Late Season Cotton Insects
(Management from Early Bloom to Cutout)

Scott Stewart (UT Extension)

- Considering Bt Options
- Control of Common Pests: Bollworm, Plant Bugs and Stink Bugs, Fall Armyworm (not thresholds)
- Dealing with Complexes of Common Pests
- Comprehensive (Multi-pest) Thresholds
Bt Cotton is a Filter

Expected level of pest control for common late-season caterpillars

<table>
<thead>
<tr>
<th>Control Program</th>
<th>Tobacco budworm</th>
<th>Bollworm</th>
<th>Fall AW</th>
<th>Beet AW</th>
<th>Loopers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bollgard</td>
<td>Great</td>
<td>Fair</td>
<td>Poor-Fair</td>
<td>Poor</td>
<td>Poor</td>
</tr>
<tr>
<td>Bollgard II</td>
<td>Great</td>
<td>Great</td>
<td>Good</td>
<td>Great</td>
<td>Great</td>
</tr>
<tr>
<td>WideStrike</td>
<td>Great</td>
<td>Good</td>
<td>Great</td>
<td>Good (?)</td>
<td>Good</td>
</tr>
<tr>
<td>Foliar on Non-Bt*</td>
<td>Good</td>
<td>Good</td>
<td>Fair-Good</td>
<td>Good</td>
<td>Good</td>
</tr>
</tbody>
</table>

* Assumes well-timed sprays at recommended treatment thresholds using appropriate insecticide.
Bollgard II and WideStrike - Bollworms
(Milan, Tennessee; Planted May 19, 2006)

% Damaged Bolls and Larvae/20 Plants (Average from 8/9 - 8/28)
Applications on 3, 9, 17 (Tracer) and 28 August (Karate)

WS = Phy 485
BGII = Stn 4554

Phy425-U
Phy425-S
Stn4664-U
Stn4664-S
Phy485-U
Phy485-S
Stn4554-U
Stn4554-S
Local Considerations

- **Traditional Pest Pressure**
  - Bollworm/Budworm, Plant Bugs, Stink Bugs, Fall Armyworm

- **Bollworm Resistance**
  - Pyrethroids - variable (but field control failures are possible)
  - Tobacco budworm resistance to pyrethroids is a given

- **Tarnished Plant Bug Resistance**
  - Pyrethroids - variable but common in the Midsouth
  - Acephate - also variable but increasing
Bollworm Resistance Monitoring
(B.R. Leonard, LSU AgCenter, Adult Vial Test)

Cypermethrin at 5 µg/vial (May-September)
Dealing With A Single Pest

- **Bollworm and Tobacco Budworm**
  - Bollgard = Pyrethroid (mid rate)
  - Bollgard II and WideStrike = Pyrethroid (mid rate)
    - Alternative if bollworm pyrethroid resistance worsens?
  - Non-Bt Cotton = Tracer (2.1-2.8 oz), Steward (11.3 oz), Denim (8-12 oz)
    - Pyrethroid alone ***only*** if exclusively bollworm
    - Tank mix with a pyrethroid insecticide often necessary against moderate to high mixed populations

- **Fall Armyworm**
  - Bt or Non-Bt Cotton: Diamond (4-6 oz), Intrepid (4-8 oz), Tank mixes with pyrethroid, Steward (9.2 - 11.3 oz), etc.

- **Plant Bugs and Stink Bugs**
  - Bidrin (6 oz), Acephate (0.5 lb), Vydate (10-12 oz)
    - Neonicotinoids, Carbine, Diamond, Pyrethroids (sometimes)
Foliar Insecticides vs. Bollgard II - Bollworms
(Jackson, Tennessee; Planted May 19, 2006)

% Damaged Bolls and Larvae/20 Plants
(3 days after second treatment)

Non-Bt = Stn 4664
Bt = Stn 4554

- Check
- Steward 0.11
- Steward 0.09
- Tracer 0.067
- Exper. 1
- Exper. 2
- Exper. 3
- Asana
- Bollgard II
# Trials in Blooming Cotton - Tennessee (TPB and CPB, 2004-2005)

