COTMAN OVERVIEW

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COTMAN Development

• Major contributions from scientists in research and Extension, growers and private crop advisors across the Mid-South and Texas.
Nothing magic about COTMAN

- Does not predict yield
- Does not give “Cookbook” recipes for production
- Is not a cure all for cotton production problems
COTMAN provides an standardized in-season monitoring system to describe the pace and progress of crop development.
COTMAN Components

†SQUAREMAN
Monitors crop from 1st squares to 1st flowerss

†BOLLMAN (NAWF)
Monitors crop from 1st flowers to cutout
COTMAN Components

SQUAREMAN
Before 1st Flowers
- Fruit retention
- Pace of crop growth
  - Pre-flower Stress

BOLLMAN
After 1st flowers
- Boll Loading Stress
- Crop termination
  - Insecticides
  - Irrigation
  - Defoliation
COTMAN is based on the following assumptions:

- Planting to 1st squares in 35 days
Every 2.7 days a new sympodial node on the main-stem.
Flowers at 60 days after planting

1st Squares to 1st flowers in 25 days
From 1\textsuperscript{st} Squares to 1\textsuperscript{st} Flowers

- Squaring node every 2.7 days
- 9.25 squaring nodes at the time of the first flowers
1st Flowers to Cutout

- Physiological Cutout at 80 DAP
- 5 squaring nodes above the first position white flowers (NAWF = 5)
Target Development Curve

Days after planting

Squaring Nodes
Target Development Curve

Days After Planting

NAFS/NAWF
Crop growth VS. TDC

- Shows growth status of your crop compared to a STANDARD
- Identify stress
- Use crop monitoring to improve decision-making
Field Setup (1 time per season)

FIELD SETUP
- Field Name
- Acreage
- Planting Date
- Cultivar
- Row Spacing
- Re-plant (Y/N)
- FN
- Stand count
Stand Counts

- Use a T-stick to determine # of plants in 3 row feet from 24 consecutive rows.
- Repeat at 4 locations/Field.
- Used to calculate fruit/A.
Finding First Fruiting Node (FN)

- Count UP from cotyledons ("0").
- Count to the first fruiting branch (sympodial).
SQUAREMAN Data

- Start at PHS
  (Usually node 5-6).

- Collect weekly.

- 4 areas/field.

  Plant Height

  SQUAREMAP
At each location or area in the field, ten plants will be square mapped.

Five consecutive plants on row 1. Turn around.

Five consecutive plants on the adjacent row or row 2.

Start at the top of each plant. 1st unfurled true leaf.
SQUAREMAP Data

- Look for the presence or absence of 1st position squares.
- Record a “1” if square is there.
- Record a “0” if square is missing.
(1) Plant Height

- Choose a plant that represents average height in row.

- Measure height (in inches) from soil to terminal.
SQUARER

CROP GROWTH

SQUARER CROP GROWTH CURVE: FLAT SLOPE

Squaring Nodes

Days from Planting

Actual

TDC 3
BOLLMAN Data (NAWF)

- Collected once per week
- Start at first flower
- Count # of nodes above white flower.
- Get 5 counts from 1 row and 5 from adjacent row.
- Repeat at 4 locations in the field.
BOLLMAN Data (NAWF)

- Stop counting at the last unfurled leaf in the plant terminal. (BE CONSISTENT)

- Collect NAWF data until cutout (NAWF = 5).
Use COTMAN to identify **cutout**:

- Physiological (Crop)
- Seasonal (Weather)
Physiological cutout

- Cutout based on crop development (carrying capacity) - No end-of-season weather restraints

- **NAWF = 5** prior to latest possible cutout date. (Bourland et al. 1992)

- Cutout at 80 DAP.
Cutout Con’t.

Seasonal cutout:

- Natural cutout restricted due to weather
- Crop development limited by end-of-season weather constraints (Zhang et al. 1994).

NAWF = 5 AFTER the latest possible cutout date
Cutout

• From NAWF=5
  – Heat unit calculations begin
    • Historical weather file
    • Actual or current
When Are Bolls Safe from Insect Attack?

+ **250** DD60s
  *Lygus lineolaris*

+ **350** DD60s
  Boll weevil
  Bollworm, Tobacco Budworm

When Are Bolls Safe from Insect Attack?

+ **450** DD60s
  Stink Bugs

+ **500-550** DD60s
  Fall Armyworm

+ **650** DD60s
  Defoliating insects

(work from Roger Leonard’s lab at LSU ..... no preference Cage tests)
End of Season Management

Irrigation

Identify flowering date of last effective boll population and track heat units....

+ 350 DD60s

Final Furrow Irrigation in Mid-South

End of Season Management
Defoliation

Identify flowering date of last effective boll population and track heat units....

+ 850 DD60s
Evaluate for Defoliation
# Overall Average – Insecticide Reduction Effects

<table>
<thead>
<tr>
<th>COTMAN</th>
<th>Full-Season</th>
<th>Difference</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>837.7</td>
<td>839.6</td>
<td>1.90</td>
<td>19.32</td>
</tr>
</tbody>
</table>
Check squares down the plant.

Count Nodes above 1st position white flowers = NAWF

SQUAREMAN
Before first flowers

BOLLMAN
After flowers

Days after planting
Time Requirements

- Approximately 20 minutes per field
- Reduce time for insect scouts
- Two different crews
Squaremap Time Requirements

3 to 10 minutes per site

Except …. in instances where there is excessive plant to plant variability
(e.g. insect injury)
NAWF Time Requirements

< 2 minutes per site
Why Use COTMAN as a Management Tool?

- Better information means better decision-making
- COTMAN is easy to use
- COTMAN provides timely information
- COTMAN is profitable
- COTMAN has been tested from Texas to Virginia
- COTMAN has a strong research base
Thank You