

Field Check

A project of the Cotton Pest Management Alliance

University of California-Cooperative Extension and California Cotton Growers Association participating

August 1999

☑ Calendar

Aug. 24

Roundup Ready alternative tillage demonstration project - 8:30 a.m., Newhall Ranch (Monsanto, UCCE & USDA), Ron Vargas: (559) 675-7879, ext. 212

Sept. 21

Field Day, 9 a.m., Shafter Research & Extension Center, Bob Hutmacher: (661) 746-8020

Sept. 22

Cotton Field Day, 10:30 a.m., San Juan Ranch, Dos Palos, Bill Weir: (209) 385-7403

Sept. 24

Field Day, 9 a.m., West Side Research & Extension Center, Dan Munk: (559) 456-7561

☑ Insect Hotline

1 (800) 880-0981

SJV pest situation updated weekly by IPM Specialist Pete Goodell

Why does fruit shed in August? A look at carbohydrate relations

Just because it's August and squares are dropping from your cotton plants, there's no need to panic or assume there's a lygus problem, says IPM specialist Dr. Pete Goodell.

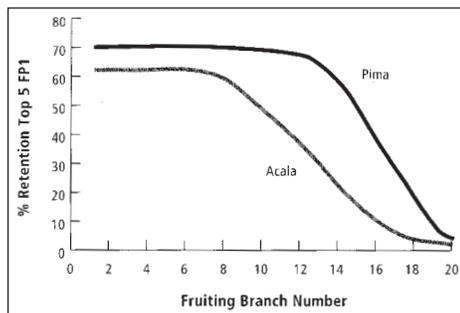
"Late-season fruit shedding is a normal, natural part of your cotton's development," Goodell says.

Here's why: Prior to flowering, the carbohydrate and nutrient requirements for the developing fruit structure are small, so photosynthate and nutrient (principally nitrogen) availability is less likely to be limited or lead to square losses. In fact, insects are the most common cause of square shedding at this stage.

During flowering and into boll-filling, however, other processes occur that begin to take their toll on later squares and small-boll retention. According to Dr. Bob Hutmacher, UCCE Extension agronomist, these include limitations in carbohydrate production or nitrogen associated with some types of plant stress. Other processes include competition for limited carbohydrates and nitrogen when good early fruit retention occurs.

Early in boll production (in the first six or seven fruiting branches), average retention of first-position bolls can be quite high in the absence of significant pest pressure. Even early in development, retention on second and third fruiting positions will be only about one-half to two-thirds that of first-position fruit on each fruiting branch.

Carbohydrate limitations. But as fruiting branch development continues, there's more competition for limited carbohydrate and nutrient (N, K) supplies. This leads to a reduced number of bolls that typically can be matured and harvested at about fruit branch 8 and beyond. Stress impacts the ability of the plant to continue carbohydrate and nutrient uptake for developing fruit and vegetative growth.



Percentage of the top five FP-1 positions that produce harvestable bolls, as related to FB number.

Stress is more likely to produce severe competition for the limited carbohydrates and nutrients needed to mature the seed and lint. A large boll load in the lower and middle part of the plant canopy thus makes it even harder to sustain high retention rates for late-season bolls. Under these conditions, it's typical to see fruit retention fall to less than 40 percent (FP-1 sites) and less than 20 percent (FP-2 sites) in fruiting branch 10 and beyond in Acala varieties.

"In short, remember that square-boll shed at this time in the season is more or less expected and will likely occur even when insect pressure is light," Goodell says. "Lygus becomes less of a threat, and higher populations should be tolerated." □

— Contact your local farm advisor for more information



Late-season fruit shedding is a natural process in cotton.

State grants funds to broaden IPM strategies in cotton

With this issue of *Field Check*, you're holding the first of a series of communications designed to deliver timely, accurate information that can educate you on the use of Integrated Pest Management (IPM) as a viable, effective tool in SJV cotton production. It's all part of the Cotton Pest Management Alliance (PMA).

Made possible by a \$100,000 grant this year from California's Dept. of Pesticide Regulations (DPR), the PMA teams the California Cotton Growers Association, the University of California-Cooperative Extension and DPR. The goal? To reduce the use of high-risk pesticides in cotton. The PMA seeks to foster further field testing and implementation of insect and weed management and alternative harvest-aid programs in cotton.

