

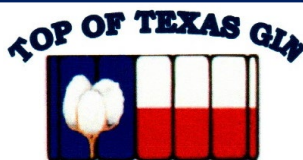


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# Cotton Insights Newsletter

A service provided by Windstar, Inc. affiliated gins.

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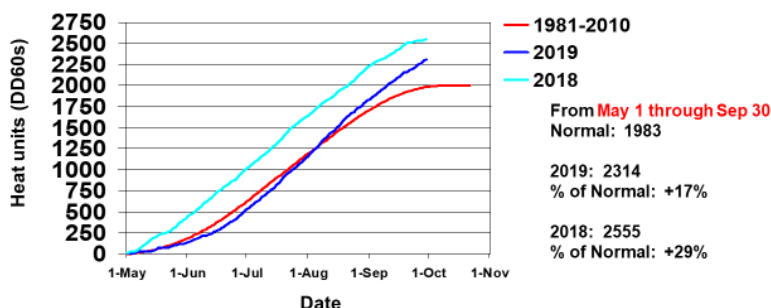
October 2, 2019

## Crop Update

Back in May and early June, we had a lot of concerns about where the year was headed. The month of September has been phenomenal for cotton maturity if moisture was available. At Amarillo, the only September rainfall came on the 19<sup>th</sup> through the 21<sup>st</sup>. The total amount was 1.10 inches, about 0.82 inches below normal for the month. So, the dry conditions remained. A rain event on October 1 resulted in 2.08 inches and provided some relief. Temperature-wise the late summer and early fall have been remarkable. This can be seen in the graphs below. Total seasonal heat units have now surpassed 2300, which is well above the 2000 mark for the 30-year normal. These conditions have resulted in good to excellent fiber maturity in irrigated cotton fields. However, the impact on the dryland from the high temperatures and generally low rainfall was very negative.

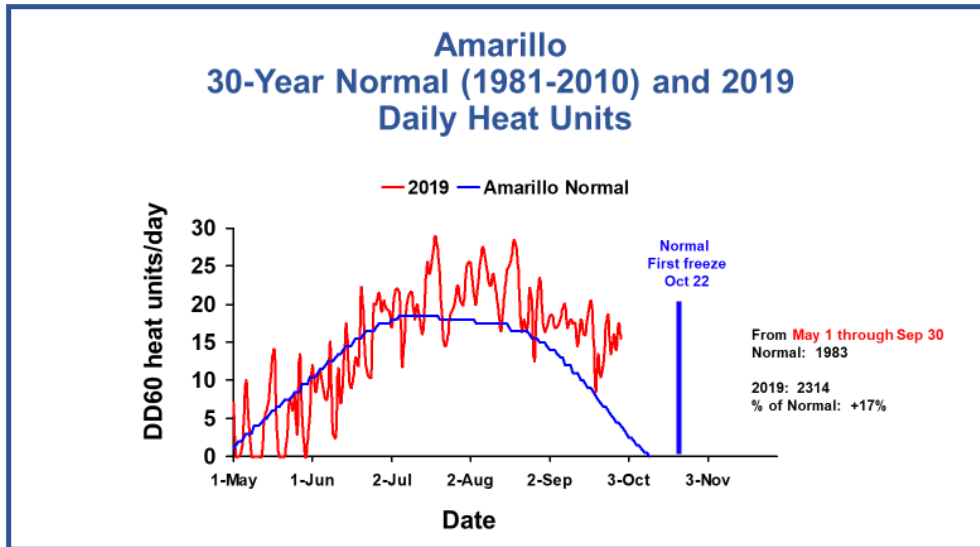
### Amarillo 30-Yr Normal (1981-2010) vs. 2018 and 2019

### Cotton Heat Unit Accumulation for May 1 Through September 30

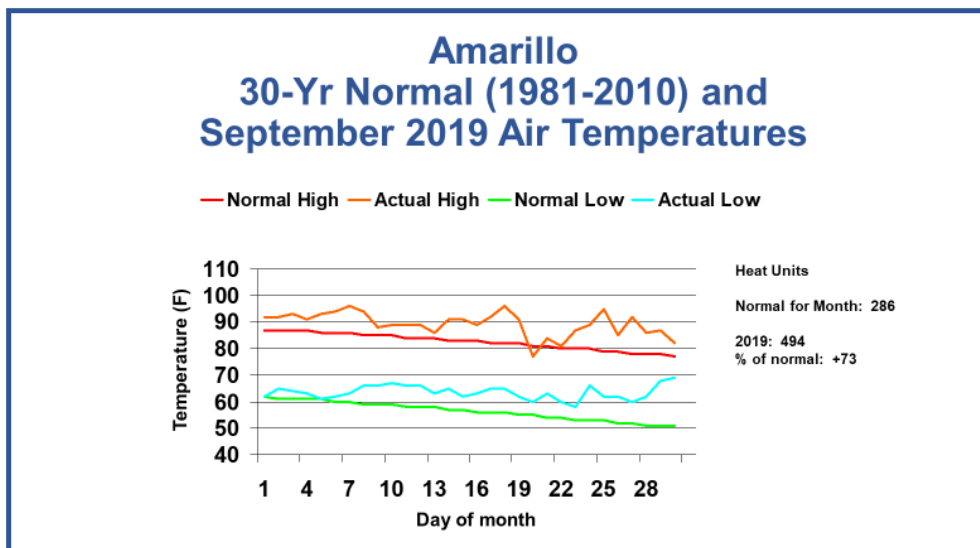


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When observing the daily heat units for the season, (see graph below) the above normal temperatures have resulted in a continued run of excellent fiber maturing conditions.



