Economics of Managing Insect Pests of Cotton

Jeff Gore
Major Insect Pests

Thrips

Tarnished Plant Bug

Bollworm
Economic Injury Levels and Thresholds
Problems with EIL’s and ET’s

• Most are not really based on economics

• They are static

• Sub-threshold populations over time?
Useful Tools in Managing Cotton Production:

End of Season Plant Maps

Johnie Jenkins

and

Jack McCarty
Major Insect Pests

Thrips

Tarnished Plant Bug

Bollworm
2018 Thrips Recommendations

1. Start with imidacloprid based seed treatment … or an in-furrow spray of imidacloprid

2. Add supplemental seed treatment components

3. Consider supplemental foliar application of Acephate, Bidrin, Dimethoate, or Radiant if needed
Major Insect Pests

- Thrips
- Tarnished Plant Bug
- Bollworm
TPB Application Interval

Days After First Application

- 4DAT
- 7DAT
- 10DAT
- One
- Vacay
- UTC

No./10 Row Ft.

40
30
20
10
0
TPB Application Interval
UTC Deleted

Days After First Application

No./10 Row Ft.

- 4DAT
- 7DAT
- 10DAT
- One
- Vacay

Days After First Application: 4, 7, 10, 14, 18

No./10 Row Ft.: 0, 5, 10, 15, 20
TPB Application Interval

UTC Deleted

No./10 Row Ft.

Days After First Application

4DAT

7DAT

SEWG

Mid-Atlantic Entomologist Working Group

COTTON

Graph showing the number of rows per 10 feet over days after the first application for 4DAT and 7DAT treatments. The graph includes error bars for each data point.
TPB Application Interval
UTC Deleted

Days After First Application

No./10 Row Ft.

4DAT
10DAT

0
5
10
15
20
Impact of TPB Application Interval on Cotton Yields

Seedcotton Yield

<table>
<thead>
<tr>
<th>4 Day</th>
<th>7 Day</th>
<th>10 Day</th>
<th>One</th>
<th>Vacay</th>
<th>UTC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Apps</td>
<td>1 App</td>
<td></td>
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</tbody>
</table>

2 Apps

1 App
Impact of Spray Termination on Cotton Yield

Mean All Locations and Years

Seedcotton per Acre

UTC  2  3  4  5  6  SLC/Thresh

Treatment (Week of Termination)
Major Insect Pests

Thrips

Tarnished Plant Bug

Bollworm
Number of White Flowers Infested and Yield

Bollgard II – 2003 - 2005

2004 - $R^2 = 0.16$, $y = -0.77 + 2416$
Number of White Flowers Infested and Yield
Non-Bt – 2002 and 2003

2002, $y = -1.69x + 1044.0$, $R^2=0.92$

2003, $y = -1.69x + 2057.2$, $R^2=0.93$
2018 Preliminary Variety Yields

- Best 2-Gene minus Best 3-Gene = 109 lbs
- $0.70 \times 109 = \$76.30$
- 2 Apps \sim \$40-50

<table>
<thead>
<tr>
<th>Variety</th>
<th>Yield</th>
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<tbody>
<tr>
<td>DP 1646 B2XF</td>
<td>1223*</td>
</tr>
<tr>
<td>NG 3729 B2XF</td>
<td>1131</td>
</tr>
<tr>
<td>DG 3526 B2XF</td>
<td>1119</td>
</tr>
<tr>
<td>ST 5471GLTP</td>
<td>1114</td>
</tr>
<tr>
<td>DP 1845 B3XF</td>
<td>1109</td>
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<tr>
<td>PHY 430 W3FE</td>
<td>1107</td>
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<tr>
<td>PHY 320 W3FE</td>
<td>1090</td>
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<tr>
<td>DP 1835 B3XF</td>
<td>1085</td>
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<tr>
<td>PHY 480 W3FE</td>
<td>1034</td>
</tr>
<tr>
<td>ST 5122GLT</td>
<td>1023</td>
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</tbody>
</table>
Ranking Them

Tarnished Plant Bug > Thrips > Bollworm
The Budget Buster

Tarnished Plant Bug

Bollworm
Thresholds

- Tarnished Plant Bug – 3/5 Row Ft, etc.
- Thrips – 1 per plant with immatures present
- Bollworm – 20% Eggs, etc.
Thresholds

• Tarnished Plant Bug – 3/5 Row Ft, etc.

• Thrips – 1 per plant with immatures present

• Bollworm – 20% Eggs, etc.

• Spider Mites – Treatment is essential when 40-50% of plants are infested and populations are increasing.
Independent Consultants
1\textsuperscript{st} and 2\textsuperscript{nd} position sites on fruiting nodes 2-14 produced 95% of the yield/money
Potential Impact of Insects on Yield Loss

- Planting: ~May 1
- 1st Square: ~June 1
- 1st Flower: ~July 1
- Peak Flower: ~July 21
- Cutout: ~Aug 25