Status of Insecticide Resistance: Cotton Aphid

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Stoneville, MS

Don Cook - MSU
Angus Catchot - MSU
Roger Leonard - LSU
Gus Lorenz - UA
Scott Stewart - UT
At-Planting Insecticides

Temik® brand 15 G
ALDICARB PESTICIDE
Net Weight: 1 x 45 lbs.
4250671
Impact of At-Planting Insecticides on Aphid Populations

Data generated from large blocks of cotton >5 acres
### Insecticide Efficacy Against Aphids, 2004

<table>
<thead>
<tr>
<th>Treatment/form.</th>
<th>Rate/acre lb AI</th>
<th>Percent Aphid Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 DAT</td>
<td>7 DAT</td>
</tr>
<tr>
<td><strong>2004</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intruder 70WP</td>
<td>0.026</td>
<td>99.2</td>
</tr>
<tr>
<td>Centric 40WG</td>
<td>0.047</td>
<td>98.4</td>
</tr>
<tr>
<td><strong>2006</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intruder 70WP</td>
<td>0.05</td>
<td>74.9</td>
</tr>
<tr>
<td>Centric 40WG</td>
<td>0.047</td>
<td>85.5</td>
</tr>
</tbody>
</table>

Roger Leonard
Cotton Aphid Leaf-Dip Bioassays – 2008-2010
48 HAT

108.6 - 1234

384 Fold

Centric
Cotton Aphid Leaf-Dip Bioassays – 2008-2010
72 HAT

8.1 Fold

LC50 (ppm)
Susceptibility of Cotton Aphids from Non-Treated Fields to Thiamethoxam
Cotton Aphid Leaf-Dip Bioassays – 2008-2010
72 HAT

LC50 (ppm)

8.1 Fold

1.7 Fold

Centric

Carbine
Sulfoxaflor

- Sulfoxaflor is a member of a new chemical class of insecticides: Sulfoximines
  - Discovered by and proprietary to Dow AgroSciences
- Sulfoxaflor is targeted for global development in all major crop groups

<table>
<thead>
<tr>
<th>Insecticide Class: Sulfoximine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transform WG</td>
</tr>
<tr>
<td>Rates: 0.75-1.5 oz./A</td>
</tr>
</tbody>
</table>
Cotton Aphid Leaf-Dip Bioassays – 2008-2010
72 HAT

- Centric: 8.1 Fold
- Sulfoxaflor: 4.5 Fold
- Carbine: 1.7 Fold
Foliar Aphid Control - 2008
Angus Catchot - Grenada, MS

Centric LC50 = 10.71 at 72h
Foliar Aphid Control - 2010
Stoneville, MS

Centric LC50 = 17.71 at 72h
Foliar Aphid Control - 2010
Angus Catchot - Grenada, MS

Centric LC50 = 20.9 at 72h
Cotton Aphid Control
Louisiana - 2008

- Sulfoxaflor 2SC (0.022 lb Al/a)
- Centric 40WG (2.0)
- Intruder 70WP (1.0)
- Non-treated

P<0.01

3 DAT

7 DAT

Roger Leonard
Cotton Aphid Control
Louisiana - 2009

- Transform (0.36)
- Transform (0.71)
- Transform (1.1)
- Intruder (1.1)
- Centric (2.0)
- Carbine (2.8)
- Non-treated

No. /10 terminals

7 DAT

Roger Leonard
Cotton Aphid Control
Mississippi - 2009

- Transform (0.36)
- Transform (0.71)
- Transform (1.1)
- Intruder (1.14 oz)
- Centric (2 oz)
- Carbine (2.8 oz)
- Check

# per 5 Leaves

Angus Catchot
Cotton Aphid Control
Arkansas - 2006

- Check
- Centric (1.25)
- Intruder (0.6)
- Trimax Pro (1.5)
- Carbine (0.06)
- Mustang Max (3.2)
- Bidrin (6)

# per 5 Leaves

Gus Lorenz
Cotton Aphid Control
Tennessee - 2008

- Carbine (2.02)
- Centric (1.5)
- Intruder (0.8)
- Trimax Pro (1.5)
- Bidrin (6)
- Dimethoate (8)
- Check

# per 5 Leaves

Scott Stewart
What to Do Now?

- **Intruder 70WP** at 0.8 to 1.1 oz/A
  + 0.5% Methylated Seed Oil (MSO)

- **Carbine 50WP** at 1.9 to 2.8 oz/A

- When spraying aphids and tarnished plant bugs:
  - VERY Limited
  - Tank Mixes

- **2012**: Transform WG at 0.7 to 1.44 oz/A
Summary and Conclusions

- Neonicotinoids are becoming less reliable for cotton aphid control.

- Currently over-utilizing the neonicotinoid class.

- Flonicamid has been important where control has been less than adequate.

- Transform (Sulfoxaflor) will provide additional benefits for cotton aphid control.