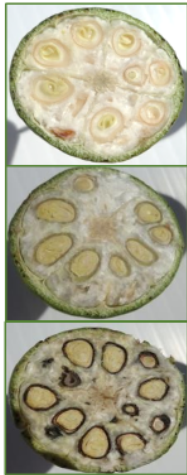
The temperatures for the month of September thus far have been well above normal for both the highs and lows and this can be seen in the graph below. In actuality, Amarillo only recorded one day (the 23rd) with a low temperature below 60 degrees during the month of September. This meant that from a physiological perspective, cotton has been able to essentially take full advantage of the temperature opportunities since the developmental threshold for this crop is 60 degrees.



## Impact on Crop Maturity

After observing several fields over the past couple of weeks, I have been very pleased with the level of maturity based on the knife test.

- Boll cutting has indicated that nearly all cotton is nearing harvest aid application maturity. Many of these fields are also not more than 5 nodes above cracked boll. Based on these observations, I don't necessarily anticipate low micronaire issues in these irrigated fields.
- On the other hand, in dryland fields where extreme water stress was encountered due to lack of rainfall, the jury may still be out. Extreme water stress can impact fiber secondary wall development which can result in immature fibers. How deeply this may affect the micronaire remains to be seen.
- Crop maturity determination methods were covered in the September 13 newsletter, but boll cutting comments are provided once again below.
- If the boll is watery or jelly like on the inside, then it is immature and needs more heat units. If boll development is such that the knife cannot slice through the lint, then the boll is nearly mature.
- Close inspection of the seed will give further indication of boll maturity. If the seed coat is turning tan and the seed leaves (or cotyledons) are fully developed, the boll is physiologically mature. For photos of this, see below.



**Requires more heat units prior to ethephon application. Ethephon will probably open this boll but it likely will not "fluff." Still has "watery" lint, and "jelly" in seed.**

**Fully formed seed leaves (cotyledons), no "jelly" in seed, tan seedcoat ring forming, lint stringing out. Ready for ethephon application.**

**Fully mature, blackened seed coat, should open with paraquat.**

## Recent Rainfall Impact on Crop Condition

Some areas have encountered rainfall events. It was evident from looking at cotton in the Tulia area earlier this week that juvenile growth has been encouraged by the high temperatures and moisture. Under these conditions, it is likely that PPO inhibitor harvest aid products such as Aim, ETX, Sharpen and others will likely be beneficial for helping to knock out this type growth.

## Temperature Forecasts

Currently the 30-day forecast for Amarillo provided by Weather.com is indicating good October conditions. Although we can't really trust a forecast that goes that far out, it appears that we are going to be provided a good opportunity for both crop maturing potential and excellent benefits from our harvest aid products. The National Weather Service (NWS) Climate Prediction Center's One-Month Outlook for temperatures is indicating that we are in a band of 40% probability of above normal temperatures for the month of October. The precipitation outlook is 33-40% probability of above normal rainfall. These maps can be accessed by clicking on the link below: <https://www.cpc.ncep.noaa.gov/>

### A Few Comments About "Frosts, Killing Frosts, Freezes and Killing Freezes"

Sometimes in conversations we hear a lot of weather terminology used. In spite of what is broadcast in local media, significant exceptions might occur at the micro- or farm-level. A lot of factors can influence whether or not a "freeze" is actually a cotton crop "killing freeze." Plus, even though a "killing freeze" may not be encountered, temperatures somewhat above 32 degrees can terminate fiber development, even though the plant is still alive. This is poorly understood physiologically, but based on my anecdotal experience, does occur.

Duration of freezing temperatures becomes important as radiant energy from the soil can buffer the depth to which freezing temperatures can penetrate the crop canopy. Although a strict definition is hard to find, conditions necessary for a "killing freeze" likely include temperatures of 28 degrees or less for approximately 4-5 hours. Some corn and soybean agronomists in the Mid-West refer to these conditions as "lethal cold temperatures" rather than a "killing freeze." This effect is typically more extensive when combined with winds. The aftermath of these phenomena is important for cotton producers and can result in difficult decisions needing to be made.

