The Impact of Planting Date and Varietal Maturity Selection on Tarnished Plant Bug Management and Yield in Midsouth Cotton

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Justification for Research

• Pest status has changed

• Currently the most important economic pest of cotton in Mississippi

• Resistance to multiple classes of insecticides

• Current insecticides only provide “marginal” control
Foliar Insect Control in Mississippi
Objectives

- To evaluate cultural practices that can be integrated into a sustainable management program for TPB in cotton
- Reduce dependency on foliar applied insecticides
Materials and Methods

• Split-Split Plot

• Four Planting Dates:
  – Mid-April
  – Early May
  – Mid May
  – Early June

• Two Varieties:
  – DP0912 B2RF(Early)
  – DP0949 B2RF(Late)

• Treatment Regimes:
  – Sprayed for tarnished plant bugs
  – No control for tarnished plant bugs
Materials and Methods

• 8 Rows x 75 ft.

• Sampled once weekly

• Sampling Methods:
  – Sweep Net
  – Drop Cloth

• All sprayed plots treated based on threshold in MS Insect Control Guide with insecticides labeled for tarnished plant bug control
Mean Densities of *Lygus lineolaris*

![Graph showing mean densities of Lygus lineolaris over time with sprayed and unsprayed conditions.](Image)
Effect of Insecticide Application on Yield

- Sprayed
  - A
- Unsprayed
  - B

kg Lint/ha
Effect of Planting Date on Yield

kg Lint/ha

Planting Date

1  2  3  4

A  B  C  D
Effect of Varietal Maturity on Yield

![Bar graph showing the effect of varietal maturity on yield. The early maturity level (A) has a significantly higher yield (kg lint/ha) compared to the late maturity level (B).]
Interaction Between Varietal Maturity and Insecticide App.
Impact of Tarnished Plant Bug on Yield

Percent Yield Loss

<table>
<thead>
<tr>
<th>Planting Date</th>
<th>Early</th>
<th>Late</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>22</td>
<td>37</td>
</tr>
<tr>
<td>2</td>
<td>21</td>
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<td>3</td>
<td>23</td>
<td>44</td>
</tr>
<tr>
<td>4</td>
<td>38</td>
<td>56</td>
</tr>
</tbody>
</table>
Conclusions

- Yield potential was higher at early planting dates and decreased as planting date increased.

- Later planting dates required more insecticide applications due to higher populations of late season TPB.

- Percent yield loss was greater on the late variety (DP 0949B2RF) than the early variety (DP 0912B2RF).
Conclusions

• Number of plant bug applications may be reduced by planting early to avoid late season tarnished plant bug populations

• Reduced insecticide applications result in less impact on the environment and non-target species, which allows more beneficial insects to remain in place throughout the year
Conclusions

• Reduced insecticide applications also play an important role in resistance management for Tarnished Plant Bugs

• Managing for “earliness” with planting date and varietal maturity can maximize yields, reduce insecticide inputs, and make cotton production more sustainable
Questions