Using Applied Research on Your Farm

Stephen Biles
Extension Agent – IPM
Calhoun, Refugio and Victoria Counties
2018 - On Farm Research

- You Identify Research Topics
- We work together to design field study
- We work together to find solutions
2017 Field Projects

Cotton
- Thrips control with Seed treatments
- Cotton Fleahopper IPM Sampling methods comparison
- Variety tolerance to CFH
- Insecticide Control Trials
  - Cotton Fleahopper
  - Bollworm
- Evaluation of Bt cottons for bollworm control
- Cotton Fertilizer Trial
- Cotton Root Rot and UAVs
- Cotton Harvest Aid Evaluation
- Cotton stalk destruction of Enlist Cotton
- Stalk destruction machine from Australian company
- Cotton Variety trials
  - Calhoun
  - Conventional Cotton Variety trial
  - Refugio
  - Bayer APT Test

Sorghum
- Insecticide Control Trials
  - Sugarcane Aphid
  - Sivanto application methods for SCA control
- Hybrid Trials
  - Hybrid evaluation for Sugarcane Aphid Resistance
  - Calhoun
  - Refugio

Corn
- Herbicide Control of Smellmelon
- Corn Fertilizer Trial
- Hybrid Trials
  - Calhoun
  - Refugio

Soybean Variety Trial

Bermudagrass Pasture
- Insecticide Control Trials
  - Fall Armyworm
  - Bermudagrass Stem Maggot
Fertilizer Trials

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Residual NO$_3$-N

![Graph of Residual NO$_3$-N](image)
Cotton Fertilizer Trial

Methods

- Soil test found **104 lbs N 0-24”**
  
  (32 lbs N 0-6” + 72 lbs N 6-24”)

- Treatments (32 row plots)
  - 0 lbs N
  - 34 lbs N applied with JD Sprayer preplant
  - 68 lbs N

- Harvest with Picker Yield Monitor
<table>
<thead>
<tr>
<th>Nitrogen Applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 lbs N applied</td>
</tr>
<tr>
<td>34 lbs N applied</td>
</tr>
<tr>
<td>68 lbs N applied</td>
</tr>
<tr>
<td>34 lbs N applied</td>
</tr>
<tr>
<td>0 lbs N applied</td>
</tr>
<tr>
<td>68 lbs N applied</td>
</tr>
<tr>
<td>68 lbs N applied</td>
</tr>
<tr>
<td>34 lbs N applied</td>
</tr>
<tr>
<td>0 lbs N applied</td>
</tr>
</tbody>
</table>
**Table 2.** Cotton yield, nitrogen cost and net revenue of three different treatments of nitrogen based on soil available nitrogen in the top 24 inches of soil. (Calhoun County, TX 2017).

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Yield (lbs. lint/A)</th>
<th>Nitrogen Cost ($/acre)</th>
<th>Net Revenue ($/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 130 lbs N</td>
<td>976 NS</td>
<td>$18.36</td>
<td>$665.07</td>
</tr>
<tr>
<td>2 65 lbs N</td>
<td>1000 NS</td>
<td>$9.18</td>
<td>$691.05</td>
</tr>
<tr>
<td>3 0 lbs N</td>
<td>956 NS</td>
<td>$0.00</td>
<td>$668.97</td>
</tr>
</tbody>
</table>

LSD P=.10 105.46 73.824
Standard Deviation 60.59 42.412
CV 6.2 6.28
Treatment F 0.408 0.327
Treatment Prob(F) 0.6896 0.7384

Means followed by same letter or symbol do not significantly differ (P=.10, LSD)
Cotton Yield by Nitrogen Fertilizer

- Rep 1: 68 lbs N, 34 lbs N, 0 lbs N
- Rep 2: 68 lbs N, 34 lbs N, 0 lbs N
- Rep 3: 68 lbs N, 34 lbs N, 0 lbs N
Corn Fertilizer Trial

Methods

- Soil test found **120 lbs N 0-24”**
  
  (26 lbs N 0-6” + 94 lbs N 6-24”)

- Treatments
  
  - 0 lbs N
  - 65 lbs N
  - 130 lbs N
    
  *knifed application post emergence*

- Harvest with Grower Combine Yield Monitor
Table 2. Corn yield, nitrogen cost and net revenue of three different treatments of nitrogen based on soil available nitrogen in the top 24 inches of soil. (Calhoun County, TX 2017).

