COTMAN™

Pocket Field Guide

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UNIVERSITY OF ARKANSAS
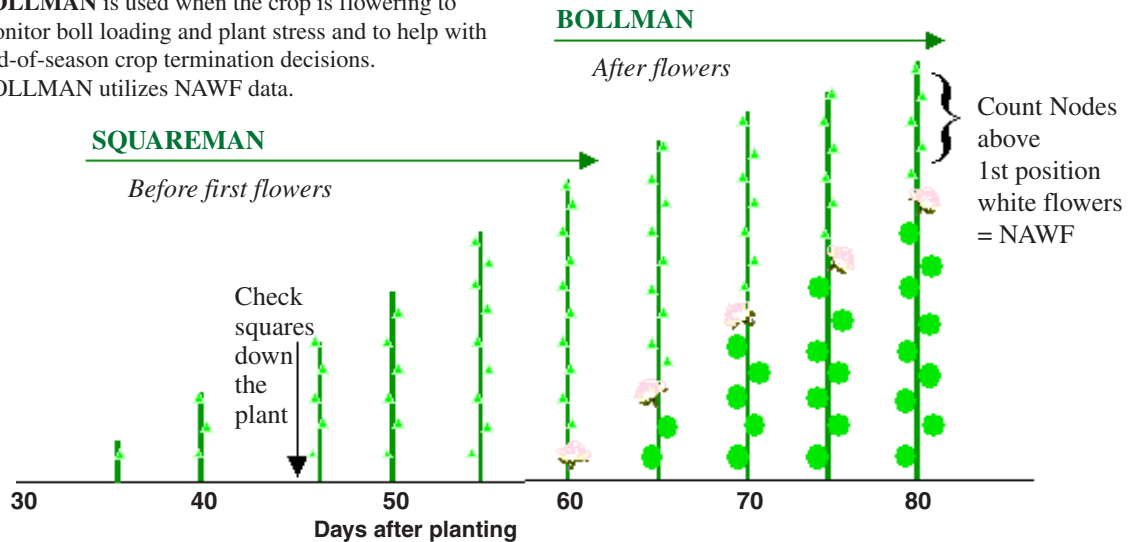DIVISION OF AGRICULTURE

cotton®

COTTON INCORPORATED

COTMAN Cotton Management System

COTMAN is divided into two components:

1. **SQUAREMAN** is used to monitor crop development up to time of first flowers. It is used to monitor square retention and plant stress.

2. **BOLLMAN** is used when the crop is flowering to monitor boll loading and plant stress and to help with end-of-season crop termination decisions. BOLLMAN utilizes NAWF data.

BOLLMAN

After flowers

Count Nodes above 1st position white flowers = NAWF

SQUAREMAN

Before first flowers

Check squares down the plant

Days after planting — 30 40 50 60 70 80

For a cotton crop to follow the COTMAN target development curve, the crop should begin squaring 35 days after planting, and first flowers should appear about 25 days later, around 60 days after planting.

Physiological cutout is expected approximately 80 days after planting when the crop averages NAWF = 5.

The COTMAN system was developed with funding from Cotton Incorporated.

COTMAN **Data Collection**

Once per season you enter these data into the COTMAN program.

1. **Farm information** - total acres, harvest capacity, weather risk...

2. **Field information** - field acreage, variety, planting date, row spacing...

3. **Stand count** - the number of plants in 3 row feet across 24 consecutive rows at 4 locations per field.

4. **First fruiting node (FN)** - the average first fruiting node (first sympodial branch) on 10 plants at 4 locations in the field.

Use a T-stick to take stand counts.

Make determination of FN when squares consistently can be found across the field.

Sympodial branch

Monopodial branch

Cotyledons

FN = 5
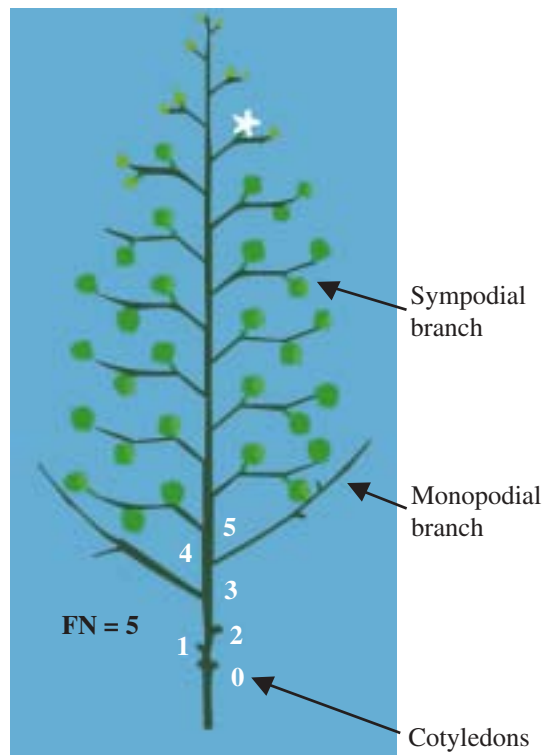
Count from the cotyledons (note "0") up to the first sympodial branch to determine FN.

