



Articles in this month's issue include:

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**Cotton Harvest Considerations: Make Sure to Calibrate the Yield Monitor (Simerjeet Virk, Extension Precision Ag Specialist and Wesley Porter, Extension Precision Ag and Irrigation Specialist):** Among all precision ag technologies, the yield monitor is one of the most valuable pieces of equipment that not only helps growers in evaluating different management decisions made throughout the year but also guides the crop management decisions for the upcoming year. Yield data from an uncalibrated yield monitor can lead to poor management decisions that can have a lasting impact on a grower's financial stability. Cotton harvest will be in full swing across the state before we realize it, therefore growers who plan to collect and utilize yield data this season must consider checking yield monitor components and performing calibration procedure to ensure quality data collection. A cotton yield monitoring system is comprised of a mass flow sensor, a ground speed sensor (can be substituted for GPS data in some cases) and a header height sensor along with a GPS receiver and an in-cab display. To minimize any downtime due to yield monitor issues during harvest, growers should consider doing a quick pre-harvest check on the yield monitoring components which includes verifying that the mass flow sensors are clean and free of any debris or obstructions, all systems (including sensors, GPS, and monitor) and wiring harnesses are connected and working correctly, and the header height sensor is installed and functioning as intended.

**Mass Flow Sensor Calibration:** A mass flow sensor is the most critical component of the yield monitoring system as it measures the flow of cotton through the air ducts while it is transported to the storage basket. Currently, there are two brands of cotton yield monitors (John Deere and Ag Leader) available for cotton pickers. Unfortunately, the Ag Leader yield monitor is no longer available for new purchase. These two systems differ in the way they sense cotton flow. The Ag Leader yield monitor uses optical sensors (Figure 1a) mounted in the ducts for sensing cotton flow whereas the John Deere yield monitor uses a microwave sensor (Figure 1b) mounted outside the air ducts.

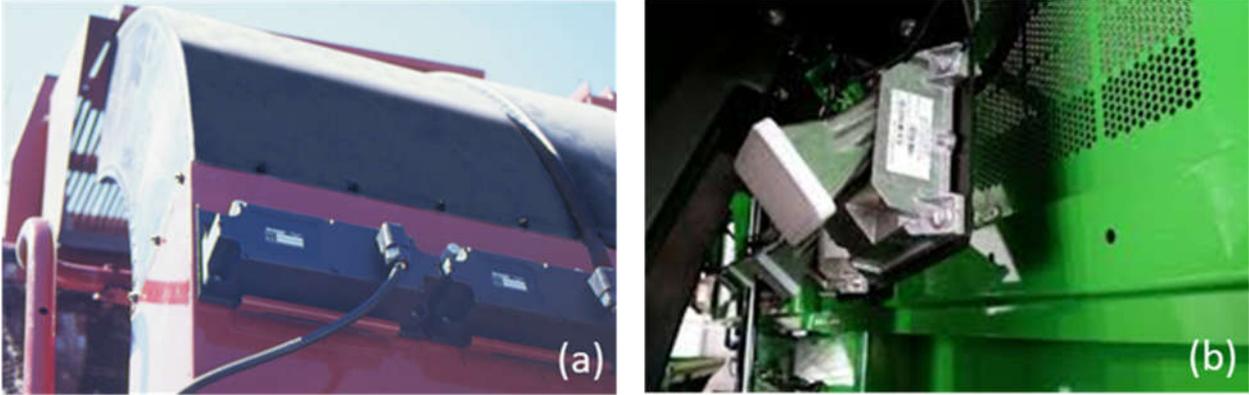


Figure 1. (a) Ag Leader optical yield monitor on a Case IH cotton picker, and (b) John Deere microwave sensor (white casings) on rear of the air ducts on a John Deere Cotton picker (Image Credits: Rebecca Barocco, UF/IFAS).

While the specific calibration procedure depends on the yield monitor manufacturer (see Figure 2 below as an example), the general calibration principle remains the same:

1. Operator starts the calibration or flags a load in the yield monitor display to be used for calibration prior to harvest
2. Operator harvests cotton for a certain distance (anywhere from  $\frac{1}{4}$  to  $\frac{3}{4}$  basket of cotton) or until a full round module is created
3. Harvested cotton is weighed using a boll buggy equipped with scales or truck scales (usually for round modules)
4. Actual cotton weight is entered into the calibration screen on the yield monitor display
5. Display software adjusts the calibration curve or factor based on difference between the mass flow sensor reading and actual weight.

