Management Considerations: Squaring to First Flower

Gus Lorenz and Glenn Studebaker, U of A Div. of Ag.
Scott Stewart, UT
Roger Leonard, LSU
Angus Catchot, MSU
Jeff Gore, USDA-ARS
Chuck Farr and Bobby Griffin
Heliothine Sprays
(Insecticide Appl. Frequency)

- Bt (1.28 mean)
- Non-Bt (2.63 mean)

Year

Treatments / acre
Total Pest Sprays
(Insecticide Appl. Frequency)

Year

Bt (6.78 mean)
Non-Bt (7.73 mean)
The Big 3 From Squaring to Bloom

- Aphids
- Spider Mites
- Plant Bugs
Pest Status of Tarnished Plant Bug
Cotton Aphid and Spider Mites

- Altern. Hosts as Refuges (C-Till, WRP, CRP)
- Bt Cotton
- Boll Weevil Eradication
- Selective Insecticides
- Application Efficiency
- Insecticide Resistance

Cotton’s Primary Pest
Aphids

- More of a problem in '06
- Resistance developing??
<table>
<thead>
<tr>
<th>Trt No.</th>
<th>Type</th>
<th>Treatment</th>
<th>Rate</th>
<th>Unit</th>
<th>No. Aphids/ 5 leaves</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CHK</td>
<td></td>
<td></td>
<td></td>
<td>215 a</td>
</tr>
<tr>
<td>2</td>
<td>INSE</td>
<td>Carbine</td>
<td>2</td>
<td>OZ/A</td>
<td>50 c</td>
</tr>
<tr>
<td>3</td>
<td>INSE</td>
<td>INTRUDER</td>
<td>0.8</td>
<td>OZ/A</td>
<td>16 c</td>
</tr>
<tr>
<td>4</td>
<td>INSE</td>
<td>INTRUDER</td>
<td>0.6</td>
<td>OZ/A</td>
<td>20 c</td>
</tr>
<tr>
<td>5</td>
<td>INSE</td>
<td>INTRUDER</td>
<td>1</td>
<td>OZ/A</td>
<td>15 c</td>
</tr>
<tr>
<td>6</td>
<td>INSE</td>
<td>CENTRIC</td>
<td>1.75</td>
<td>OZ/A</td>
<td>84 bc</td>
</tr>
<tr>
<td>7</td>
<td>INSE</td>
<td>CENTRIC</td>
<td>2</td>
<td>OZ/A</td>
<td>44 c</td>
</tr>
<tr>
<td>8</td>
<td>INSE</td>
<td>BIDRIN</td>
<td>0.5</td>
<td>LB A/A</td>
<td>112 b</td>
</tr>
</tbody>
</table>
Cotton Aphid Bioassay

Percent Mortality

Intruder Rate (lb AI/Acre)

Arkansas

Stoneville

Jeff Gore
USDA-ARS, Stoneville, MS
About Two-Spotted Spider Mites

Spider mites thrive in a hot and dry climate.

Spider mites usually feed on the underside of leaves.

Spider mites can be difficult to control.

Proper application with thorough coverage is critical.

Spider mite control appears to vary with product and time of season.
Spider Mite Trial at Lepanto - 8 DAT
June 8, 2004

Spider Mites per 5 Leaf Sample (Sq. cm per leaf)

8 DAT

- Untreated Check
- Oberon @ 8 oz/a
- Oberon @ 12 oz/a
- Oberon @ 16 oz/a
- Abamectin @ 6 oz/a
- Abamectin @ 8 oz/a
- Kelthane MF @ 1 qt/a
- Kelthane MF @ 1.5 qt/a
- Capture @ 5.12 oz/a
- Capture @ 3.8 oz/a + Oberon @ 8 oz/a
- Zephyr @ 6 oz/a
- Zephyr @ 8 oz/a
Spider Mite All @ Barton 5 DAT
Phillips County, July 25, 2006

Average SM/1 CM. Square

Treatments

UTC
Zeal at 1 OZ/A
Oberon at 6 OZ/A
Abba at 6 OZ/A
Fujimite at 10 OZ/A
Capture at 6 OZ/A + COC at 0.25 % V/V
Onager at 10 OZ/A
Acramite at 12 OZ/A
Kelthane at 1 QT/A
**Spider Mite Summary**

- Good application critical
- Spend $$ wisely
- Multiple applications may be necessary