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Yield (bu/A)</th>
<th>Nitrogen Cost ($/acre)</th>
<th>Net Revenue ($/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 130 lbs N</td>
<td>140.3</td>
<td>a</td>
<td>$34.67</td>
</tr>
<tr>
<td>2 65 lbs N</td>
<td>141.0</td>
<td>a</td>
<td>$17.33</td>
</tr>
<tr>
<td>3 0 lbs N</td>
<td>129.3</td>
<td>b</td>
<td>$0.00</td>
</tr>
</tbody>
</table>

LSD P=.10

Standard Deviation 4.56
CV 3.33

Treatment F 6.198
Treatment Prob(F) 0.0595

Means followed by same letter or symbol do not significantly differ (P=.10, LSD)
Scouting the Cotton Fleahopper

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Calhoun, Refugio and Victoria Counties

Mid-Coast IPM
- **Cotton Fleahopper** (*Pseudatomoscelis seriatus*)
  - Extension ET: 15 per 100 plants (visual)
  - Consultant ET: 1-15 per 100 plants
Methods

- Compare scouting method
  - Visual
  - Beat Bucket
    - Black 5 gallon bucket
    - White 2 gallon bucket
- Timing
  - First square to
  - Mid-bloom
Cotton Fleahoppers (#/10 plants) 2017

- **Adults**
  - Black Bucket: 3
  - White Bucket: 1.5
  - Visual: 1

- **Nymphs**
  - Black Bucket: 0.5
  - White Bucket: 0.5
  - Visual: 0.5

- **Total**
  - Black Bucket: 4
  - White Bucket: 2
  - Visual: 2
Insecticide Control of the Cotton Fleahopper

Stephen Biles
Extension Agent – IPM
Calhoun, Refugio and Victoria Counties

Mid-Coast IPM
Insecticide Control of the Cotton Fleahopper

- **Methods**
  - Application Date: May 9, 2017
  - Treated Population: 2-3 per 10 plants
  - Spray Volume: 6.8 GPA
  - Spray Tips: Hollow Cone
  - Plot Design: Randomized Complete Block
## Insecticide Control of the Cotton Fleahopper

<table>
<thead>
<tr>
<th></th>
<th>Treatments</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bidrin</td>
<td>3.2  oz/a</td>
</tr>
<tr>
<td>2</td>
<td>Transform</td>
<td>1.5  oz/a</td>
</tr>
<tr>
<td>3</td>
<td>Provoke</td>
<td>2    oz/a</td>
</tr>
<tr>
<td>4</td>
<td>Acephate</td>
<td>8    oz/a</td>
</tr>
<tr>
<td>5</td>
<td>Acephate</td>
<td>4    oz/a</td>
</tr>
<tr>
<td>6</td>
<td>Acephate</td>
<td>4    oz/a</td>
</tr>
<tr>
<td></td>
<td>Provoke</td>
<td>2    oz/a</td>
</tr>
<tr>
<td>7</td>
<td>Untreated Check</td>
<td></td>
</tr>
</tbody>
</table>

*Note: *Rate is given in ounces per acre (oz/a).*
Insecticide Control of the Cotton Fleahopper
3 DAT

- Nymphs
- Adults
Insecticide Control of the Cotton Fleahopper
7 DAT

- Nymphs
- Adults
Insecticide Control of the Cotton Fleahopper 10 DAT
Evaluation of Bt Cotton for Bollworm Control

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Evaluation of Bt Cotton for Bollworm Control

Methods

Varieties

- PHY 333 WRF
- FM 1953 GLTP
- FM 2322 GL (non-Bt)
- ST 4946 GLB2
Evaluation of Bt Cotton for Bollworm Control

Worms / 10 plants

- PHY 333 WRF: 82.3%
- FM 1953 GLTP: 100%
- FM 2322 GL: 92.5%
- ST 4946 GLB2: 0
Cotton stalk destruction of Enlist Cotton

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Calhoun, Refugio and Victoria Counties

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Cotton stalk destruction of Enlist Cotton

Methods
- Cotton Harvest: August 25
- Application Date: Sept. 19
  - Applied to standing cotton stalks
- Shredded: Oct. 6

Treatments
Cotton stalk destruction of Enlist Cotton

<table>
<thead>
<tr>
<th>Trt No.</th>
<th>Treatment Name</th>
<th>Rate</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2,4-DP</td>
<td>24</td>
<td>oz/a</td>
</tr>
<tr>
<td>2</td>
<td>2,4-DP</td>
<td>24</td>
<td>oz/a</td>
</tr>
<tr>
<td></td>
<td>2,4-DP</td>
<td>24</td>
<td>oz/a</td>
</tr>
<tr>
<td>3</td>
<td>Dicamba (Veritas)</td>
<td>1</td>
<td>qt/a</td>
</tr>
<tr>
<td>4</td>
<td>Dicamba</td>
<td>1</td>
<td>qt/a</td>
</tr>
<tr>
<td></td>
<td>Dicamba</td>
<td>1</td>
<td>qt/a</td>
</tr>
<tr>
<td>5</td>
<td>Dicamba</td>
<td>2</td>
<td>qt/a</td>
</tr>
<tr>
<td>6</td>
<td>Untreated Check</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Agri-Dex applied to all treatments at 1 % v/v
Cotton stalk destruction of Enlist Cotton