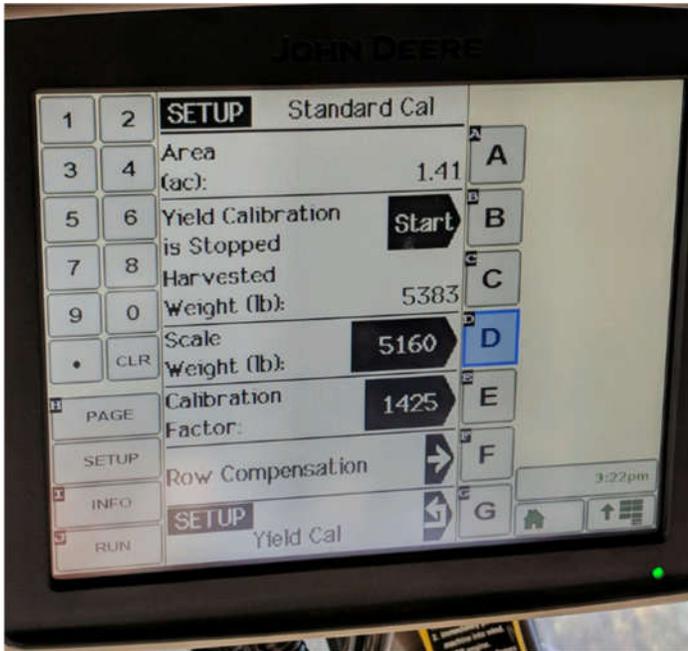


Figure 2. Calibration screen on a John Deere GS3 2630 display showing harvested area, cotton weight, scale weight and calibration factor during yield monitor calibration on a John Deere CP690 cotton picker.

Depending on the manufacturer, this calibration procedure can require harvesting three to five different harvest loads and entering each load weight either separately or all together into the display at the end. Therefore, it is critical to follow the calibration procedure specific to the display and yield monitor manufacturer as outlined in the operator’s manual. It is also important to note that any significant change in crop or field conditions (variety, moisture, etc.) during the harvest season may require additional calibrations to be performed in order to maintain the yield data accuracy. Growers should also consider checking the yield monitor components as well as accuracy of yield data regularly throughout the season by performing additional checks as needed.

Wishing everyone a safe and smooth harvest!

**Cotton Market React to the Hurricane Season (Yangxuan Liu, Assistant Professor, Ag Economist):**

Hurricane Laura made landfall in Cameron, Louisiana, on Thursday, August 27, as a Category 4 storm, near the Texas border. Cotton December futures rallied for a week after the Hurricane, as the market was anticipating the possible damages on cotton production. Producers in Louisiana and the east side of Texas were concerned with the potential impact by the Hurricane for boll lock and boll rot. According to the NASS Crop Progress report on August 30, cotton bolls opening had reached 61 percent in Louisiana.

Indicators of the U.S. economy start to show a slow recovery after reopening. At the worst time during the lockdown, real GDP in the U.S. decreased at an annual rate of 5% in the first quarter of 2020 and 31.7% in the second quarter of 2020 (<https://fred.stlouisfed.org/series/A191RL1Q225SBEA>). The unemployment rate in the U.S. has reached its highest level since 1929, with a peak of 14.7% in April during the COVID-19 lockdown. After that, the unemployment rate starts to drop each month slowly. The most recent unemployment rate is at 8.4% in August, indicating that the labor market has improved since the reopening of the economy (<https://fred.stlouisfed.org/series/UNRATE>). Retail sales in clothing and clothing accessories in the U.S. also started to recover, and it is reported at \$17.7 billion in July, which is \$14.7 billion higher than the lowest level back in April (<https://fred.stlouisfed.org/series/RSCCAS>). The stock market started off September on a high note with the S&P 500 and the Nasdaq Composite both hitting new records. Usually, when the stock market performs well, we also see a rising in cotton prices. However, we need to be aware of the possibilities of another round of stock selloff as the Tech stocks slide recently since the Friday before the Labor Day. The tech stocks have been the engine of the recent stock market recovery during pandemics.

