Stink Bug Management in the Southeast
2010 Cotton Incorporated Crop Management Seminar

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NCSU
Two significant events have changed cotton IPM during the last 37 years.

- **Boll Weevil Era**
- **Boll Weevil Free**
- **Bt Cotton**
Two significant events have changed cotton IPM during the last 24 years.
## Plant bug treatments

### 2004-2010 NC cotton insecticide use survey

<table>
<thead>
<tr>
<th>Year</th>
<th>% treated</th>
</tr>
</thead>
<tbody>
<tr>
<td>04</td>
<td>12.2</td>
</tr>
<tr>
<td>05</td>
<td>7.4</td>
</tr>
<tr>
<td>06</td>
<td>3.2</td>
</tr>
<tr>
<td>07</td>
<td>1.6</td>
</tr>
<tr>
<td>08</td>
<td>1.9</td>
</tr>
<tr>
<td>09</td>
<td>4.8</td>
</tr>
<tr>
<td>10</td>
<td>12.4</td>
</tr>
</tbody>
</table>
North Carolina’s major boll damaging stink bug species

- **Green stink bug**
  - Nymph
  - Adult

- **Brown stink bug**
  - Nymph
  - Adult
Proportion of green, brown and southern green stink bugs at SE test locations, 2004-2008

- Green
- Brown
- Southern green
- Other

Graph showing the proportion of different stink bug stages from 2004 to 2008.
Average number of stink bugs per 6 row feet
(n = 8 tests, 2005-2008)

Week of bloom

Nymphs
Adults

Number of stink bugs

1 2 3 4 5 6 7

Week of bloom
Stink bug damage to dime-sized boll
Stink bug damage to bolls vs. yield; Wayne Co., 2004

\[ y = -7.076x + 1870.7 \]

\[ R^2 = 0.895 \]
Quarter-sized boll = 15/16 inch
Bolls become safe from stink bug damage over time, 3.5 weeks is considered a “Safe Boll”
Boll age (>3.5 weeks) and size vs. damage

> 1.25” diam.
Stink bugs damage cotton less:

1) when there are fewer susceptible bolls
   *early in the bloom period*

2) when bolls are no longer susceptible
   *late in the bloom period*
Thresholds evaluated:

- UTC: untreated control
- Wkly bloom: sprayed weekly from 1st wk of bloom
- 10% sprayed at 10% with 1 internal symptom
- 20% sprayed at 20% with 1 internal symptom
- 30% sprayed at 30% with 1 internal symptom
- Dynamic 50, 30, 10, 10, 10, 20, 30, 50% by wk

Treated with pyrethroid + dicrotophos
(e.g., Baythroid @ 0.03 + Bidrin @ 0.25 lb ai/acre)
Profit difference between use of
20% vs. Dynamic threshold
\( (n = 47 \text{ tests}; \text{NC, SC & GA}) \)

<table>
<thead>
<tr>
<th>Stink bug level (apps @ 20%)</th>
<th>UT</th>
<th>20%</th>
<th>Dynamic</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (0 app.)</td>
<td>0</td>
<td>0</td>
<td>+7.42</td>
<td>+ $7.42</td>
</tr>
<tr>
<td>Mod. (1 app.)</td>
<td>0</td>
<td>-10.37</td>
<td>+8.82</td>
<td>+ $19.29</td>
</tr>
<tr>
<td>High (2+ app.)</td>
<td>0</td>
<td>+103.83</td>
<td>+137.61</td>
<td>+ $33.78</td>
</tr>
</tbody>
</table>
Characteristics of a good field scouting device:

- Card must be durable
- Information must be easily understood
- Must explain scouting procedure
- Accommodate variability in state recommendations
- Thresholds clearly spelled out on card
- Show images of damage?
- Self-contained scouting tool
**Decision aid for stink bug thresholds in Southeast cotton**

1. Pull random sample of quarter size diameter bolls, avoid field edges. (boll sizes between 0.9” and 1.1”)
2. 1 boll / acre, no less than 25 / field.
3. Sort bolls into two piles: those with and those without, obvious external lesions.
4. Crack and inspect bolls with external lesions for internal damage (boll wall warts, stained seed or lint).
5. If threshold is not met for that week, (see chart) check the remaining bolls for internal damage.
6. Treat field only if the threshold is met for that week.

<table>
<thead>
<tr>
<th>Week of bloom</th>
<th>Threshold (% internal boll damage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50%</td>
</tr>
<tr>
<td>2</td>
<td>30%</td>
</tr>
<tr>
<td>3</td>
<td>10%</td>
</tr>
<tr>
<td>4</td>
<td>10%*</td>
</tr>
<tr>
<td>5</td>
<td>10%*</td>
</tr>
<tr>
<td>6</td>
<td>20%</td>
</tr>
<tr>
<td>7</td>
<td>30%</td>
</tr>
<tr>
<td>8</td>
<td>50%</td>
</tr>
</tbody>
</table>

*Consult state guidelines for scouting intervals.*
Decision aid for stink bug thresholds in Southeast cotton

Stained seed and lint
Boll wall warts
External lesions
Quarter size boll

AG-730
Boll diameter should be between 0.9” and 1.1”
Lanyard for removing decision aid
Characteristics of a good field scouting device:

- field-ready card
- information straightforward
- scouting procedures listed
- minor differences in state recomm. listed
- thresholds clearly spelled out on card
- damage images imbedded in plastic
- self-contained scouting tool
Potential Cotton Pest??

Brown marmorated stink bug

- Distinct black and white pattern around abdomen
- Smooth "shoulder"
- White bands on dark antennae
VA counties reporting brown marmorated stink bug, 2010
Okra images courtesy of Barbara Leach