COTMAN SQUAREMAN Data Collection

Weekly Data Collection

Begin collecting SQUAREMAN data when the crop starts squaring (you may wish to collect FN data at the same time you start collecting SQUAREMAN data). Repeat the following procedure in 4 different locations in each field:

1. Measure the average plant height.

2. From 5 consecutive plants, start at the first fully expanded true leaf in the terminal and check for the presence or absence of first position squares. Record a "1" if a square is present and enter a "0" if the square has shed.

3. Repeat steps 1 and 2 on the adjacent row.

Check for presence or absence of first position squares starting the top of the plant with the first fully expanded leaf.

Measure plant height from the soil to the terminal in inches — one measurement on both rows at each site.

Don't start checking for squares on this node because this leaf is not unfurled — its leaf tips are touching.

Check for presence or absence of 1st position squares starting at the 1st node with an unfurled leaf and continue down the plant.
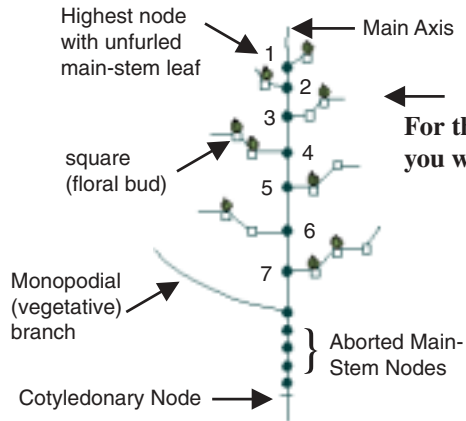
Deciding where to sample in the field
- Choose the 4 sample sites where plant growth is typical for the field.
- Try to sample the same general areas in the same order every week.
- If the field is irrigated, always stay inside the irrigated area.
- It is a good idea to ask the grower where to make your counts in the fields because he will know the fields best.

COTMAN SQUAREMAN Mapper Tips

1. Start at the top of the plant at the first fully expanded true leaf — its tips should not be touching.

2. Don't damage the terminal area digging around for small squares.

3. If the first square is dark or obviously damaged, record a "0." If the square looks normal, record a "1."

4. Check the remaining first position squares down the plant until you reach a monopodial branch.
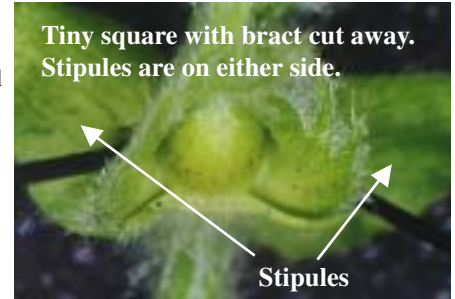
5. Move to the next plant and begin again.

Follow the Stipule Rule: Stipules are small leaves on each side of a square. It will save time looking for the square if you train your eye to look precisely between the stipules. The stipules are pointing where you need to look.

Tiny square with bract cut away. Stipules are on either side.

Stipules

A pair of stipules on a sympodial branch will have between them either 1) a square or boll or 2) a scar where a square or boll has been shed.

Highest node with unfurled main-stem leaf

Main Axis

square (floral bud)

For this plant you would record

Monopodial (vegetative) branch

Aborted Main-Stem Nodes

Cotyledonary Node

First Position Square on Node	Record on Psion Workabout
1	1
2	1
3	0
4	1
5	1
6	0
7	1

1 = square present
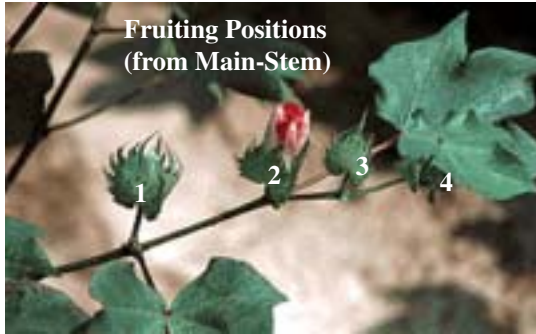2 = boll present
0 = square or boll shed

COTMAN BOLLMAN Data Collection

When first flowers appear, start collecting NAWF data. Repeat the following procedure at 4 locations per field:

1. Count the number of nodes **above** the uppermost first position white flower (NAWF) from 5 plants in one row and 5 plants from an adjacent row. When the crop is just starting to flower, you may have to "swim" down the row to find 5 plants with white flowers.

