Cotton Aphid Control
US Average

Percent

Infested
Treated

Cotton Aphid Control
US Average

- Acres Treated
- Cost per Application
Cotton Aphids in the Mid-South 2006 Overview

• Initial aphid populations showed up early (1-2 true leaf stage).
• Populations were higher than the past few years.
• Hot dry weather during May and June.
• Populations of beneficial insects were reduced by oversprays of broad spectrum insecticides.
• Tolerance to the neonicotinoids increasing.
• Epizootics of the fungus were delayed and sporadic.
Beneficial Insects
Symptoms of Cotton Aphids
Cotton Aphids
Aphid Fungus
Aphid Fungus Sampling Service

http://www.uark.edu/misc/aplid/

Cotton Incorporated

Dr. Don Steinkraus
Univ. of Arkansas
Neonicotinoid Bioassays
Neonicotinoid Bioassays
Neonicotinoid Bioassays
Cotton Aphid Bioassay - MS

![Graph showing corrected mortality vs log dose for Thiamethoxam, Acetamiprid, and Imidacloprid.](image)

- **Thiamethoxam**
- **Acetamiprid**
- **Imidacloprid**
Cotton Aphid Bioassay - MS

Intruder Rate (lb Al/Acre)

Percent Mortality

- Tchula 1
- Tchula 2
- Stoneville
Cotton Aphid Bioassay - LA

Percent Mortality vs. Intruder Rate (lb AI/Acre)

- East Carroll
- West Carroll
- Macon Ridge
Selection Pressure
First to Second True Leaf Stage
Seed Treatments
Selection Pressure
Neonicotinoid Seed Treatment
Roundup Ready Technology
Broad Spectrum Insecticides

Pyrethroids and Organophosphates
Selection Pressure
Pyrethroid or Orthene with Roundup
Selection Pressure
First Application of Foliar Neonicotinoid
Selection Pressure
Selection Pressure
Second Neonicotinoid Application
Thresholds

NC – Rating Scale – 0-5, Treatment recommended with a rating of 5. Many heavily infested plants and honeydew throughout the field.

GA – Apply when aphids are abundant and seedling leaves are severely curled, or when honeydew is present in older cotton.

LA – Treat when honeydew, leaf crinckling, and stunting begin to occur before open boll. Treat when sooty mold appears on open bolls and aphids present.

AR – Treat when populations are building and aphids present on approximately 50% of the plants.

TN – Early: Treat if aphids are present on numerous plants and some leaves are curled along the edges, particularly if the crop is already suffering from drought stress. Mid-Late: Treat when aphids are very numerous, honeydew is present, plants are showing signs of stress and natural control agents are not affecting aphid populations.
Thresholds (cont.)

**MS** – Consider treatment when spots of high aphid populations are causing heavy localized honeydew accumulation, aphid numbers are increasing over the remainder of the field, and no signs of diseased aphids are present.

**Important factors to consider before treatment:**

1) Possibility of a fungal epizootic that will likely occur under high aphid infestation.
2) Possibility of control failure with recommended insecticides.
3) Predator and parasite populations that may suppress aphids.
4) Presence of additional stress factors, such as drought or low plant vigor.
5) Need to apply insecticide for control of other pests.
New Arkansas Threshold
Kring and others
http://entomology.uark.edu/faculty/kringAphidNaturalEnemyThreshold.pdf

IF 50% of plants are infested with an aphid colony and the population is building

Are there at least 0.3 lady beetle adults or 0.2 lady beetle larvae per row ft. (1 adult per 3 ft. or 1 larva per 5 ft.)?

If NO – Treat

If YES – Wait 7-10 days and sample again. At this time, if the aphid population has increased (growing), treat with insecticide.
Cotton Aphid Control – 2006
Stoneville, MS
Cotton Aphid Control - 2006
Scott Stewart, Henderson Co., TN

Percent Control

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Percent Control</th>
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</thead>
<tbody>
<tr>
<td>Intruder (0.8)</td>
<td>92</td>
</tr>
<tr>
<td>Centric (1.66)</td>
<td>36</td>
</tr>
<tr>
<td>Trimax Pro (1.2)</td>
<td>0</td>
</tr>
<tr>
<td>Carbine (1.5)</td>
<td>88</td>
</tr>
<tr>
<td>Carbine (2.3)</td>
<td>97</td>
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<tr>
<td>Dimethoate (8)</td>
<td>67</td>
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<tr>
<td>Bidrin (6)</td>
<td>81</td>
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</table>
Insecticide Efficacy Against Aphids
Roger Leonard, LA, 2004

Percent Aphid Control

Carbine 50WG (0.063)  Intruder 70WP (0.026)
Trimax 4F (0.047)   Centric 25WP (0.047)

4 DAT1

Carbine 50WG
Intruder 70WP
Trimax 4F
Centric 25WP

7 DAT1

Carbine 50WG
Intruder 70WP
Trimax 4F
Centric 25WP

MRCT0412
### Insecticide Efficacy Against Aphids, 2006

**B. R. Leonard, LSU AgCenter**

<table>
<thead>
<tr>
<th>Treatment/form.</th>
<th>Rate/acre lb Al</th>
<th>Percent Aphid Control</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>2 DAT</td>
<td>7 DAT</td>
</tr>
<tr>
<td>Intruder 70WP*</td>
<td>0.05</td>
<td>64.5ab</td>
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<tr>
<td>Centric 40WG*</td>
<td>0.05</td>
<td>52.9b</td>
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<td>Carbine 50PC*</td>
<td>0.088</td>
<td>46.3b</td>
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<tr>
<td>Furadan 4F*</td>
<td>0.25</td>
<td>88.2a</td>
</tr>
<tr>
<td></td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

Means in columns followed by a common letter are not significantly different (P=0.05; DMRT).

* + COC 99PC 1% V/V.

Infestation Level/10 plts = 2 DAT, 253.5; 7 DAT, 99.5.
Insecticide Efficacy Against Aphids, 2005

B. R. Leonard, LSU AgCenter

Insecticide Efficacy Against Aphids, 2005

B. R. Leonard, LSU AgCenter

Carbine 50WG (0.054)  Carbine 50WG (0.027)  Centric 25WG (0.047)
Trimax 4SC (0.047)  Intruder 70WP (0.026)
<table>
<thead>
<tr>
<th>Treatment/form</th>
<th>Rate</th>
<th>Percent Control</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lb Al/acre</td>
<td>3 DAT</td>
<td>6 DAT</td>
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<tr>
<td>Provado 1.6F</td>
<td>0.047</td>
<td>81.1ab</td>
<td>73.4c</td>
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<td>Leverage 2.7SC</td>
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<td>Centric 40WP</td>
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<td>90.7a</td>
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<td>86.1a</td>
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<tr>
<td>Furadan 4F</td>
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<td>93.1a</td>
<td>89.4a</td>
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<tr>
<td>(P&gt;F)</td>
<td></td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
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(MRCT0009)
Summary and Conclusions

• Limit insecticide applications early that will flare aphids. (Pyrethroids and Organophosphates)

• Rotate chemistries when appropriate.

• Don’t apply foliar neonicotinoids following neonicotinoid seed treatments.

• Use accurate thresholds and spray only when necessary.

• Eliminate unnecessary applications.

• Use full labeled rates.