For the new crop, world cotton production in 2020 is forecast at 118 million bales, decreased from 123 billion bales in 2019. Global cotton mill use is forecast at 113 million bales in 2020, increased from 102 million bales from 2019, but still significantly lower than 2017 and 2018 levels. The world ending stocks for 2020 are projected at the second-highest level for the past decade at 105 million bales. Especially, stocks outside of China are projected at the highest level for the past decade at 64 million bales. This increase in ending stocks outside of China creates further downward pressure on global cotton prices.

In terms of U.S. cotton, for the past three years, production has been outpacing demand, which resulted in the highest ending stocks for the past decade at 7.2 million bales for 2020. Exports for 2020 are currently forecasted at 15 million bales. The U.S. dollar weakened since March of this year when the pandemic worsens in the U.S, and the Fed eased the monetary policy with low interest rate to stimulate the economy. This weakening of the U.S. dollar supports U.S. cotton exports as the relative price of U.S cotton falls. On average, over 80% of cotton produced in the U.S. enters into the global market.

The decline of global cotton demand, trade uncertainty, and economic recession due to Covid-19, all of these factors combined create downward pressure for U.S. cotton prices. Whether the recent rally of cotton prices will last depend on the aftermath of the damages caused by Hurricane Laura. We are not sure how long the pandemic's negative impact will continue and whether there will be a second wave pushing the U.S. economy into another round of decline. USDA is not very optimistic about the prices for the 2020 crop. The seasonal average farm price is projected at 59 cents per pound in 2020 in the August report by USDA. In 2019 it was 59.5 cents per pound, and in 2018 it was 70.3 cents per pound. New crop December futures at 64.99 cents per pound on September 7, 2020.

**Finalizing Cotton Irrigation and Cotton Irrigation Termination Decisions (David Hall, Extension Water Educator, Cale Cloud, Extension Water Agent, and Wesley Porter, Extension Precision Ag and Irrigation Specialist):** Unlike during July, the environmental conditions across the state have become very wet and rainy with high humidity. As we approach the end of the growing season we are around 12 to 16 weeks after planting at the beginning of September based on a May 1 to June 1 planting. On average, we will be around 14 to 18 weeks after planting throughout the month of September. This will put our water usage just past peak and beginning to decline. UGA Extension cotton irrigation scheduling guidelines, like all other guides, must be used in conjunction with field and atmospheric conditions. That means boots on the ground or moisture sensors to assist you in determining available moisture in the soil. September is historically dry with low humidity leading to soils drying out faster. Although cotton plant moisture uptake is small, there still is a need for some moisture in the soil to add in finishing out those last harvestable bolls.