☑ In addition to *Field Check* (inserted monthly in *Cotton Chronicles*), we'll be faxing and e-mailing timely crop management facts twice a month in *Quick Check*. To receive *Quick Check* free of charge, call Calif. Cotton Growers at (559) 252-0684. □

Preparing the new California Uplands for defoliation

Although the "California Upland" cottons are new to the SJV, Arizona growers have considerable experience in managing these varieties. During a series of SJV meetings in late July, Steve Husman, area Extension agent for the University of Arizona, offered these key points on managing the new upland varieties:

1) Proper agronomic practices are important in preparing the crop for defoliation. Weather conditions, primarily temperature, also strongly influence the efficacy of chemicals for defoliation. Important tips:

- Watch the plant's water status. Make sure cotton is not too stressed, since herbicide activity of most defoliants requires an active leaf for good chemical penetration and achieving desired effects;

- Avoid excess honeydew from insects, which reduces chemical efficacy;

- Aim for applications during favorable weather: more than 80°F daytimes if possible for 7–10 days after application.

2) Arizona and California methods are similar for estimating cutout, proper date of final irrigation and identification of the last bolls to carry to maturity.

3) Arizona's industry standard for a single defoliation is becoming the chemical "Ginstar," used at the 6–12 oz/acre rate. Arizona research indicates that predicted temperatures for the 7–10 days after a planned defoliation can be used to guide Ginstar's application rate.

4) To minimize reductions in lint quality and grade, avoid too-early applications of pre-treatments or defoliants.

5) Other chemicals have generally worked better when used in combinations, as in California tests reported by UCCE farm advisors. To date, their experiences suggest that defoliation of most California Uplands should be easier than, or at least comparable to, Acala. □

Managing late-season irrigation

Proper late-season irrigation management is one of the most cost-effective management tools you have at your disposal but it's not always an easy call, says Dr. Bob Hutmacher, Extension cotton agronomist.

"It's important to avoid early irrigation cutoff that places the plant under excessive stress and limits complete development of mid- and late-season bolls that have a realistic chance to mature," Hutmacher says.

Studies in many parts of the Cotton Belt indicate that proper timing of the last irrigation helps avoid poor defoliation and excessive regrowth. A poorly timed last irrigation can result in multiple, higher-cost applications and reduced lint quality as well. But how much stress is enough — or too much?

"Recent irrigation studies by UCCE farm advisor Dan Munk and others have shown more effective defoliation, with fewer unopened bolls, when leaf water potentials reach -20 to -25 bars during the last two weeks before defoliant applications," Hutmacher says.

A key approach. The most important factors influencing the proper timing of the final irrigation are the effective rooting depth and soil water-holding capacity after the last irrigation. Using long-term average estimates of crop ET (evapotranspiration) and weather conditions, you can make estimates of how long available soil water will hold out for each soil type. "Of course, large deviations in crop maturity — for example, how late it is or prevailing weather — will impact the accuracy of your estimate," Hutmacher says.

The California Cotton manager (CCM) program for palmtop and personal computers (*see Web site address above right*) has a "Final Irrigation" module useful in estimating proper final irrigation dates. It uses soil water-holding capacity, rooting depth, nodes above white flower data, and long-term data on ET to estimate final irrigation. □

Monitoring for late-season aphids

Cotton aphids can hit hard and fast, and cause big losses. Yet, be aware that, with an IPM approach, thresholds for treating aphids vary with cotton plant's growth stage, says Larry Godfrey, Extension entomologist.

During the squaring and boll-filling stage, cotton aphids can substantially reduce yield and need to be controlled. "A good guideline to start insecticidal treatment at this stage is when aphids number 50–75 per leaf," Godfrey says.

However, when cotton has reached the boll crack stage, aphids can contaminate open bolls and lint with sticky honeydew. Then, thresholds are low. Treatments should be initiated at 10–15 aphids per leaf.

Sampling at both stages should be done on the 5th main stem node leaf. All aphid — adults and nymphs — should be counted.

Remember to maximize use of biological and cultural controls, treat only when aphids reach the action threshold, use the most selective insecticides first so that natural enemy populations can build and be maintained, and save the most disruptive, broad-spectrum insecticides for the season's end. □

— Contact your local farm advisor for more information



Helpful Web sites

www.ipm.ucdavis.edu
California Cotton Manager Computer (CCM) Program - for help in heat-unit calculations, late season irrigation management, replanting decisions and plant mapping. Look in the "models" section

<http://agronomy.ucdavis.edu/plant>
Plant Mapping Programs - "Cotton Plant Mapper" (CPM) and "Cotton Pro"

Useful Publications

Cotton Production Manual
From the University of California, Division of Agriculture and Natural Resources, Publication 3352. Available at your local Cooperative Extension office, \$55.00.

FieldCheck

is published monthly by the Cotton Pest Management Alliance with funds from California's Dept. of Pesticide Regulations. Administrator: California Cotton Growers Association, 1941 N. Gateway Blvd. #101 Fresno CA 93727
Phone: (559) 252-0684
Fax: (559) 252-0551
E-mail: cagingrow@aol.com