<table>
<thead>
<tr>
<th>Miticide</th>
<th>Cost/ Amt</th>
<th>Cost/ A*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capture</td>
<td>$375/ Gallon</td>
<td>1 gal/ 25 A = $15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 gal/ 30 A = $12.50</td>
</tr>
<tr>
<td>Zephyr</td>
<td>$625/ Gallon</td>
<td>4 oz/ A = $19.53</td>
</tr>
<tr>
<td></td>
<td>Or $4.88/ oz</td>
<td>6 oz/ A = $29.28</td>
</tr>
<tr>
<td>Zeal</td>
<td>$22/ oz</td>
<td>1 oz/A=$22.00</td>
</tr>
<tr>
<td>Kelthane</td>
<td>$36/ Gallon</td>
<td>1 Qt/ A= $9</td>
</tr>
</tbody>
</table>
### NC acreage treated for spider mites

(2004-2005 Consultants’ Survey)

<table>
<thead>
<tr>
<th>Usage pattern</th>
<th>% acres treated</th>
<th>Odds of treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temik (100%)</td>
<td>0.58</td>
<td>1/170</td>
</tr>
<tr>
<td>Seed Trt. (74.5%)</td>
<td>5.3</td>
<td>1/19</td>
</tr>
</tbody>
</table>

Difference: **9.1-fold**

Jack Bacheler, NCSU
Tarnished Plant Bug, *Lygus lineolaris*
Plant Bugs

- Tarnished plant bug
- Clouded plant bug
- Cotton fleahopper
- Orthene, Bidrin are the standards
- Sweepnet early and black shake sheet later used with square retention or COTMAN
Economic Loss Due to TPB Mid-South (AR, LA, MS)

Dollars (Millions)

Year


Yield Reduction
Cost of Control

Williams et. al, BWCC Insect Losses
Are we doing this...

...too much?
...not enough?
...at the right time?
Insecticide Resistance Management

- Most important threat to plant bug management
  - Pyrethroid
  - OP’s
- Change use patterns
  - Neonics early, save “standards”
  - Utilize new chemistry - novaluron, flonicamid, etc.
- Rotate Chemistry
Early Season Plant Bug Threshold
Study
Midsouth- AR, TN, LA, MS

- Purpose of the study is to evaluate thresholds and determine at what level plant bug numbers impact yield.
Early Season Plant Bug Threshold Study

- Large Block Trials 24-36 rows X 100 ft
- Centric @ 2 oz/ A
- 4 Treatments to Trigger Applications:
  1. Untreated
  2. Low = 8 Plant bugs/ sweep
  3. High = 16 plant bugs/ sweep
  4. Automatic applications (weekly)
Early Season Plant Bug Threshold at Soudan
Treated vs. Untreated

Treatment dates: 8, 15, 21, and 29 June
2oz Centric
Early Season Plant Bug Threshold at Steve Stevens
Treated vs Untreated

Treatments:
- Automatic at Pinhead Square Through Bloom
- Untreated

Treatment dates:
- 8, 15, 21, 29 June
- 2 oz Centric
Early Season Plant Bug Threshold TN-S. Stweart
Treated vs. Untreated

Treatment dates: 22, 28 June and 6, 12 July
2 oz Centric
Early Season Threshold Judd Hill
Treated vs. Untreated

Treatments:
- Automatic at Pinhead Square Through Bloom
- Untreated

Treatment Dates: 21, 26, 29 June and 3 July

2 oz Centric
When do YOU decide to spray an insecticide??

Do you have “Zero Tolerance” for plant bugs??

TOP 10 REASONS TO SPRAY

1. When my neighbors do
2. When my neighbors don’t
3. I get an urge to kill something invertebrate
4. When Jupiter aligns with Mars and the moon is in the 7th hour
5. I hear a voice…….
6. It just feels right… When in doubt put something out
7. Recreational spraying
8. It’s convenient, to avoid making additional trips across the field
9. At certain crop stages (PHS, 1st bloom)
10. When pest populations are close to established thresholds to avoid economic damage and maintain maximum economic yield
The Most Expensive Insecticide Application……
Is the one that doesn’t work.

- Currently, we have more insects in cotton with resistance/tolerance issues than any other time in the history of cotton production in the U.S.
- Budworm, Bollworm, Tarnished Plant Bug, Aphids, Soybean Looper, Brown and Red Banded Stink Bugs
- Over use and misuse can get us resistance problems we don’t want