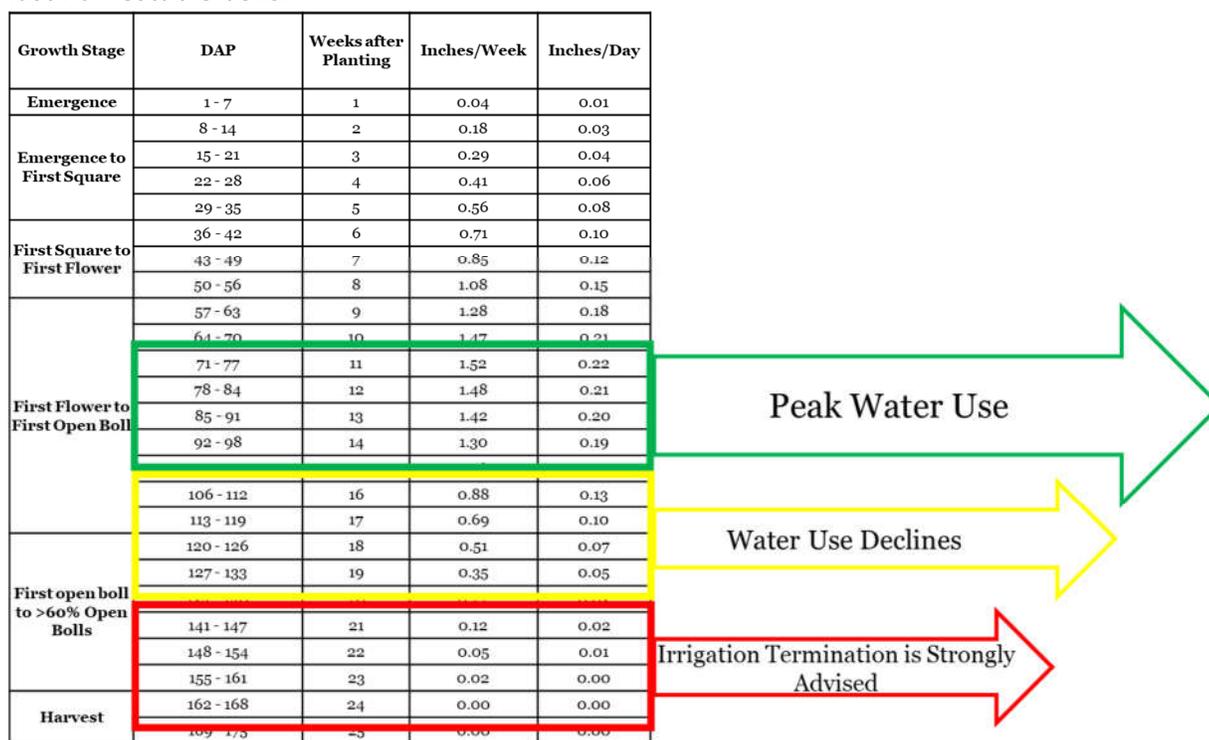


Figure 1. Seasonal cotton water usage with peak, decline and irrigation termination highlighted.

As water use declines, it is necessary to closely monitor your fields for cotton bolls that are beginning to open. UGA’s official irrigation termination recommendation for cotton is at an average of 10% open boll across a field. 10 percent open is not a high number of bolls that are open to start considering irrigation termination. A plant with 12 harvestable bolls means you need to be looking at the available soil

moisture if 1.2 bolls are open. September 2019 was abnormally hot and dry. Bolls were beginning to open but our available water “banked” in the soil was depleted. Due to dry soils, hot temps and long term dry weather forecasts, one last irrigation event(s) was needed to help finish the crop. The low humidity and sunny conditions helped to prevent open bolls from being damaged. If you remember last fall we had very little boll rot last year, this year if you follow Dr. Kemerait’s daily disease update we are currently facing up to four different types of boll rot in 2020 (seems typical for 2020 right??).

Currently, we are totally 180 degrees from last year. At the time of this writing, we just dodged bullets from two hurricanes while our soils, especially in Southwest Georgia, are saturated. As we continue to receive rainfall and have high humidity environments, boll rot is a major issue occurring across this area now. This time of season extending leaf wetness period is going to make disease issues worse on both cotton and peanuts, so do everything you can to reduce these periods of wetness. Recently we’ve had high instances of heavy dew every morning keeping this plants wet, so don’t make the problem worse by adding irrigation when it is not needed.

