

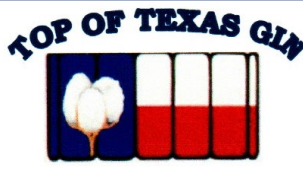


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## Cotton Insights Newsletter

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### Virus Pandemic Is Impacting Our Region

The rapid spread of the COVID-19 virus is causing significant disruptions in normal life in our area. This is no longer just an east or west coast challenge. More cases and a few deaths are showing up in our region. Among many other cancellations, the Texas Cotton Ginners Association and Plains Cotton Growers annual meetings at Lubbock will not be held. Markets have been hit hard and in these unprecedented times, we must remain prayerful and optimistic that things will be better, hopefully soon. Please be mindful that we need to be cautious during this outbreak, and strive to maintain healthy practices.

### 2019 Wrap-Up – What Caused the Color Grade Issues?

Color grades in some areas were off quite a bit in 2019 compared to other years. For more information on this see the October 23<sup>rd</sup> and October 30<sup>th</sup> issues Cotton Insights Newsletter. The season had a very cold start which resulted in many fields being considerably later than we wanted. Then, the summer arrived with a hot vengeance and resulted in minimal rainfall in many areas. Later, the early freeze challenge came our way around October 10<sup>th</sup>. Lubbock Classing Office data through the end of January (when the last classing report is available) can shed some light on how extensive this was in 2019. Around 15% of the 2.4 million bales classed there had a spotted or tinged grade (color grade second digits 3 or 4). A similar percentage was found in the 253,000 Kansas bales classed at Abilene. A quick glance of final reports from both Lubbock and Abilene for the immediate past few years indicates that this is a significant anomaly. So, what caused this? We had an excellent late summer with respect to maturing a lot of irrigated cotton. However, we still had some issues at the end of the season due to the early freeze encountered on October 10<sup>th</sup> from about Plainview north. Even though many late-set bolls were passing the knife test prior to the freeze, we still had some immature seed in some of those bolls. Many of these late set bolls were able to properly “fluff” but had staining once opened.

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We grabbed some boll samples that exhibited staining (“stained seed cotton”), and others which did not (“white seed cotton”) and submitted those to Dr. Nouredine Abidi, Managing Director of the Fiber and Biopolymer Research Institute (FBRI) at Texas Tech University. Dr. Abidi kindly accepted the challenge to identify the source of this discoloration. Essentially, specific seeds and the lint associated with those seeds were the discoloration source.

- “Stained seed cotton” evaluated indicated that the chalazal end (“domed end”) of the seed had poorly developed seed coats, and some fiber bundles were attached to a broken portion of this seed coat.
- These poorly developed seeds were smaller than unaffected ones associated with the “white seed cotton.”
- “White seed cotton” samples were hard to cut with a razor blade, and were darker and thicker – which to me indicated better maturity. “Stained seed cotton” seed coats were discolored and much easier to cut with the razor blade - which to me indicated less maturity.
- Conclusions were that the “stained seed cotton” seed coats near the chalazal end appeared to be weak and contained biomolecules which could easily stain fibers in the presence of moisture.
- Moisture inside the boll before opening or rainfall after boll opening are likely to have contributed to this. My personal observations on this were that bolls which were opened prior to the freeze did not exhibit much lint staining if any. However, bolls that were “mature” and still closed going into the freeze typically exhibited this discoloration. Many of these bolls opened and “fluffed” but had at least some level of lint staining. Another confounding issue was that some fields had encountered rainfall not long after the freeze, which may have been a contributing factor.
- Dr. Abidi also used a high-tech analytical method called Fourier-Transform Infrared Spectroscopy (FTIR) on fibers from both the “white seed cotton” and “stained seed cotton” samples.
- Observations from these analyses indicated that the “white seed cotton” samples looked identical to and representative of typical cotton fibers.
- However, the “stained seed cotton” samples indicated some spectroscopic differences when compared to the “white seed cotton.” “Stained seed cotton” had fiber contamination with non-cellulosic compounds possibly arising from cotton seeds.
- The TTU-FBRI plays a critical role in the cotton industry in our region. We wish to express our gratitude to Dr. Abidi for his time, effort and capabilities in investigating this important issue.