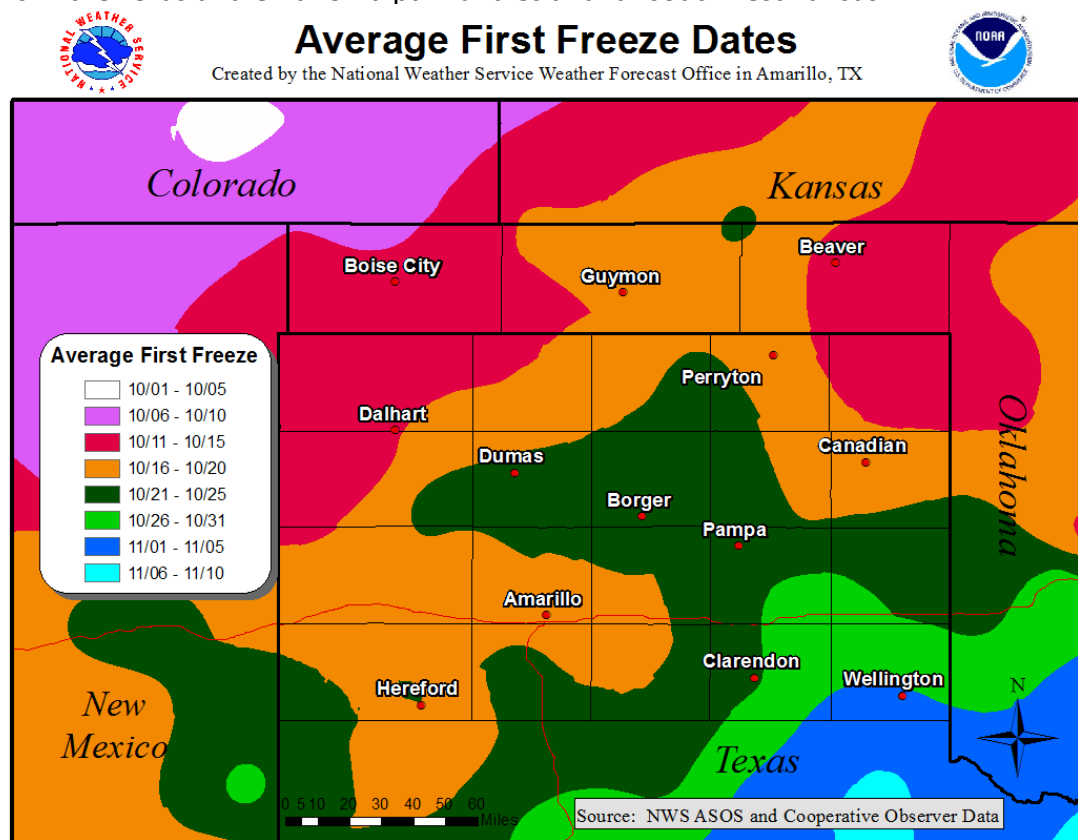
After searching for definitions, I landed on a NWS website located in northern Indiana (<https://www.weather.gov/iwx/fallfrostinfo>). It explains some of the terminology they use **during forecasting** which is reproduced below. I have taken the liberty to add a few comments in parentheses.

- While the National Weather Service does not keep track of "frost" in observations per se, they do keep track of when temperatures hit the freezing mark or fall below.
- Typically, frost can occur when the temperature falls below 36°F, especially in rural areas. It is a localized phenomena and can be quite variable across a small area. Frost becomes more widespread when the temperature falls below 32°F with some freeze possible. A hard freeze is possible when temperatures fall below 28°F.
- A **Frost Advisory** is issued when temperatures, winds (calm), and sky cover (no clouds) are favorable for frost development. (Sufficient humidity is also necessary). This is most likely when temperatures are less than or equal to 36 degrees. Coverage of frost in these cases should be more than patchy. If a frost is sufficiently severe to end the growing season, it is commonly referred to as a 'killing frost.'
- A **Freeze Watch** means sub-freezing temperatures are possible. These conditions could kill crops and other sensitive vegetation. A Freeze Watch may be issued a few days ahead of time if the potential exists for temperatures to fall into these thresholds.

- A **Freeze Warning** is issued when low temperatures are expected to be 29-32 degrees.
- A **Hard Freeze Warning** is issued when temperatures are expected to be 28 degrees or less. (Ice crystals form in cells throughout the plant and destroy cellular integrity, thus resulting in a completely dead plant). A **Hard Freeze Watch** may be issued a few days ahead of time if the potential exists for temperatures to fall into these thresholds.
- For more information on this terminology, click on the following link:  
<https://www.nws.noaa.gov/directives/sym/pd01005015curr.pdf>

## Average First Freeze Dates

I obtained the graphic below from the Amarillo National Weather Service office's website. This indicates when the local average first freeze date (low temperature reaches 32 degrees) occurs in the Texas and Oklahoma panhandles and far southwest Kansas.



Source: [https://www.weather.gov/ama/first\\_freeze](https://www.weather.gov/ama/first_freeze)

## Upcoming Field Days:

PhytoGen Field Day, Lubbock, 10:30 a.m., October 3

Texas A&M AgriLife Producer Field Day, Halfway Station, 9:00 a.m., October 7