LAST EFFECTIVE BLOOM DATE FOR COTTON IN GEORGIA

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Introduction

Cotton is Georgia's largest row crop with an average of 1.3 million acres being planted annually, and accounting for nearly $800 million in FarmGate Value. Most cotton is planted in the month of May in Georgia which allows cotton to fully mature prior to first frost. As growers increase acres or double crop cotton behind sweet corn or potatoes this planting window is being pushed later into the growing season. Delayed planting reduces the likelihood of the crop reaching full maturity. Cotton bolls require 850 DD60s to fully mature from a white bloom. Growers typically use a date between September 5 to 15 as the last effective bloom date depending on location. The objective of this study was to determine the last effective bloom date in five cotton producing counties.

Materials and Methods

This year County Agent's from across the cotton belt in Georgia selected late planting, June 1st or later, commercial cotton fields and once a week starting the first week of September and continuing into the first week of October for a total five weeks tagged white blooms. On the day the Agent tagged the blooms the selected a single row and tagged twenty-five white first position blooms for that week. One week later they moved over one row and did the same for the duration of the five weeks. Once the cotton was defoliated and ready to harvest. The Agent came back and hand harvested all tagged open bolls while noting if the tags positions where harvestable, missing, or unopened/unharvestable.

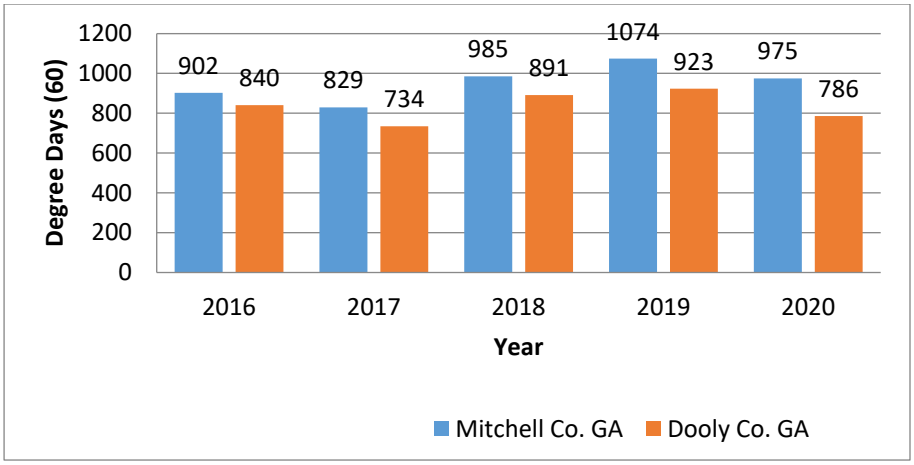

Figure 1. DD60s from September 1 thru November 30 in Mitchell and Dooly Counties Georgia (2016-2020).

Accumulated DD60s are typically higher in southern counties compared with more northern counties. In four of the five years, cotton accumulated greater than 850 DD60s which would fully mature positions which bloomed on that date. In only two of the past five years did blooms on September 1 acquire sufficient heat units to fully mature.

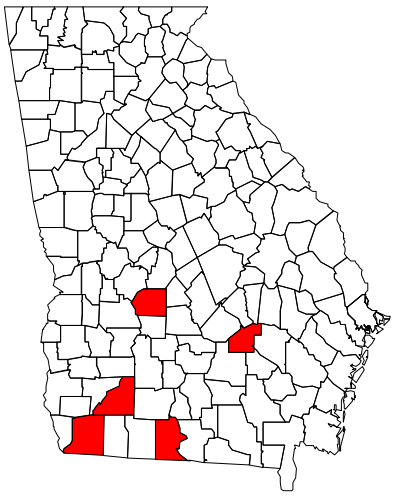

Figure 2. Counties bolls were tagged.

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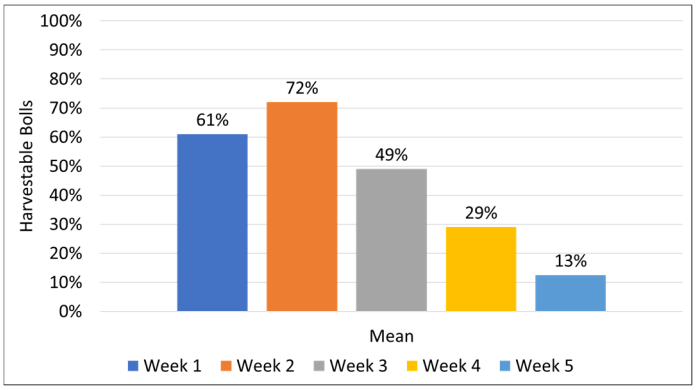

Figure 3. Mean percent harvestable bolls by week of bloom during September during 2020.