2. When counting, stop at the uppermost unfurled leaf in the terminal. **Do not count a leaf that is not yet unfurled.**

3. Stop collecting BOLLMAN data when the field averages a NAWF value of 5.

NAWF = Nodes Above White Flower

Count nodes up from first position white flowers

The NAWF count for this plant is 5.

5
4
3
2
1
0

Fruiting Positions (from Main-Stem)

1   2   3   4

Select only plants with a **WHITE** flower on the **FIRST** fruiting position. On this branch there is a pink flower on the second position, so it would not be selected.
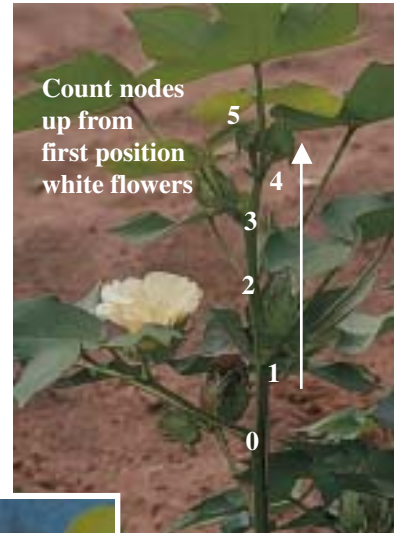
Do not count this node. This leaf is not yet unfurled. Its leaf tips are touching.

This leaf is unfurled, so this node would be the last node counted when determining NAWF.

COTMAN Plant Structure

Plant mappers must understand plant structure.

A B C D

(A) Cotyledon leaves, (B) first true leaf, (C) and
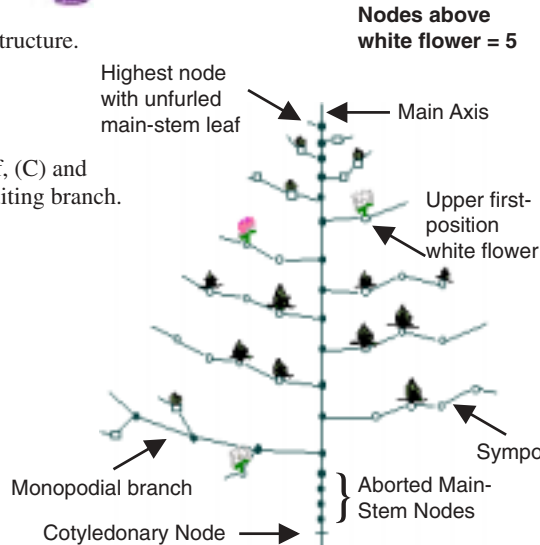(D) true leaves from main-stem and fruiting branch.

Cotyledons are the first leaves to
emerge, and they are the only leaves
side-by-side on the main-stem.

First true leaf
(heart-shaped)

True leaves
(lobed leaves)

Cotyledon: bean-shaped and lies
side-by-side on the main-stem.

**Nodes above
white flower = 5**

Highest node
with unfurled
main-stem leaf

Main Axis

Upper first-
position
white flower

Monopodial branch

Sympodial branch

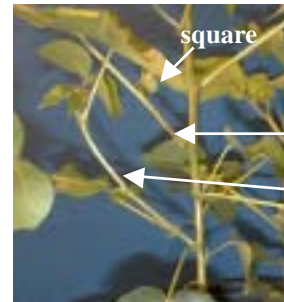Cotyledonary Node

Aborted Main-
Stem Nodes

Main Stem Branches

1. After a sympodial branch
   (fruiting branch) produces a
   square it will begin to grow
   again and will zig-zag.

2. A monopodial branch
   (vegetative branch) is a
   continuous limb.

3. Cotyledons lie side-by-side
   on the main-stem. All other
   branches rotate up the plant.

square

Sympodial branch (zig-zag)

Monopodial branches look
likeindividual plants growing
from the main-stem, and they
can eventually set fruit.

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