<table>
<thead>
<tr>
<th>Insecticide*</th>
<th>Cumulative check counts</th>
<th>% Control of TPB</th>
<th>% Control of CPB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TPB</td>
<td>CPB</td>
<td>(N)</td>
</tr>
<tr>
<td>Acephate</td>
<td>26.5</td>
<td>31.4</td>
<td>(5)</td>
</tr>
<tr>
<td>Bidrin</td>
<td>27.4</td>
<td>39.3</td>
<td>(7)</td>
</tr>
<tr>
<td>Vydate</td>
<td>12.6</td>
<td>25.3</td>
<td>(3)</td>
</tr>
<tr>
<td>Pyrethroids</td>
<td>49.2</td>
<td>56.7</td>
<td>(9)</td>
</tr>
<tr>
<td>Centric</td>
<td>37.1</td>
<td>35.2</td>
<td>(7)</td>
</tr>
<tr>
<td>Diamond</td>
<td>25.8</td>
<td>21.7</td>
<td>(4)</td>
</tr>
</tbody>
</table>

* Single application only; Rating unit was 2 or 3 drop cloth samples per treatment per trial; N = number of trials in comparison; 4-6 DAT
Tarnished Plant Bug Insecticide Trial
(Jeff Gore, USDA ARS, Stoneville, 2006)
Dealing with a Pest Complex
(Bollworm/Budworm, Fall Armyworm and/or Bugs)

- **Bt Cotton (primarily Bollgard)**
  - Pyrethroid + Diamond (4 oz) + Acephate (0.33 lb)
  - Pyrethroid + Acephate (0.5 lb) - mostly bugs
  - Pyrethroid + Bidrin (3-5 oz) - mostly bugs
  - Pyrethroid + Diamond (4 oz) - mostly armyworms
  - Pyrethroid + Intrepid (4 oz) - mostly armyworms
  - Pyrethroid only - primarily bollworms, or bollworms with green stink bugs or clouded plant bugs
    - Choices are highly dependent on levels of individual pest populations, local resistance levels, and crop maturity
    - Concerning dependence on pyrethroids and acephate

- **Non-Bt Cotton**
  - I Give Up: Pyrethroid + Acephate/Diamond + Tracer or ...
Comprehensive (Multi-pest) Thresholds

- Some of my suggestions
  - 1 stink bug = 3 tarnished plant bugs
  - 1 clouded plant bug = 1.5 tarnished plant bugs
  - 1 fall armyworm = 0.33 bollworms

- Most the time, when this is an issue, one pest is already at or above the recommended treatment threshold (or it soon will be)

- Use professional judgment
  - Are you using this has an excuse to treat when pest populations are not really near threshold?
    - Being at a ¼ threshold for 4 weeks doesn't count
  - If not, don't sweat a percentage point or two
  - Don't hold you breath for much better guidelines
Terminating Insect Control

- **Cutout (NAWF5) + 350-400 DD60s**
  - Approximately 16-21 days
  - Applies fairly well to most fruit feeding pests
  - Premises:
    - Bolls can tolerate, or are less susceptible, to the pests as they age
    - Maturing fields are less attractive to insect pests

- **Does this rule apply to atypical fields?**
  - Late maturing fields are a potential sink for insects
  - Weather rules for very late fields
Plant Bugs vs. Crop Maturity

(Jeff Gore, USDA ARS, Stoneville, 2006)
Concluding Remarks

- Late season, specifically weeks 2-6 of flowering, is the critical time for insect management
  - Direct damage; Little time for recovery; Vested in the crop
- Earliness still pays if it does not reduce yield potential (e.g., DPL 444 vs. DPL 555)
  - New Bt traits will reduce insect management risks associated with late-maturing varieties
- Local/situational knowledge is critical
  - Likely resistance levels (including previous insecticide), presence of tobacco budworm, crop maturity, etc.
- Resistance management is still important
- No mention of spider mites, beet armyworms, loopers, whiteflies, etc.