![Graph showing CSV data:](# live plants / 10)

28 DAT

35 DAT

- 2,4-D (2 oz)
- 2,4-D (2 oz) + 2,4-D (2 oz)
- Dicamba (1 qt)
- Dicamba (1 qt) + Dicamba (1 qt)
- Dicamba (2 qt)
- Untreated
Stalk Destruction Machine
Australian Method

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Scorpion Root Cutter
Hybrid evaluation for Sugarcane Aphid Resistance

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Hybrid evaluation for Sugarcane Aphid Resistance

- Methods
- 8 sorghum hybrids planted
  - Treated and untreated
  - Sivanto 5 oz/A
- Harvest
Hybrid evaluation for Sugarcane Aphid Resistance

Plot Yield (lbs)

BH 4100 UTC
BH 4100 UTC
DKS 53-67 UTC
DKS 53-67 UTC
Pioneer 83P56 UTC
Pioneer 83P56 UTC
Warner 7051 UTC
Warner 7051 UTC
Warner 844E UTC
Warner 844E UTC
Warner 625Y UTC
Warner 625Y UTC
SP 73B12 UTC
SP 73B12 UTC
SP 7715 UTC
SP 7715 UTC
## Sorghum Hybrid Trials

<table>
<thead>
<tr>
<th>No</th>
<th>Hybrid</th>
<th>YIELD</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>REV RV9782</td>
<td>5929</td>
<td>NS</td>
</tr>
<tr>
<td>2</td>
<td>SP 78M30</td>
<td>4190</td>
<td>NS</td>
</tr>
<tr>
<td>3</td>
<td>DG M74GB17</td>
<td>5182</td>
<td>NS</td>
</tr>
<tr>
<td>4</td>
<td>BH 4100</td>
<td>5865</td>
<td>NS</td>
</tr>
<tr>
<td>5</td>
<td>DKS 51-01</td>
<td>7560</td>
<td>NS</td>
</tr>
<tr>
<td>6</td>
<td>SP 7715</td>
<td>5283</td>
<td>NS</td>
</tr>
<tr>
<td>7</td>
<td>GA 3960 B</td>
<td>6047</td>
<td>NS</td>
</tr>
<tr>
<td>8</td>
<td>XG 3203</td>
<td>5930</td>
<td>NS</td>
</tr>
</tbody>
</table>

LSD P=.05 1891.06  
Standard Deviation 1079.86  
CV 18.79  
Treatment F 2.358  
Treatment Prob(F) 0.0814
<table>
<thead>
<tr>
<th>No.</th>
<th>Hybrid</th>
<th>Yield</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DKS 67-14</td>
<td>138</td>
<td>NS</td>
</tr>
<tr>
<td>2</td>
<td>My 13M87</td>
<td>122</td>
<td>NS</td>
</tr>
<tr>
<td>3</td>
<td>GA G6708</td>
<td>151</td>
<td>NS</td>
</tr>
<tr>
<td>4</td>
<td>DKC 67-14</td>
<td>131</td>
<td>NS</td>
</tr>
<tr>
<td>5</td>
<td>REV 25BHR26</td>
<td>135</td>
<td>NS</td>
</tr>
<tr>
<td>6</td>
<td>DG D57VP51</td>
<td>142</td>
<td>NS</td>
</tr>
</tbody>
</table>

LSD P=.05: 21.79
Standard Deviation: 11.98
CV: 8.76
Treatment F: 1.982
Treatment Prob(F): 0.1672
2017 Bermudagrass Field Trials

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Insecticide Control of Fall Armyworm

- Beseige 6 oz
- Prevathon 10 oz
- Karate 3.84 oz
- Untreated
Bermudagrass Stem Maggot Insecticide Efficacy Trial
Calhoun County, Texas
July 22, 2015 – 10 Day Post Treatment Evaluation

![Graph showing the efficacy of different insecticides on Bermudagrass stem maggots.](image)

- **C** represents the control group.
- **bc** indicates the Prevathon 10 oz/a group.
- **a** and **ab** represent Besiege 6 oz/a and Mustang Max 3 oz/a groups, respectively.

The graph compares the number of damaged terminals among different treatments.
Bermudagrass Stem Maggot Insecticide Efficacy Trial
Calhoun County, Texas
August 5, 2015 – 19 Day Post Treatment Evaluation*
2018 Field Plans

Mid-Coast IPM
2018 - On Farm Research

- You Identify Research Topics
  - Variety / Hybrid Trials  Cotton, Corn, Sorghum, Soybean
    - Small plot trials
    - I plant and harvest
    - You treat like the rest of the field
  - Soil Fertility  Cotton, Corn, Sorghum
    - I soil test
    - You fertilize 3 rates of Nitrogen
    - Harvest with yield monitors
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