

OVERVIEW AND UPDATE OF THE COTMAN™ CROP MONITORING SYSTEM

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Abstract

COTMAN is a crop management system based on in-season plant monitoring. The COTMAN computer software makes it easy to enter data and generate the reports used to make management decisions. It is divided into two parts. SQUAREMAN is used to monitor crop development up to time of first flowers. Reports provide feedback on square retention and plant stress. BOLLMAN is used when the crop is flowering to monitor boll-loading stress and to assist with end-of-season crop termination decisions.

Why Use COTMAN as a Management Tool?

Better Information Means Better Decision-Making

Each field has its own report.

Square shed information alerts growers to pest problems and augments insect scouting reports.

A quick comparison to the Target Development Curve tells if crop pace is too slow, too fast or right on track for an early crop and high yields (Figure 1).

Crop maturity rankings are useful in sequencing fields for harvest operations.

Eliminates End-of-Season Guess-Work

When bolls are safe from fruit-feeding insects.

When to defoliate for optimum yields and quality.

COTMAN is Easy to Use

At first square, plant stand counts and average first fruiting node are recorded.

From first square to first flower, ten plants at each of four sites per field are monitored weekly for the presence or absence of first-position squares (Figure 2).

From first flower until cutout, nodes-above-white-flower (NAWF) counts are recorded weekly from ten plants at each of four sites per field (Figure 3).

COTMAN Provides Timely Information

Square retention.

Plant and fruit numbers per acre.

Graph of crop developmental pace.

Flowering date of the last effective boll population (cutout).

Dates when bolls are safe from damage by fruit-feeding insects -- bollworms, tobacco budworms, and boll weevils dates when crop is ready for defoliation.

COTMAN is Profitable

The cost of full-season crop monitoring is more than offset by savings on late-season insecticide.

Timely feedback on crop developmental pace and stress gives growers potential to take prompt corrective actions.

Integrate management systems.

Meet objectives of overall profitability.

COTMAN has been Tested from Texas to Virginia

Crop termination rules for insecticide and defoliation have been proven on commercial farms.

NAWF-based insecticide termination is part of Cooperative Extension Service Recommendations in several states.

COTMAN has a Strong Research Base

Researchers are entomologists, plant physiologists, plant breeders, weed scientists, agricultural engineers and agricultural economists.

Since 1994, when the software was first tested on-farm, COTMAN has been continually refined and updated with the latest research results. Irrigation termination decision rules currently are under development, as are insecticide termination rules for plant bugs, stink bugs, beet armyworms and fall armyworms.

COTMAN Computer Software

The software requires Windows® 95 or later operating system and a minimum of 5MB free hard drive space. Data collection software is available for:

- Psion Workabout handheld
- Palm OS-based handhelds (programs provided by Bayer CropScience to interface with ScoutLink™)
- Windows Pocket PC OS-based handhelds (under development).

New software, under development, improves data handling, archives data in a relational database, provides reports with interactive hyperlinks and allows reports to be saved. COTMAN is distributed to U.S. growers at minimal or no charge. An order form is available at <http://www.uark.edu/depts/cotman>. COTMAN was developed by the University of Arkansas Division of Agriculture with support from Cotton Incorporated.

Target Development Curve

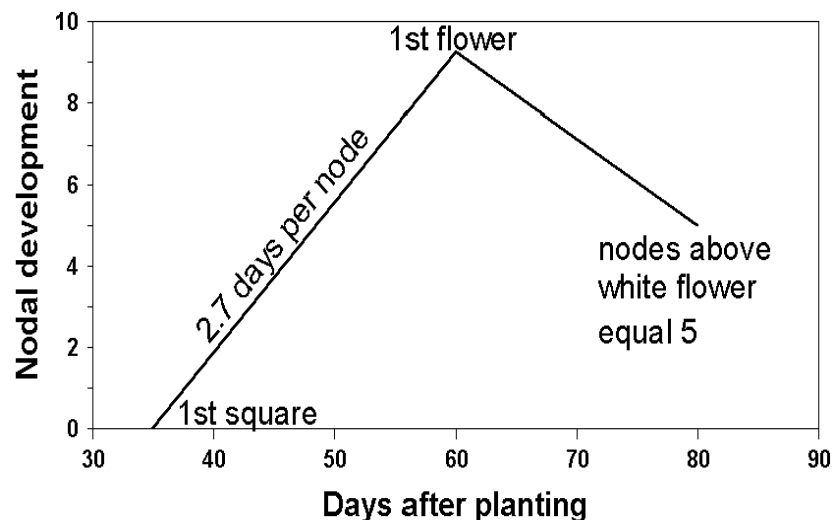


Figure 1. COTMAN Target Development Curve for Comparison to Actual Crop Development Pace