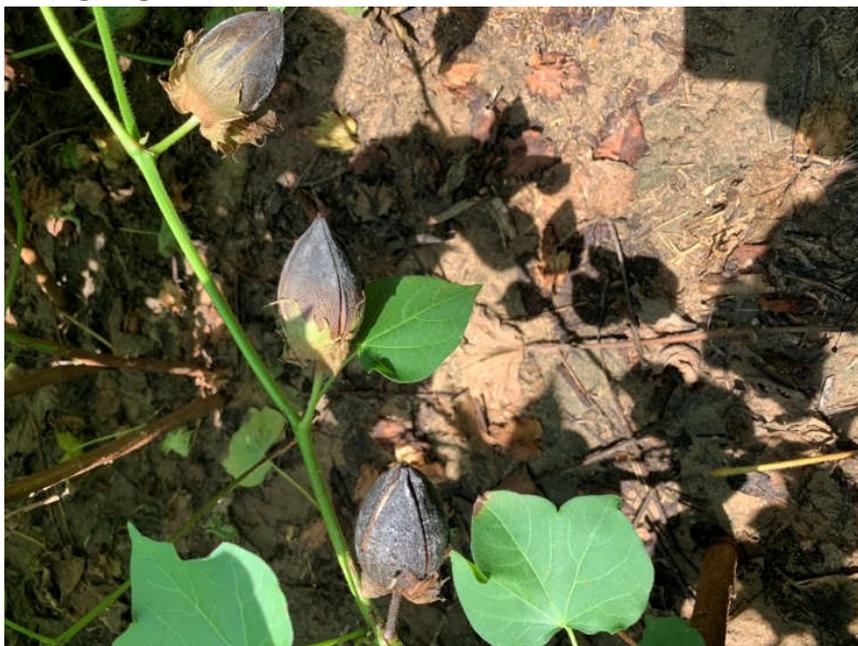


Figure 2. Picture courtesy of Dr. Bob Kemerait

Mother Nature cannot be controlled but your irrigation applications can be. Two weeks from now we could be very dry, which would be very good for reducing new boll rot instances. The main point for irrigation termination on cotton is upon reaching that 10% open boll stage, do not over irrigate and exacerbate more boll rot, observe the current and long term weather forecast, know your soil moisture content and use good judgement on terminating irrigation. Good moisture in the soil and 10% open bolls means the end of another irrigation cotton season!

Unfortunately, a good many acres have been affected by boll rot, and it occurs on our most valuable bolls in the lower canopy. An updated boll positioning value has been produced by Jared Whitaker showing the importance of those lower and first position bolls.

Fruiting Location	Value
1 <sup>st</sup> Positions	72%
2 <sup>nd</sup> Positions	18%
3 <sup>rd</sup> Positions	5%
Vegetative	5%
Nodes ≤10	60%
Nodes 11-15	31%
Nodes ≥ 16	9%

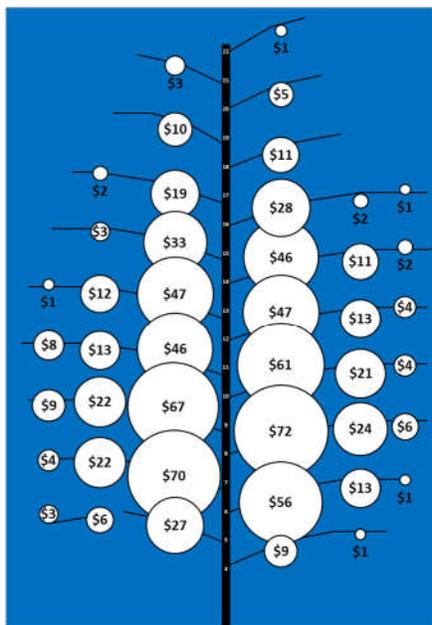


Figure 3. Boll position and value of boll position along the cotton plant, courtesy of Jared Whitaker.

This new value tree really emphasizes the importance of first setting those high dollar bolls early in the season with proper management. Nearing the end of the growing season, overwatering and irrigating your crop with a higher than 10% open boll in an effort to make young upper position low value bolls open in the top will lead to losing or damaging your most valuable bolls and reducing yield and profitability. Not to mention, those young bolls probably will not mature enough to be harvested.

**Terminating Insecticide Applications (Phillip Roberts, Extension Entomologist):** The decision to terminate insect controls can be challenging in some fields but a few basic considerations will assist in that decision. When evaluating a field, a grower must first identify the last boll population which will significantly contribute to yield (bolls which you plan to harvest). In some situations, the last population of bolls which you will harvest is easy to see (i.e. cotton which is loaded and cutout). In others, such as late planted cotton, the last population of bolls you will harvest will be determined by weather factors (the last bloom you expect to open and harvest based on heat unit accumulation). Once the last boll

population is determined the boll development or approximate boll age should be estimated. Depending on the insect pest, bolls are relatively safe from attack at varying stages of boll development.

The table below list approximate boll age in days which bolls should be protected for selected insect pests. Cooler temperatures will slow plant development and subsequent boll age values may increase in such environments. It is assumed that the field is relatively insect pest free when the decision to terminate insecticide applications for a pest is made.

<b>Insect Pest(s)</b>	<b>Approx. Boll Age (days)</b>
Corn Earworm Tobacco Budworm	18-20 bolls fully sized
Stink Bugs	25
Fall Armyworm	bolls near maturity
Foliage Feeders soybean looper beet armyworm southern armyworm	bolls mature
Sucking Insects whiteflies aphids	harvest (honeydew accumulation on lint)

**Important Dates:**

*Georgia Cotton Commission Annual Meeting and UGA Cotton Production Workshop – January 2021*