot Aer
CN Cot Aer
CT Cot Gau

% survival
0
20
40
60
80
100
120
0 ug
100 ug
360 ug
Susceptibility of Tobacco Thrips, *Frankliniella fusca*, to the Neonicotinoid Class of Insecticides in Mid-South Region

Chelsie Darnell, Angus Catchot, and Fred Musser
Field vs Lab Colony

<table>
<thead>
<tr>
<th>Colony</th>
<th>Cruiser</th>
<th>Gaucho</th>
<th>Poncho</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LC$_{50}$</td>
<td>RR</td>
<td>LC$_{50}$</td>
</tr>
<tr>
<td>MS Delta</td>
<td>35.12</td>
<td>20.4</td>
<td>2.52</td>
</tr>
<tr>
<td>MS Hills</td>
<td>9.49</td>
<td>5.5</td>
<td>1.14</td>
</tr>
<tr>
<td>TN</td>
<td>13.91</td>
<td>8.1</td>
<td>4.26</td>
</tr>
<tr>
<td>SC</td>
<td>26.72</td>
<td>15.5</td>
<td>-</td>
</tr>
<tr>
<td>Lab</td>
<td>1.72</td>
<td>1</td>
<td>1.84*</td>
</tr>
</tbody>
</table>

* 3 assays with LC$_{50}$ ranging from 0.1 to 4.5
** 3 assays and concentration not significant for any but all had similar LC$_{50}$ estimate
Seed treatment alternatives

3 true leaf stage

<table>
<thead>
<tr>
<th>Fungicide</th>
<th>Acephate</th>
<th>Acephate</th>
<th>Cruiser</th>
<th>Cruiser + Acephate</th>
<th>Avicta</th>
<th>Gaucho</th>
<th>Aeris</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damage Rating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a</td>
<td>bc</td>
<td>bc</td>
<td>a</td>
<td>b</td>
<td>b</td>
<td>cd</td>
<td>d</td>
</tr>
<tr>
<td>6.4</td>
<td>24</td>
<td>0.375</td>
<td>0.375</td>
<td>6.4</td>
<td>0.525</td>
<td>0.375</td>
<td>0.75</td>
</tr>
</tbody>
</table>
In-furrow sprays tests for thrips control
St. Joseph - 2013 (29 DAT)
In-furrow spray test

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Injury Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Untreated</td>
<td>1</td>
</tr>
<tr>
<td>Gaucho 0.375mg/seed</td>
<td>a</td>
</tr>
<tr>
<td>Cruiser 0.375mg/seed</td>
<td>c</td>
</tr>
<tr>
<td>Admire Pro 9.2 fl oz</td>
<td>b</td>
</tr>
<tr>
<td>Platinum 3.67 oz</td>
<td>c</td>
</tr>
<tr>
<td>Temik 3.3 lbs</td>
<td>ab</td>
</tr>
</tbody>
</table>

> 95% Tobacco thrips
Winnsboro, LA 2014

Thrips per 5 plants

19 DAP
26 DAP
32 DAP

Untreated
Aeris
Velium 10 oz
Velium 14 oz
Velium 18 oz
Aeris + Velium 14 oz

Thrips per 5 plants
0
5
10
15
20
25
30
Sampling Thrips
Foliar Thrips Trial in Cotton

St. Joseph, LA - 2013 (5 DAT)

5:95 WFT:TT

Thrips per 5 plants

- Untreated
- Bidrin 3.2 fl-oz + COC
- Radiant 1.5 fl-oz
- Dimethoate 1 pt
- Dimethoate 2 pt
- Acephate 3.2 oz
- Acephate 8 oz

Adults
Immatures

a
b
ab

St. Joseph, LA - 2013 (5 DAT)
Winnsboro, LA 2014

Thrips injury (1-5 scale)

- Untreated
- Orthene cotyl & 3TL
- Orthene 1 & 3TL
- Orthene 1 thrips
- Radiant cotyl & 3TL
- Radiant 1 & 3TL
- Radiant 1 thrips

Legend:
- May 27
- June 3
- June 10