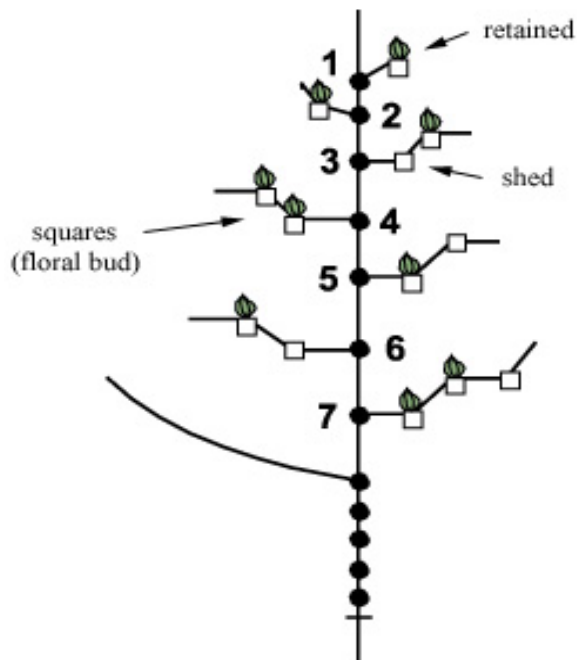


Figure 2. Mapping of First Position Squares

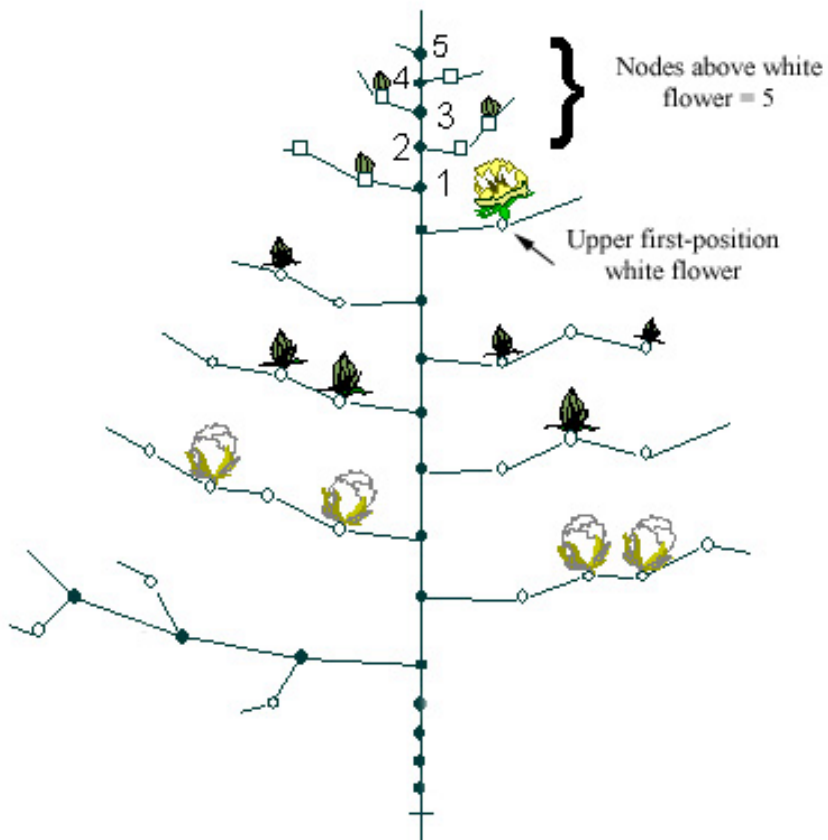


Figure 3. Nodes Above White Flower Counts