Harvestable bolls from blooms tagged during the three weeks of September were not significantly different. Percent harvestable bolls ranged from 49 to 72 percent which is acceptable retention rates. Blooms tagged during the fourth and fifth week of bloom were the lowest and ranged from 13 to 29 percent.

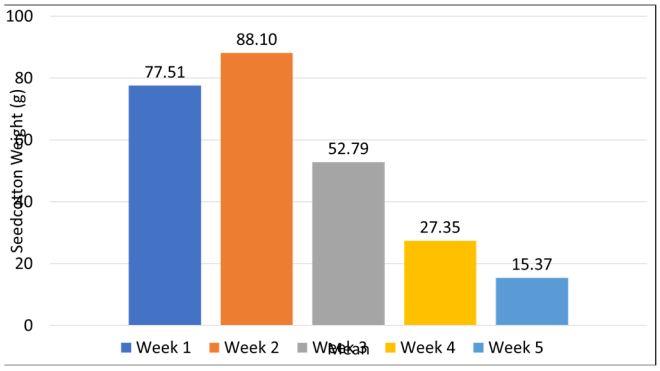

Figure 4. Mean seedcotton weight by week of bloom during September during 2020.

Blooms tagged during the two weeks of September produced the greatest total seedcotton weight; 77.51 g in week 1 and 88.10 g in week 2. Blooms tagged during the fourth and fifth week of bloom were the lowest and ranged from 15.37 g to 27.35 g. Blooms tagged the third week of bloom were intermediate and weighed 52.79 g.

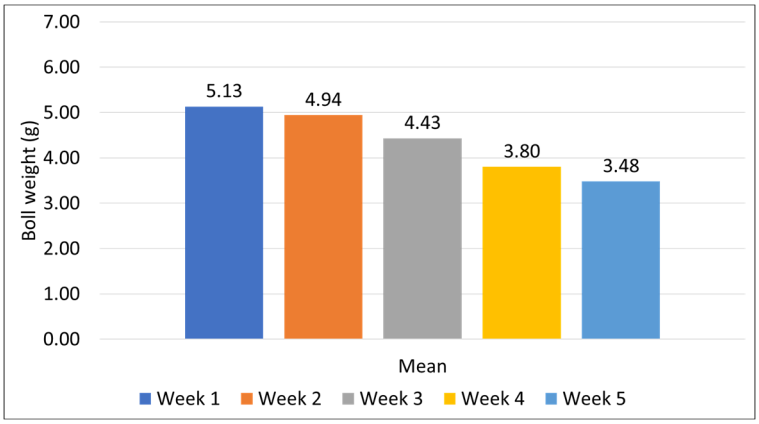

Figure 5. Mean boll weight by week of bloom during September during 2020.

Mean boll weights from blooms tagged during the three weeks of September were significantly greater when compared with blooms tagged during weeks four and five. There was a trend for boll weight to be reduced for blooms tagged later in September.

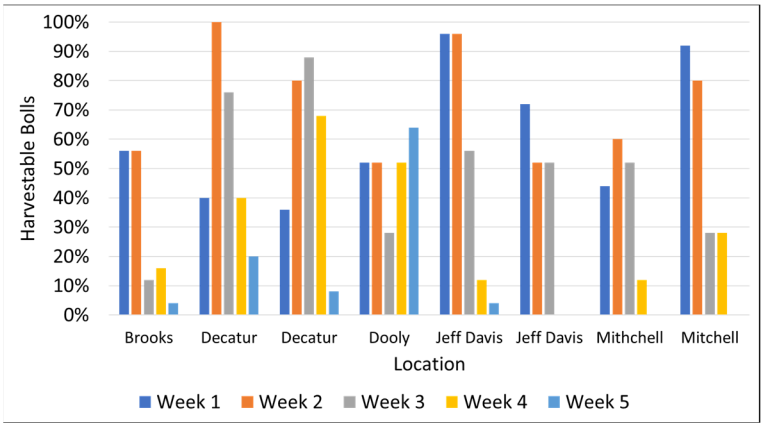

Figure 6. Percent harvestable bolls by location by week of bloom during September during 2020.

Substantial differences in harvestable bolls by week blooms were tagged were observed by location. These differences do not appear to be related to latitude solely. In general, bolls tagged during the first three weeks of September had acceptable retention rates. At many locations bolls tagged the fourth and fifth week of September had unacceptable retention. However, the most northern location had greater than 50 percent retention of blooms tagged during the fourth and fifth weeks of September.

Conclusion

In conclusion, the environmental conditions experienced during 2020 allowed blooms to mature through the third week of September. 2020 appeared to be a normal year and one year of data supports the hypothesis that positions which bloom between September 5 and 15 are likely to mature. Every field and year will be different, and additional data needs to be collected.