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Which Bolls at the top of the Plant Should be Saved?
Sandy Stewart, Ph.D.

Due to planting date, maturity, rains in July, plant bug pressure, or some combination of all four, many Louisiana cotton fields have low boll retention on the bottom half of the plant. In some situations, the lowest node on which a harvestable boll can be found is as high as node 9 or 10. In isolated situations, this may even be higher on the plant. The causes of such poor retention can be debated on a field by field basis, but the key issue is how to manage these situations now. In fields with low, or non-existent early boll retention the majority of the harvested crop will be set in August. This is not entirely new to Louisiana producers, as experience in past years with a full season variety like DP 555 BG/RR has shown that impressive yields can be obtained when favorable conditions for flowering and retention prevail in August.

Aside from insect management in this late cotton, the most pressing question should be what is the realistic last effective bloom date? Identifying the last boll on the plant that has a reasonable chance of being harvested can aid greatly in determining what kind of insecticide costs are warranted, irrigation needs, and begin the process of scheduling defoliation and harvest.

Louisiana lies at the southern part of the cotton belt where adequate heat unit accumulation for boll development often persists through September. Therefore, the question of determining the last effective fruiting site can be approached in two ways.

Last Effective Bloom Date

The first way is by the calendar date. Due to declining heat unit accumulation for boll development, there reaches a point in time where newly formed flowers will never have enough time to develop into harvestable bolls. The exact date of that

occurrence in Louisiana, however, is not as straightforward as we would like it to be. Bolls that form at NAWF=5 generally take around 850 DD60s to mature. However, small bolls that form after NAWF=5 should take less time than 850 DD60s. The exact number is difficult to predict and dependent on boll load, water, and nutrient status of the plant.

The following table shows the average date needed to accumulate 700, 800, or 900 DD60s over a range of possible last effective bloom dates based on a five-year average (2002-2006) at St. Joseph, LA. If 700 DD60s are needed to mature the last boll, a difference in 10 days, from August 23 to September 1, results in a 24 day difference to reach boll maturity (Sept. 29 versus Oct. 23).

The last effective bloom date in Louisiana is a moving target from year to year. However, in my opinion August 27 should be considered the last possible date to realistically expect a bloom to mature into a harvestable boll. Based on a 5-year average and 800 DD60s needed for maturation, this would leave us with a mature boll on October 22. Allowing for defoliation, this would place harvest on Nov. 1. Exposing cotton to weather any longer than that in Louisiana is not worth the risk.

Average date needed to accumulate various levels of DD60s for boll maturation given an arbitrary last effective bloom date. Weather data based on 5-year average (2002-2006) at St. Joseph, LA.

Last Effective Bloom Date	Average Date Needed to Accumulate:		
	700 DD60s	800 DD60s	900 DD60s
Aug. 20	Sept. 24	Oct. 2	Oct. 11
Aug. 21	Sept. 25	Oct. 4	Oct. 15
Aug. 22	Sept. 27	Oct. 6	Oct. 20
Aug. 23	Sept. 29	Oct. 7	Oct. 23
Aug. 24	Oct. 1	Oct. 9	Oct. 25
Aug. 25	Oct. 3	Oct. 13	Oct. 28
Aug. 26	Oct. 4	Oct. 16	Oct. 31
Aug. 27	Oct. 6	Oct. 22	Nov. 4
Aug. 28	Oct. 8	Oct. 24	Nov. 8
Aug. 29	Oct. 12	Oct. 27	Nov. 13
Aug. 30	Oct. 14	Oct. 29	Nov. 20
Aug. 31	Oct. 17	Nov. 2	Nov. 27
Sept. 1	Oct. 28	Nov. 6	Dec. 5

Last Effective Fruiting Site

A second way to pinpoint the last effective fruiting site is to determine the number of fruiting branches over which the crop will be harvested. Based on plant mapping in Louisiana, 95% of the effective yield is harvested over a 12-14 node range on the plant. While there are some exceptions, it is remarkable how consistent this number is from year to year and across varieties.

Because we can realistically expect to harvest cotton over a 12-14 node range on the plant, finding the last effective fruiting site can be simplified. Starting at the bottom of the plant, identify the first fruiting branch with a first position boll that will be expected to make it into the picker basket. Count up 12 nodes. The square, flower, or boll at that site should contribute to yield in most years. This can be stretched to 14 nodes in some situations in which a significant fruiting gap occurs. Waiting on bolls younger than this identified last effective fruiting site exposes bottom bolls to unnecessary weathering, loss, and needlessly extends the period in which the crop must be protected.

This method has proven useful in timing defoliation in Louisiana (see *Journal of Cotton Science*, 2006, Vol. 10, p. 146-54). While not vastly different from other defoliation timing methods, the 12 node rule can remove the guesswork about which boll at the top of the plant is actually worth saving. The same principle can be applied in August when producers must determine the last effective fruiting site in managing late-season pests and irrigation. When used in conjunction with the calendar date, realistic determinations of the last effective fruiting site can help determine where resources should be devoted at the end of the growing season.

Dean Lee Research Station Row Crop Field Day – August 23.

The annual Dean Lee Research Station Row Crop Field Day will be held at the research station on US Hwy. 71 south of Alexandria on August 23. Registration will begin at 2:00 pm. A short program will precede loading trailers for the field tour at 3:00 pm. Following the field tour a social and meal will follow at 6:00 pm. Topics and speakers will include:

Soybean Desiccation for Harvest – *Dr. Jim Griffin, LSU AgCenter*

IPM Strategies for Feed Grains – *Dr. Roger Leonard, LSU AgCenter*

Statewide Feed Grain Situation and Update – *Dr. David Lanclos, LSU AgCenter*

Twin Row Cotton – *Dr. Trey Koger, Mississippi State University*

Late Season Cotton Insect Management – *Dr. Ralph Bagwell, LSU AgCenter*

New Roundup Ready Flex Cotton Varieties – *Dr. Sandy Stewart, LSU AgCenter*

Double-Cropped Cotton and Wheat – *Rob Ferguson, Dr. Sandy Stewart, and Donna Morgan, LSU AgCenter*

Weed Competition and Resistance Issues – *Dr. Donnie Miller, Roy Vidrine, Derek Scroggs, LSU AgCenter, and Dr. Larry Steckel, University of Tenn.*

Maturity Group V Soybean Stunting – *Dr. Steve Moore, LSU AgCenter*

Wheat Seed Availability and Planting Date – *Dr. Steve Harrison, LSU AgCenter*

Please make plans to attend. For questions and/or directions, call the LSU AgCenter's Central Region Office at 318-427-4424 or contact Dr. John Barnett at jbarnett@agcenter.lsu.edu.

Below is a list of contacts, both agents and specialists, in Louisiana cotton-producing parishes. They are ready and willing to assist you in any way they can.

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